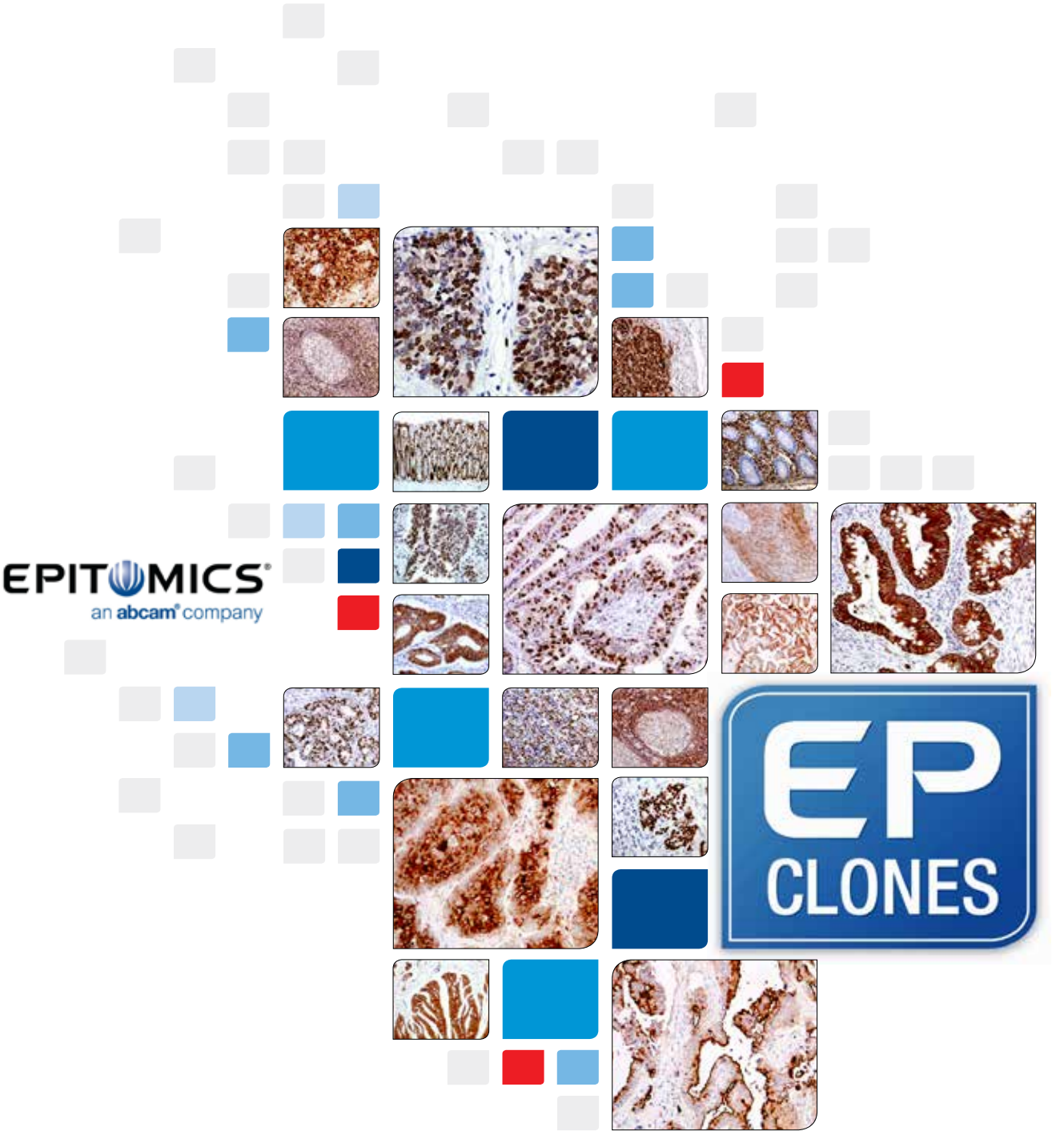

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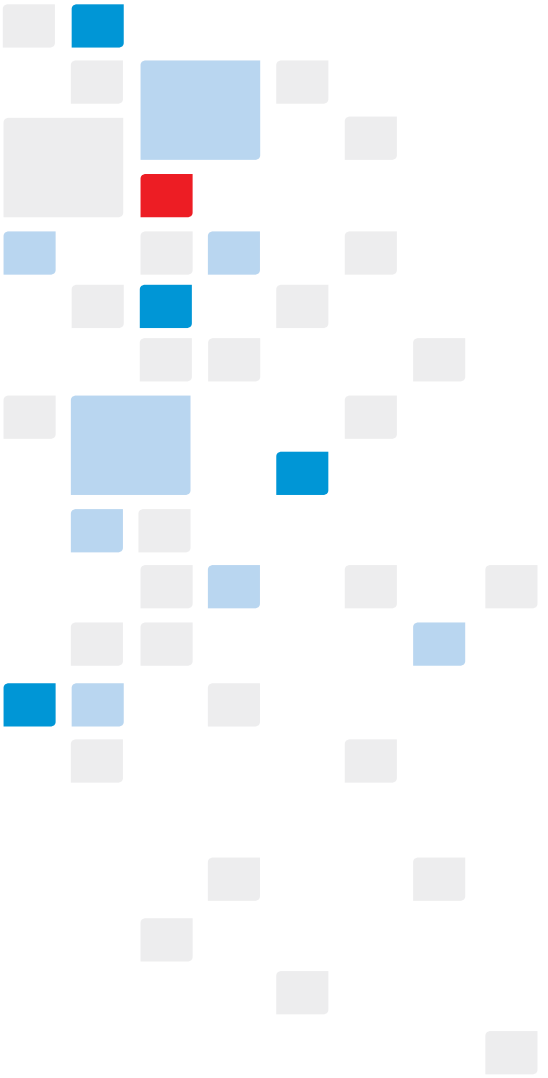

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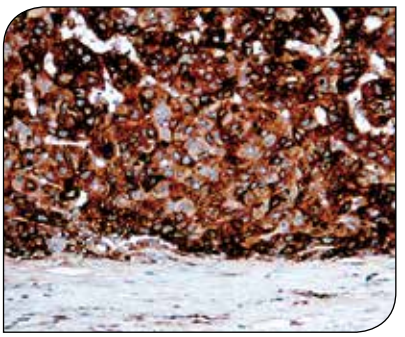
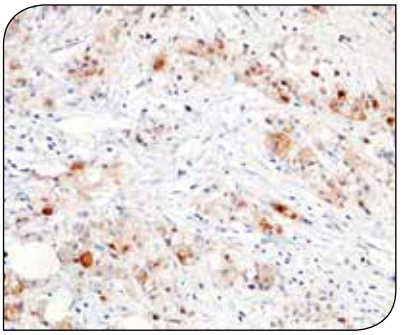


Hepatocellular carcinoma stained with anti-AFP

AFP (EP209)

Alpha-fetoprotein (AFP) is the most abundant plasma protein found in the human fetus. It is thought to be the fetal form of serum albumin. AFP binds to copper, nickel, fatty acids and bilirubin and is found in monomeric, dimeric and trimeric forms. Alpha-Fetoprotein (AFP) is synthesized by the cells of the embryonic yolk sac, fetal liver and fetal intestinal tract. AFP levels decrease soon after birth. In abnormal tissues, expression of AFP has been demonstrated in hepatocellular carcinoma, hepatoid adenocarcinoma, germ cell tumors and particularly yolk sac tumor. The anti-AFP antibody may be useful for the identification of neoplastic liver diseases, yolk sac tumors and mixed germ cell tumors.

Product Availability:	Control:	Visualization:
0.1 ml . . . . . .#AC-0166A 1 ml . . . . . #AC-0166	fetal liver, hepatocellular carcinoma	cytoplasm

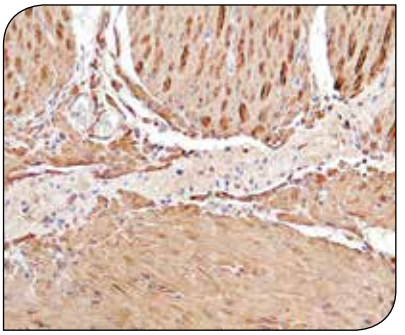


Breast cancer stained with anti-Aldh1A1

Aldh1A1 (EP168)

Aldh1A1 belongs to the aldehyde dehydrogenase family. Aldehyde dehydrogenase is the next enzyme after alcohol dehydrogenase in the major pathway of alcohol metabolism. Aldh1A1 is known to catalyze the oxidation of retinaldehyde to retinoic acid. Aldh1A1 has been a well established marker of hematopoietic stem cells and progenitor cells. Recent studies also show that Aldh1A1 is an important cancer stem marker associated with tumor progression in cancers of the breast, prostate and lung. This antibody labels epithelial cells of the stomach, liver, kidney and thyroid, neural cells and stromal cells including endothelial cells. In tumors, it stains stromal cells as well as tumor cells in many types of cancers.

Product Availability:	Control:	Visualization:
0.1 ml . . . . . #AC-0136RUO 1 ml . . . . . #AC-0136RUOC	embryonal liver, breast carcinoma	cytoplasm

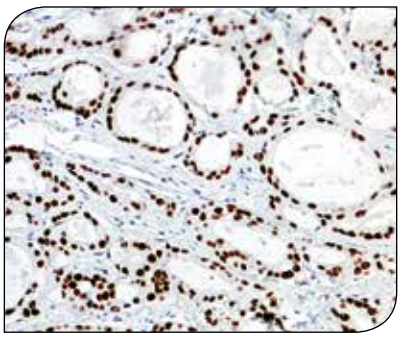


Smooth muscle stained with anti-Alpha-Actin (smooth muscle)

Alpha-Actin (smooth muscle) (EP188)

Actins are a major component of the cytoskeleton ubiquitously expresses in all eukaryotic cells. Although actin is one of the most conserved eukaryotic proteins, six isoforms characterized by isoelectric point and amino acid sequence analysis. Four of them represent differentiation markers of muscle tissues and two are found practically in all cells. These six different actin isoforms share >90% sequence homology throughout the entire molecule, but each has a unique sequence in the first 18 residues at the amino terminus. These actins are thought to be involved in the maintenance of contractile activity and other cellular function. Anti-Alpha-Actin (smooth muscle) antibody recognizes smooth muscle actin, no cross-reaction with cardiac or skeletal muscle actin and other non-muscle actins. It specifically labels smooth muscle cells, myofibroblasts and myoepithelial cells. This antibody is a useful tool for smooth muscle cells and smooth muscle-derived tumors.

Product Availability:	Control:	Visualization:
0.1 ml . . . . . #AC-0167RUO 1 ml . . . . . #AC-0167RUOC	colon, leiomyoma	cytoplasm

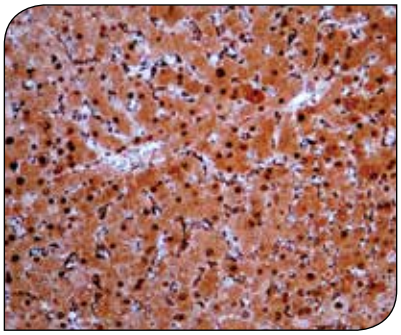


Prostate tumor stained with anti-Androgen Receptor

Androgen Receptor (EP120)

Androgen receptor (AR) is a member of the steroid receptor superfamily that is essential for the growth of prostate cancer cells. It has been reported that tyrosine phosphorylation of AR is induced by growth factors and elevated in hormone-refractory prostate tumors. Data suggest that growth factors and their downstream tyrosine kinases, which are elevated during hormone-ablation therapy, can induce tyrosine phosphorylation of AR. Such modification may be important for prostate tumor growth under androgen-depleted conditions. Cellular signaling occurs following androgen binding to the AR and translocation to the nucleus. This activated complex associates with androgen-responsive elements contained in the DNA sequence of target genes, affecting the transcriptional activity of these genes. AR antibody labels epithelial cells and stromal cells in normal prostate. AR reactivity is also found in other types of cells, including epithelial cells of the breast and hepatocytes. In prostate cancer, AR expression is maintained throughout cancer progression. Immunohistochemistry of AR is useful for the evaluation of prostate cancer AR in routinely processed tissues. The majority of androgen independent hormone refractory prostate cancers express AR. Transcriptional activation of AR is involved in refractory antiandrogen therapy. Androgen receptor expression has been helpful in predicting the clinical response to anti-androgenic treatment.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0071A 1 ml ..... #AC-0071	prostate, prostate carcinoma	nuclear

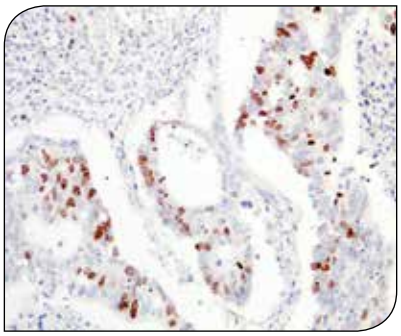


Liver stained with anti-ARG-1

ARG-1 (EP261)

Arginase is a manganese metalloenzyme that catalyzes the hydrolysis of arginine to generate ornithine and urea. Arginase I and II are isoenzymes which differ in subcellular localization, regulation, and possibly function. Arginase I is a cytosolic enzyme, which is expressed mainly in the liver as part of the urea cycle, whereas arginase II is a mitochondrial protein found in a variety of tissues. Antibody to ARG-1 labels hepatocytes in normal tissues and granulocytes in peripheral blood. ARG-1 is a sensitive and specific marker for identification of hepatocellular carcinoma.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0227A 1 ml ..... #AC-0227	liver, hepatocellular carcinoma	cytoplasm/nuclear

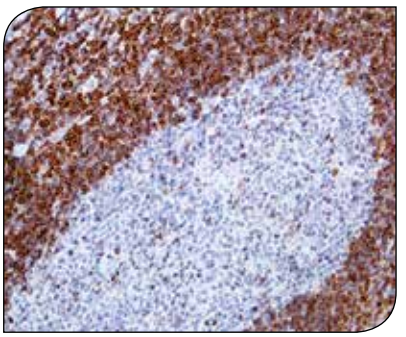


Colon cancer stained with anti-Aurora B

Aurora B (EP136)

The serine/threonine protein kinase aurora B (Aurora B) is a chromosomal passenger protein critical for accurate chromosome segregation, cytokinesis, protein localization to the centromere and kinetochore, correct microtubule-kinetochore attachment, and regulation of the mitotic checkpoint. Aurora B forms a tight complex with inner centrosome protein and survivin Inactivation of any of these proteins causes similar defects in chromosome segregation. A significant overexpression of Aurora B has been found in a variety of human tumors including non-small cell lung carcinoma, astrocytoma, seminoma and carcinomas of the colon, prostate, endometrium and thyroid. The expression level of Aurora B is associated with cell proliferation and prognosis in these tumors.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0196A 1 ml ..... #AC-0196	tonsil, colon carcinoma	nuclear

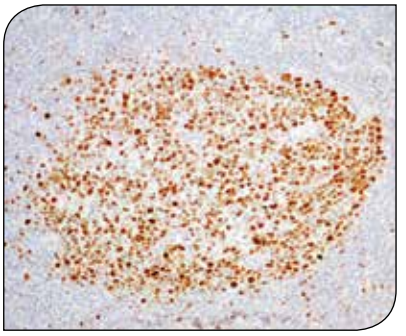


Tonsil stained with anti-Bcl-2

Bcl-2 (EP36)

The Bcl-2 family of proteins regulates apoptosis by controlling mitochondrial permeability and release of cytochrome c. Bcl-2 is an anti-apoptotic protein that resides in the outer mitochondrial wall and inhibits release of cytochrome c. Over-expression of Bcl-2 has been shown to promote cell survival by suppressing apoptosis. It has been documented that Bcl-2 becomes deregulated in tumor cells as a result of translocation into the immunoglobulin heavy-chain locus and is therefore activated in B-cell malignancies. Bcl-2 is useful in differentiation of follicular lymphoma from reactive follicular proliferation (Bcl-2 negative). In addition, Bcl-2 has been shown to be correlated with disease prognosis in breast cancer, prostate cancer, ovarian cancer, endometrial cancer and colon cancer. The sensitivity of this antibody in diagnosis of follicular lymphoma is higher than other Bcl-2 antibody as reported by Masir et al.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0035A 1 ml ..... #AC-0035	tonsil, follicular lymphoma	cytoplasm

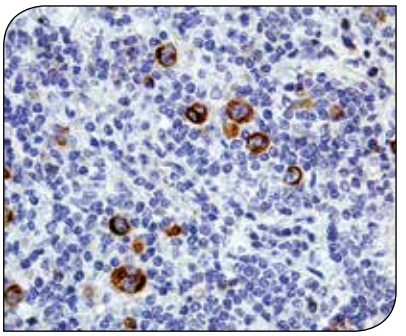


Tonsil stained with anti-Bcl-6

Bcl-6 (EP278)

Bcl-6 is a Kruppel-type zinc finger transcription factor spanning 706 amino acids. Bcl-6 plays a central role in germinal center (GC) formation, functioning as a regulator of B lymphocyte growth and development by protecting GC B cells from undergoing DNA damage-induced apotosis. Logarajah S et al. found that Bcl-6 is involved in mammary epithelial differentiation, which may play a potential role in carcinogenesis. Bcl-6 expression is mainly localized in GC B cells. Surrounding mantle- and marginal-zone B cells, as well as plasma cells and marrow B-cell precursors are negative for Bcl-6. Bcl-6 protein is commonly detected in GC neoplasms including follicular lymphomas, diffuse large B-cell lymphoma (DLBCL) and Burkitt's lymphomas. Bcl-6 is not restricted to B-cell lineage, a considerable number of anaplastic large cell lymphoma also had Bcl-6 expression, especially in ALK positive cases.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0242A 1 ml ..... #AC-0242	tonsil, follicular lymphoma	nuclear

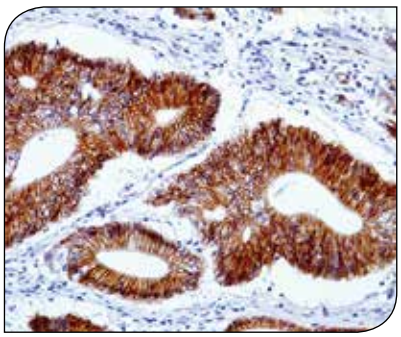


Hodgkin's lymphoma stained with anti-Bcl-x

Bcl-x (EP94)

Bcl-x, also know as Bcl-2-like protein 1, is a member of the Bcl-2 protein family. It inhibits cell death, or apoptosis. Bcl-x is expressed as two isomeric forms, Bcl-xL and Bcl-xS, and it is typically present in the cytosol in association with the mitochondrial membrane. Bcl-xL forms heterodimers with various proteins, including Bax, Bak and Bcl-2. It has been found that heterodimerization with Bax does not seem to be required for anti-apoptotic activity. Since Bcl-xL can form an ion channel in synthetic lipid membranes, there is a strong possibility that this property plays a role in heterodimerizationindependent cell survival. The Bcl-X(S) isoform promotes apoptosis. Bcl-x is expressed in many types of cell including lymphocytes, neuronal cells, and epithelial cells. In tumors, a high level of Bcl-x has been found in Reed Sternberg cells in Hodgkin's disease. Overexpression of Bcl-x has been observed in primary central nervous system lymphomas that occur in immunosuppressed patients. In prostate cancer, Bcl-x expression is increased during tumor progression. Overexpression of Bcl-x in colon cancer has been linked to a poor prognosis.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0098RUO 1 ml ..... #AC-0098RUOC	tonsil, lymphoma	cytoplasm/nuclear

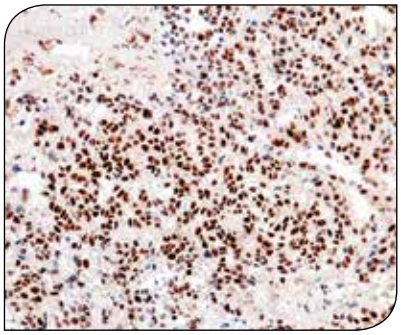


Colon cancer stained with anti-Beta-Catenin

Beta-Catenin (EP35)

Beta-Catenin is a key regulatory protein involved in cell adhesion and signal transduction through the Wnt pathway, and plays important roles in development, cellular proliferation, and differentiation. Mutations in the Beta-Catenin gene CTNNB1 leading to stabilization of Beta-Catenin in the cytoplasm and translocation to the nucleus have been implicated in various forms of tumor including familial adenomatous polyposis, fibromatosis, solitary fibrous tumors and endometrial carcinoma. A nuclear accumulation of Beta-Catenin in fibromatosis (desmoid tumor) in various locations including breast and mesentery is useful in the differentiation of this tumor from other fibroblast like lesions.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0034A 1 ml ..... #AC-0034	breast fibromatosis	cytoplasm/membrane/nuclear

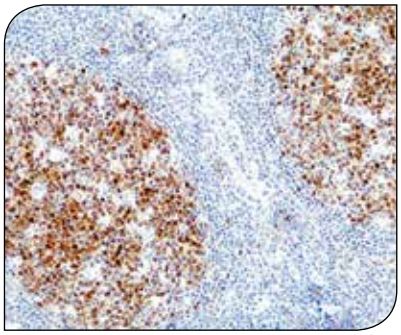


Melanoma stained with anti-BMI-1

BMI-1 (EP199)

BMI-1 (B lymphoma Mo-MLV insertion region 1 homolog), a key component of the PRC1 complex, was identified initially as an oncogene that cooperates with c-myc in the generation of B-cell lymphoma. It functions as a transcriptional repressor involved in gene silencing and the malignant transformation and biologic aggressiveness of several human carcinomas. Overexpression of BMI-1 is correlated with tumor progression in a variety of malignancies, including B-cell non-Hodgkin lymphoma, esophageal squamous carcinoma, and cancers of the bladder, cervix, ovary and breast. In contrast, loss of BMI expression has been reported to be associated with decreased patient survival in melanoma.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0168RUO 1 ml ..... #AC-0168RUOC	breast, breast carcinoma	nuclear

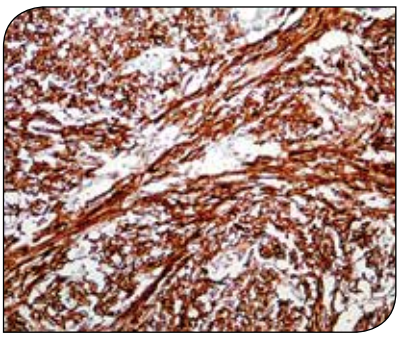


Tonsil stained with anti-BOB.1

BOB.1 (EP114)

BOB.1, also know as B-cell-specific coactivator OBF-1 or OCA-B, is a lymphoid-specific transcriptional coactivator that interacts with the transcription factors Oct-1 and Oct-2. BOB.1 has been shown to be critical for the development of a normal immune response, where it mediates octamer-dependent transcriptional activity in B lymphocytes. It is also critically involved in the formation of germinal centers in secondary lymphoid organs. BOB.1 levels have been observed to be massively upregulated in germinal center B cells, as compared with resting B cells. The BOB.1 antibody labels B lymphocytes and plasma cells. It is expressed in various B-cell derived lymphomas and Hodgkin's lymphomas (HL). The expression of BOB.1 is high in nodular lymphocyte predominant Hodgkin lymphoma (NLPHL), but low in classic HL.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0114A 1 ml ..... #AC-0114	tonsil, B-cell lymphoma	nuclear

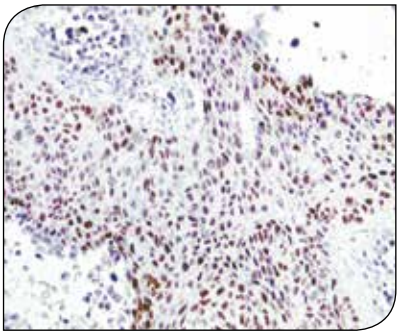


Gastrointestinal stromal tumor stained with anti-CD117

c-Kit/CD117 (EP10)

Member of the Tyrosine Kinase Receptor (TKRs) and highly homologous to receptor PDF and CSF-1. Activation of c-Kit tyrosine kinase by SCF (Stem Cell factor) leads to autophosphorylation and association of c-Kit with substrate PI3K. CD117 is a marker for mast cells and gastrointestinal stromal tumor. This anti-CD117 has been validated with excellent staining result by NordiQC, an independent scientific organization, promoting the quality of immunohistochemistry for pathology laboratories.

Product Availability:	
0.1 ml.....#AC-0029A 1 ml ..... #AC-0029	**USA:** ASR **Japan:** RUO
0.1 ml..... #AC-0029EUA 1 ml ..... #AC-0029EU	**Europe:** IVD

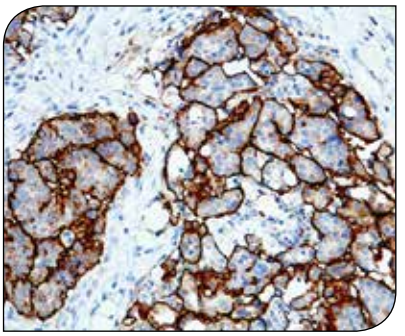


Lung cancer stained with anti-c-Myc

c-Myc (EP121)

The c-Myc gene is located at chromosome 8q24. It is required for progression through the cell cycle and promotes cellular proliferation. The t(8;14)(q24;q32) translocation and the c-Myc/immunoglobulin heavy-chain (IGH) fusion gene are not only in Burkitt lymphoma, but are also seen in diffuse large B-cell lymphoma, blastic mantle cell lymphoma and transformed follicular lymphoma. In another study on predicting c-Myc translocation in 17 cases of Burkitt lymphomas (BLs) and 19 cases of diffuse large B-cell lymphomas (DLBCLs), Ruzinova et al. reported that the sensitivity and specificity of this c-Myc antibody on identifying tumors harboring a c-Myc rearrangement reached 96% and 90% respectively. This novel c-Myc antibody is a useful tool for identifying aggressive B-cell lymphomas likely to harbor a c-Myc rearrangement, and thus warrant genetic testing.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0116A 1 ml ..... #AC-0116	Burkitt's lymphoma	cytoplasm/nuclear

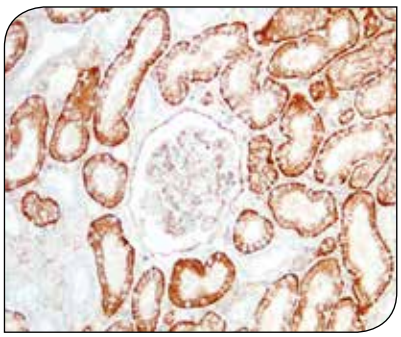


Ovarian cancer stained with anti-CA 125

CA 125 (EP48)

Carcinoma antigen 125 (CA125) is a high molecular weight tumor antigen. It is a heavily glycosylated mucin encoded by MUC16 gene. It is expressed on ovarian carcinoma and several epithelial tumors including endometrial carcinoma, cervix carcinoma and clear cell carcinoma of bladder. In addition, CA125 also binds to mesothelin and expressed on mesothelioma. The binding of CA125 to mesothelin may contribute to ovarian cancer metastasize to peritoneum.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0046A 1 ml ..... #AC-0046	ovarian carcinoma	cytoplasm/membrane

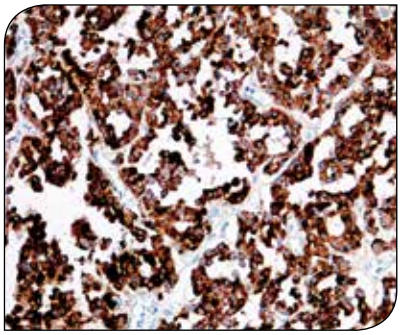


Kidney stained with anti-Cadherin-6

Cadherin-6 (EP217)

Cadherin-6 is a member of the cadherin superfamily. Cadherins are membrane glycoproteins that mediate homophilic cell-cell adhesion and play critical roles in cell differentiation and morphogenesis. It is a type II cadherin and may play a role in kidney development as well as endometrium and placenta formation. Cadherin-6 is highly expressed in kidney and the central nervous system. It has been found to be related to fetal kidney development and has been identified as a major cadherin in renal proximal tubules where conventional renal cell carcinoma originates. The expression of Cadherin-6 is associated with tumor progression in renal cell carcinoma.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0207RUO 1 ml ..... #AC-0207RUOC	kidney, renal cell carcinoma	membrane

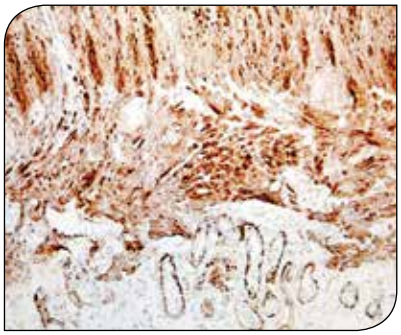


Thyroid medullary carcinoma stained with anti-Calcitonin

Calcitonin (EP92)

Calcitonin is a 32-amino acid polypeptide hormone that is commonly expressed in the parafollicular C cells in the thyroid gland. Calcitonin is a potent plasma calcium-lowering peptide; it decreases the level of calcium and phosphate in blood by promoting the incorporation of these ions in bones. Calcitonin antibody is useful for the identification of C cell hyperplasia and medullary thyroid carcinomas.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0092A 1 ml ..... #AC-0092	thyroid, thyroid medullary carcinoma	cytoplasm

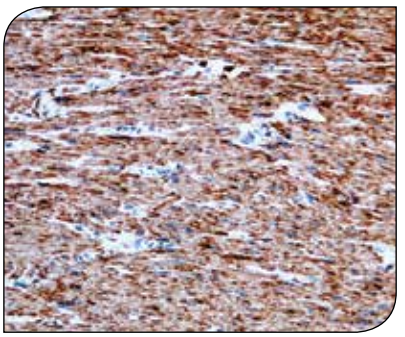


Smooth muscle stained with anti-Caldesmon

Caldesmon (EP19)

Caldesmon is a smooth muscle regulatory protein that interacts with actin, myosin, tropomyosin, and calmodulin. It is more specific to smooth muscle differentiation than desmin and muscle specific actin. Also, it is useful in differentiation of smooth muscle from myofibroblast tumors, uterus leiomyoma from endometrial stromal tumor. Caldesmon is a marker for identification of epitheloid mesothelioma.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0022A 1 ml ..... #AC-0022	uterus, leiomyoma	cytoplasm

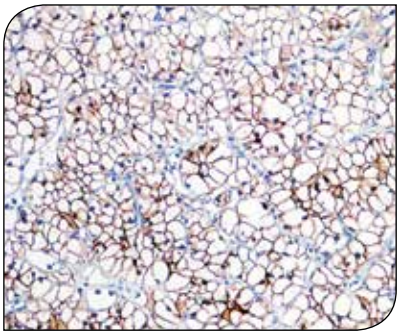


Smooth muscle stained with anti-Calponin-1

Calponin-1 (EP63)

Calponin is a smooth muscle specific, actin-, tropomyosin- and calmodulin-binding protein thought to be involved in regulation of actomyosin as well as the regulation or modulation of contraction. It is expressed on smooth muscle cells and myoepithelial cells. Calponin has been used to identify invasion of breast lesion. Additionally, Calponin is expressed on malignant fibrous histiocytoma of bone and adenoid cystic carcinoma of salivary gland. The consistently positive staining pattern in adenoid cystic carcinomas may be useful in discriminating histologically similar but consistently negative polymorphous low-grade adenocarcinomas

Product Availability:	Control:	Visualization:
0.1 ml . . . . . #AC-0060A 1 ml . . . . . #AC-0060	uterus	cytoplasm

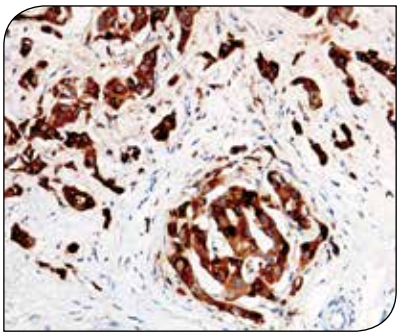


Kidney clear cell tumor stained with anti-CA9

Carbonic Anhydrase 9 (EP161)

Carbonic anhydrases (CAs) are a large family of zinc metalloenzymes that catalyze the reversible hydration of carbon dioxide. Carbonic Anhydrase 9 (CA9) has a distinctive expression pattern in normal and cancer tissues. The most abundant expression of CA9 was found in normal mucosa of the stomach and gallbladder. Other normal tissues have lower or no expression. Relatively high levels of CA9 are expressed in carcinomas of the cervix, kidney, lung, breast and many other tumors. Most studies have shown that decreased CA9 levels are independently associated with poor survival. Low levels of CA9 may benefit more from adjuvant treatment than patients with high levels.

Product Availability:	Control:	Visualization:
0.1 ml . . . . . #AC-0137RUO 1 ml . . . . . #AC-0137RUOC	stomach, renal cell carcinoma	cytoplasm/membrane

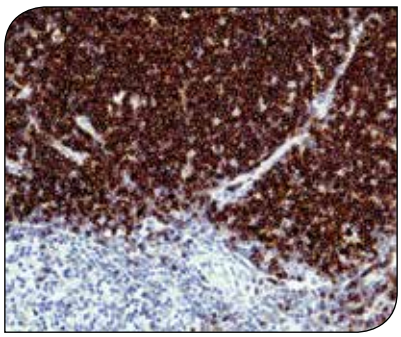


Breast cancer stained with anti-Cathepsin D

Cathepsin D (EP81)

Cathepsin D is a ubiquitously expressed lysosomal protease that is involved in proteolytic degradation, cell invasion, and apoptosis. It is suspected to play important roles in protein catabolism, antigen processing, degenerative diseases, and cancer progression. Cathepsin D is present in many types of cancer cells. In breast cancer, it is induced by estrogens and its expression is correlated with a higher risk of metastasis and poor disease-free survival. Extensive studies have been also performed to evaluate the clinical and therapeutic implication of Cathepsin D expression in nongynecological solid tumors. Although conflicting results have been observed in some reports, evidence emerging from these studies indicated that Cathepsin D seems to facilitate early stages of tumor progression such as cell proliferation and local dissemination.

Product Availability:	Control:	Visualization:
0.1 ml . . . . . #AC-0090RUO 1 ml . . . . . #AC-0090RUOC	breast carcinoma	cytoplasm

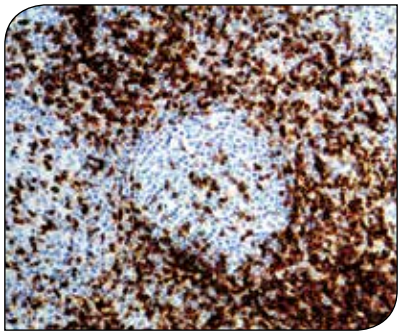


Thymus stained with anti-CD1a

CD1a (EP80)

Cluster of Differentiation 1a (CD1a) is part of a family of major histocompatibility complex (MHC) antigen-like glycoproteins that associate with beta-2-microglobulin. CD1a binds self and non-self lipid and glycolipid antigens, presenting them to T-cell receptors on natural killer T cells. CD1a antibody labels cortical thymocytes, Langerhans' cells and dendritic cells. It has been used to identify Langerhans' cell histiocytosis and precursor T lymphoblastic lymphoma/leukemia.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0078A 1 ml ..... #AC-0078	thymus	membrane

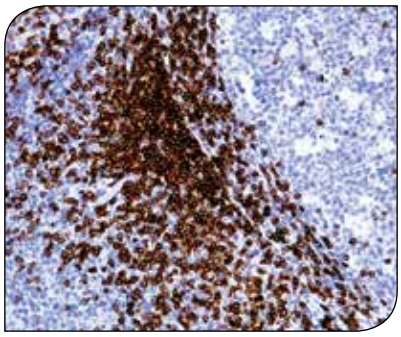


Tonsil stained with anti-CD2

CD2 (EP222)

T-cell surface antigen CD2 (CD2) is a T-cell specific surface glycoprotein that is critically important for mediating adherence of T cells to antigen-presenting cells or target cells. It interacts with lymphocyte function-associated antigen (LFA-3) and CD48/BCM1 to mediate adhesion between T cells and other cell types. CD2 is involved in triggering T cells, and the cytoplasmic domain is involved in signaling. CD2 is a pan T-cell marker. CD2 antibody labels T-cell, thymocytes and natural killer (NK) cells. CD2 is absent in a small subset of T cells. CD2 antibody is useful for identification of precursor and mature T-cell lymphomas. Aberrant loss of CD2 in T-cell lymphomas may help to distinguish them from reactive T-cell proliferations.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0228A 1 ml ..... #AC-0228	tonsil, T-cell lymphoma	membrane

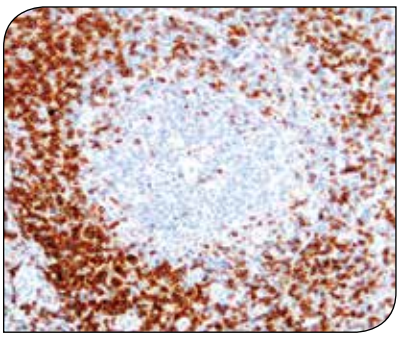


Tonsil stained with anti-CD3

CD3 (EP41)

CD3 (Cluster of Differentiation 3) is a complex of proteins that associates directly with the T-cell antigen receptor (TCR). CD3 is composed of five invariant polypeptide chains that associate to form three dimers. The five invariant chains of CD3 are labeled gamma, delta, epsilon, zeta, and eta. The CD3 is involved in T-cell development and survival. It is expressed on T cells in Thymus, peripheral lymphoid tissue, blood and bone marrow. CD3 is a commonly used marker for identification of T-cell and T-cell derived malignancies. This CD3 antibody has been validated by the 9th International Conference on Human Leukocyte Differentiation Antigens (HLDA9).

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0004A 1 ml ..... #AC-0004	tonsil, lymphoma	cytoplasm/membrane

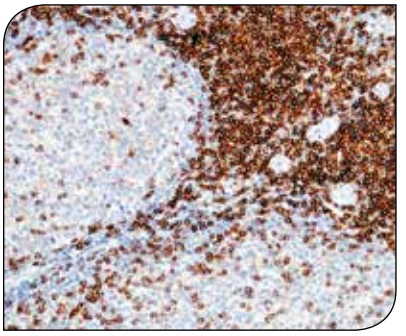


Tonsil stained with anti-CD3 delta

CD3 delta (EP177)

CD3 (Cluster of Differentiation 3) is a complex of proteins that associates directly with the T-cell antigen receptor (TCR). CD3 is composed of five invariant polypeptide chains that associate to form three dimers. The five invariant chains of CD3 are labeled gamma, delta, epsilon, zeta, and eta. CD3 is involved in T-cell development and survival. It is expressed on T cells in thymus, peripheral lymphoid tissue, blood and bone marrow. CD3 is a commonly used marker for identification of T-cell and T-cell derived malignancies.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0201A 1 ml ..... #AC-0201	tonsil, T-cell lymphoma	cytoplasm/membrane

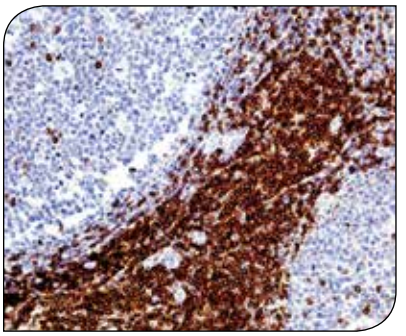


Tonsil stained with anti-CD4

CD4 (EP204)

CD4 is a glycoprotein found on the surface of immune cells such as T helper cells, monocytes, macrophages and dendritic cells. It is a co-receptor that assists the T-cell receptor (TCR) with an antigen-presenting cell and also interacts directly with MHC class II molecules on the surface of the antigen-presenting cells using its extracellular domain. In lymphatic tissues, the CD4+ T cells are seen in large numbers in the parafollicular zone, while scattered cells are found in the germinal centres and mantle zone. CD4 is also demonstrated in hepatic sinusoidal cells, monocytes and monocytes-derived cells but not expressed on B cells and immature thymocytes. Precursor T-lymphoblastic lymphomas are therefore variable in their expression of CD4. Most mature T-cell lymphomas are CD4 positive with the exception of aggressive NK-cell leukemia and extranodal NK/T-cell lymphoma. CD4 plays an important role in the classification of lymphocytes in inflammatory lesions and malignant lymphomas.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0173A 1 ml ..... #AC-0173	tonsil, T-cell lymphoma	membrane

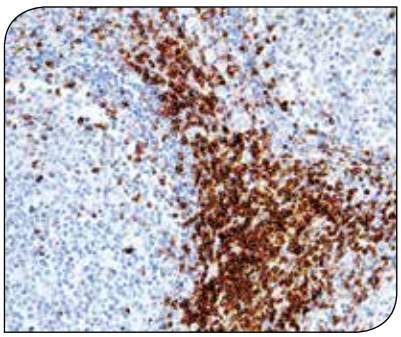


Tonsil stained with anti-CD5

CD5 (EP77)

CD5 (Lymphocyte antigen T1/Leu-1) is a transmembrane glycoprotein which has been implicated as a receptor in the regulation of T-cell proliferation. CD5 antibody labels a variety of T lymphocytes, mantle zone lymphocytes and a small subset of B lymphocytes. In tumors, CD5 is expressed on T-cell malignancies, B-cell chronic lymphocytic leukemia (CLL)/small lymphocytic lymphoma (SLL), and mantle-cell lymphoma. It is a useful diagnostic tool for these tumors. In addition, anti-CD5 is helpful in diagnosis of thymic carcinoma (CD5 positive).

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0077A 1 ml ..... #AC-0077	tonsil, mantle cell lymphoma	membrane

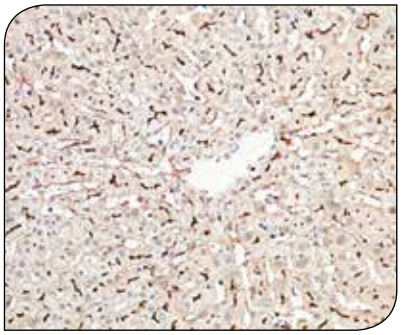


Tonsil stained with anti-CD7

CD7 (EP132)

CD7 is a single-pass type 1 transmembrane protein that is a member of the immunoglobulin superfamily. It plays an essential role in T-cell interactions and also in T-cell/B-cell interactions during early lymphoid development. CD7 is expressed on thymocytes, T and natural killer cells, and progenitors of lymphoid and myeloid cells. It is also expressed on T-cell Acute Lymphoblastic Leukemia/Lymphoma, Acute Myelogenous Leukemia and Chronic Myelogenous Leukemia. CD7 antibody is the most sensitive and specific T-cell deletion marker. Loss of CD7 expression by neoplastic lymphocytes is considered a distinguishing characteristic of mycosis fungoides (MF) and cutaneous T-cell lymphoma.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0124A 1 ml ..... #AC-0124	tonsil, T-cell acute lymphoblastic leukemia	membrane

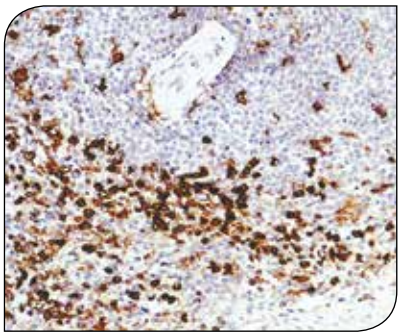


Liver stained with anti-CD10

CD10 (EP195)

The common acute lymphoblastic leukemia antigen (CALLA/CD10) is a single-pass type II transmembrane metallo-endopeptidase that cleaves and inactivates a variety of peptide growth factors important for signal transduction including the enkephalins, bombesin and substance P. CD10 is expressed by a number of hematopoietic cells such as immature T and B cells, B cells of the germinal centers of lymphoid follicles and granulocytes. It also reacts with a variety of non-hematopoietic cells, including epithelial cells in GI tract and kidney tubules. In liver, the bile canaliculi show a moderate to strong staining. CD10 has been used for the identification and classification of certain types of malignant lymphoma and leukemia. CD10 is expressed in a high percentage of cases of acute lymphoblastic leukemia, follicular lymphoma, Burkitt's lymphoma, some hematopoietic tumors, and chronic myelogenous leukemias in lymphoid blast crisis. It is also known to be a marker of endometrial stromal cells. It is helpful in differentiating endometrial stromal sarcoma (ESS) from uterine cellular leiomyoma (UCL) and uterine leiomyosarcoma (ULS).

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0169A 1 ml ..... #AC-0169	tonsil, follicular lymphoma	cytoplasm/membrane

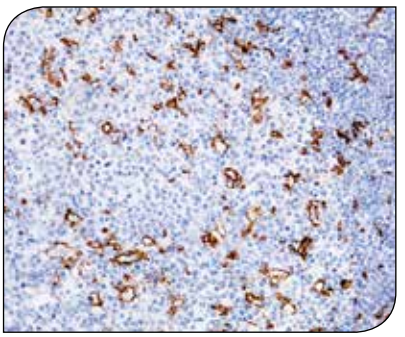


Spleen stained with anti-CD11b

CD11b (EP45)

CD11b, also known as ITAM, Integrin alpha-M or MAC-1 alpha subunit or CR3 alpha chain belongs to the integrin alpha chain family; it is predominately presented in human myeloid cells, NK1 cells, monocytes, granulocytes and follicular dendritic cells. The alpha subunit of ITAM/beta-2 complex (CD11b/CD18, Mac-1), is a receptor for fibrinogen, factor X, and ICAM1. ITAM/beta-2 is implicated in adhesive interactions of monocytes, macrophages, and granulocytes. CD11b has been used as a common myeloid marker. CD11b is expressed in about 50% of acute myeloid leukemia (AML). In combination with CD117, CD11b is helpful in differentiating acute promyelocytic leukemia (CD11b negative) from recovering benign myeloid proliferation (CD11b positive, CD117 negative). In acute promyelocytic leukemia patients treated with all-trans retinoic acid or Arsenic trioxide (As2O3), CD11b is a marker for differentiating the induction of leukemia cells. CD11b is also expressed on microglia cells and involved in the development of neurodegenerative diseases.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0043RUO 1 ml ..... #AC-0043RUOC	spleen, leukemia	membrane

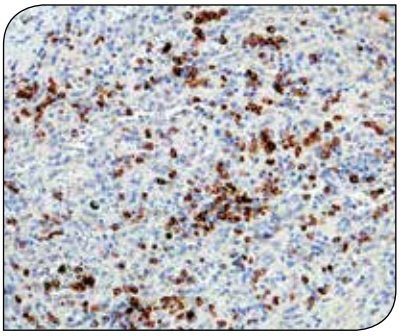


Tonsil stained with anti-CD11c

CD11c (EP157)

CD11c (ITGAX), a member of the leukointegrin family, shares the same beta subunit with other members of the leukocyte adhesion molecule family, which includes CD11a (LFA-1), CD11b (MAC-1) and CD11d (ITGAD), but has a unique alpha chain. CD11c has been shown to play a role in phagocytosis, cell migration, and cytokine production by monocytes/macrophages as well as induction of T-cell proliferation by Langerhans cells. CD11c is expressed prominently on the plasma membranes of monocytes, tissue macrophages, NK cells, and most dendritic cells (DCs). A lower level of expression is also observed on neutrophils as a result of its high level of expression on most DCs. An antibody to CD11c may aid in identification of lesions with histiocytic origin. It may also been used as a marker for hairy cell leukemia in paraffin-embedded tissues.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0134RUO 1 ml ..... #AC-0134RUOC	tonsil	membrane

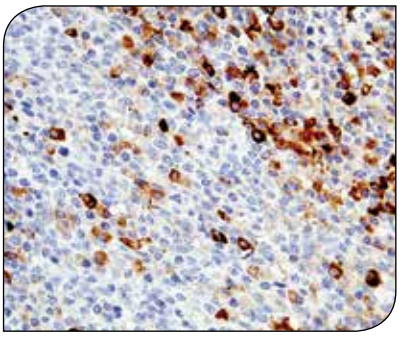


Spleen stained with anti-CD13

CD13 (EP117)

CD13, also known as aminopeptidase N, was originally identified as a cell surface glycoprotein expressed by cells of granulocytic and monocytic lineages at various differentiation stages. Sequence comparisons showed that the cDNA sequence of CD13 is identical to aminopeptidase N (APN), a prominent membrane-anchored metallopeptidase expressed by the brush borders of the small intestinal and renal microvillar membrane, and also in other plasma membranes. Human APN is a receptor for one strain of human coronavirus that is an important cause of upper respiratory tract infections. Human CD13 may also mediate HCMV infection by a process that increases binding, but not its enzymatic domain. CD13 has been used as a myeloid marker. The antibody labels leukemic blasts in acute myeloid leukemia (AML) and is helpful in identifying AML subtype M0 acute lymphoid leukemia (ALL). Additionally, CD13 is a sensitive but not entirely specific marker for anaplastic lymphoma kinase positive (ALK+) anaplastic large cell lymphomas (ALCLs). CD13 is also expressed in nonhematopoietic cells including fibroblasts, bone marrow stromal cells, osteoclasts and epithelial cells. A canalicular staining pattern of CD13 in hepatocellular carcinoma (HCC) is useful in differentiation between HCC and non- HCC in liver.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0107RUO 1 ml ..... #AC-0107RUOC	spleen, acute myeloid leukemia (AML)	cytoplasm/membrane

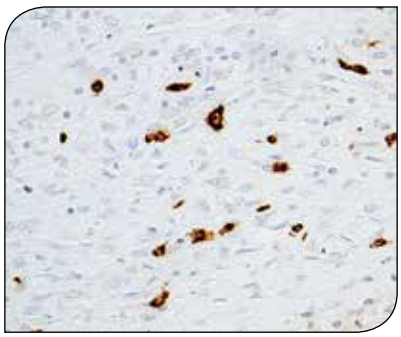


Tonsil stained with anti-CD14

CD14 (EP128)

CD14 is a 55-kDa protein found as a glycosylphosphatidylinositol (GPI)- anchored protein on the surface of monocytes, macrophages, and polymorphonuclear leukocytes, and as a soluble protein in the blood. Its main function is to serve as a receptor for lipopolysaccharide (LPS). Besides its role in endotoxin signaling, it has been proposed that CD14 is involved in the transportation of other lipids, cell-cell interactions during different immune responses, and recognition of apoptotic cells. CD14 is highly expressed on the surface of monocytes/macrophages and strongly up-regulated during the differentiation of monocytic precursor cells into mature monocytes. Therefore, CD14 has been commonly used as a differentiation marker for monocytes/macrophages. An antibody to CD14 also labels Langerhans' cells and dendritic cells.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0123A 1 ml ..... #AC-0123	tonsil, histiocytic sarcoma	cytoplasm/membrane

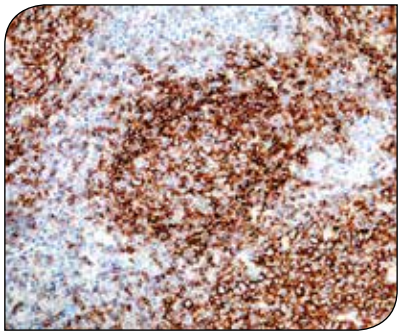


Hodgkin's lymphoma stained with anti-CD15

CD15 (EP273)

CD15 is a complex cluster of cell surface glycoproteins and glycolipids with a common trisaccharide structure, 3-fucosyl-N-acetyllactosamine (3-FL), also referred to as Lewis X (LeX) antigen. This antigen is involved in neutrophil functions such as, cell-cell interactions, phagocytosis, stimulation of degranulation and respiratory burst. The CD15 is expressed in Reed-Sternberg cells, myeloid cells as well as epithelial cells. CD15 antibody has been used as an immunohistochemical marker to identify Reed-Sternberg cells (RSC) in classical Hodgkin lymphoma (CHL).

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0244A 1 ml ..... #AC-0244	spleen, Hodgkin's lymphoma	cytoplasm/membrane

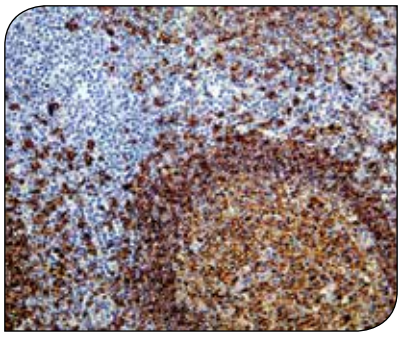


Tonsil stained with anti-CD19

CD19 (EP169)

CD19 is a pan B-cell marker expressed in a wide range of maturational stages including pre-B cells. CD19 labels the membrane of B cells in germinal centers including B cells and follicular dendritic cells, mantle zone cells and cells in the interfollicular areas. It is negative in plasma cells. CD19 is found in the majority of B-cell-derived malignancies.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0139A 1 ml ..... #AC-0139	tonsil, B-cell lymphoma	membrane

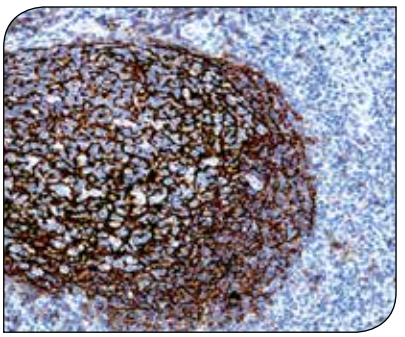


Tonsil stained with anti-CD20

CD20 C-term (EP7)

CD20 is a transmembrane phosphprotein which functions as a calcium-permeable cation channel involved in B-cell activation, proliferation and differentiation. It is expressed on both normal and malignant B cells. The expression of CD20 is observed in all mature B lymphocytes but lost in terminal differentiated plasma cells. CD20 is one of the most important markers for B cell. It labels almost all mature B-cell lymphoma, half of lymphoblastic lymphoma/leukemia and Reed-Sternberg cells in Hodgkin's disease. It has also been used to monitor down regulation of CD20 in patient treated with Rituximab for B-cell lymphoma.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0012A 1 ml ..... #AC-0012	tonsil, B-cell lymphoma	membrane

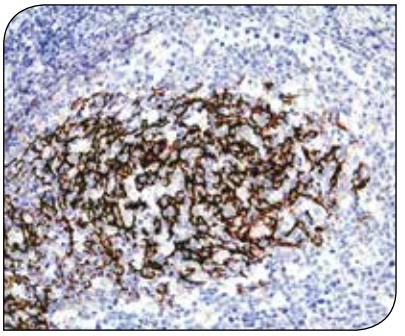


Tonsil stained with anti-CD21

CD21 (EP64)

CD21 is a single-pass type 2 transmembrane protein that serves as the complement receptor for C3d and the Epstein-Barr virus. CD21 labels follicular dendritic cells and mature B cells particularly in marginal and mantle zone of lymphoid tissues. It is a useful marker to identify neoplasms derived from follicular dendritic cells.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0061A 1 ml ..... #AC-0061	tonsil, lymphoma	membrane

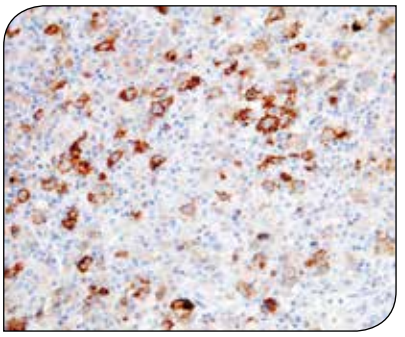


Tonsil stained with anti-CD23

CD23 (EP75)

CD23, a type II transmembrane glycoprotein, is a key molecule for B-cell activation and growth and functions as a receptor for IgE. CD23 antibody labels activated B cells expressing IgM/IgD and follicular dentritic cells. In tumors, CD23 antibody is helpful in identification of B-cell chronic lymphocytic leukemia (CLL), follicular dendritic cell tumors and mediastinal large B-cell lymphoma. In addition, anti-CD23 is useful to differentiate CLL from mantle cell lymphoma which is CD23 negative.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0076A 1 ml ..... #AC-0076	tonsil, B-cell chronic lymphocytic leukemia	membrane

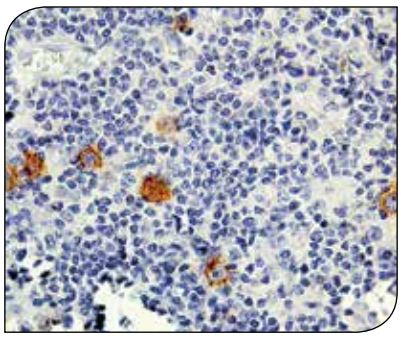


Hodgkin's lymphoma stained with anti-CD25

CD25 (EP218)

CD25, or interleukin 2 (IL2) receptor alpha (IL2RA), and beta (IL2RB) chains, together with the common gamma chain (IL2RG), constitute the high-affinity IL2 receptor. Homodimeric alpha chains (CD25) result in low-affinity receptor, while homodimeric beta (IL2RB) chains produce a medium-affinity receptor. Normally an integral-membrane protein, soluble CD25 has been isolated and determined to result from extracellular proteolyisis. CD25 (the p55 chain of the interleukin-2 receptor) is a marker of activation for a number of cell types, including T cells, B cells, and macrophages. It also appears to be a reliable immunohistochemical marker for the discrimination of neoplastic from normal/reactive mast cells, with potential as a diagnostic tool in systemic mastocytosis. CD25 is also expressed on hairy cell leukemia.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0209A 1 ml ..... #AC-0209	tonsil, mastocytosis	membrane

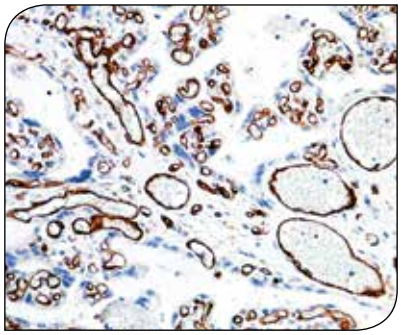


Hodgkin's lymphoma stained with anti-CD30

CD30 (EP154)

CD30, TNF-receptor superfamily member, is a receptor for TNFSF8/CD30L. TRAF2 and TRAF5 can interact with this receptor and mediate the signal transduction that leads to the activation of NF-kappaB. This receptor is a positive regulator of apoptosis, and it also has been shown to limit the proliferative potential of autoreactive CD8 effector T cells and protect the body against autoimmunity. The CD30 antibody labels activated B and T cells. It has been useful in identifying Hodgkin's lymphoma, anaplastic large cell lymphomas (ALCL) and primary cutaneous CD30+ T-cell lymphoproliferative disorders. In non-lymphoid malignancies, CD30 reactivity has been reported in embryonal carcinomas (ECs), seminomas, and hepatocellular carcinomas.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0141A 1 ml ..... #AC-0141	tonsil, Hodgkin's lymphoma	cytoplasm/membrane

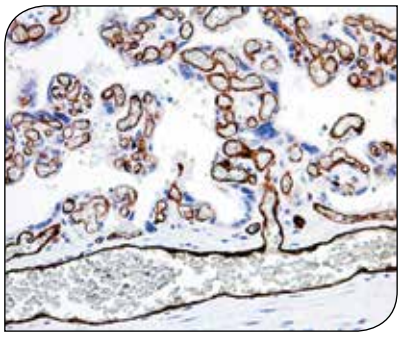


Placenta stained with anti-CD31

CD31 (EP78)

CD31, also known as PECAM-1, is a 130 kDa integral membrane glycoprotein found on the surface of endothelial cells, platelets and some hematopoietic cells. The antibody labels endothelial cells of arteries, arterioles, venules, veins, and non-sinusoidal capillaries in various tissues. CD31 is the most sensitive and specific endothelial cell marker. It is useful for detection of tumors with endothelial origin. In addition, CD31 has been used to identify vascular invasion of tumors, and assessment of angiogenesis which is a prognostic marker for many types of cancer.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0083A 1 ml ..... #AC-0083	placenta, angiosarcoma	membrane

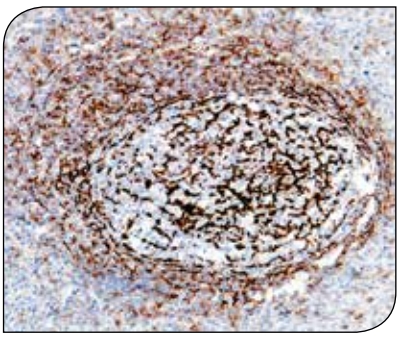


Placenta stained with anti-CD34

CD34 (EP88)

CD34 (Cluster of differentiation 34) is a single-pass type I transmembrane glycoprotein which primary functions as a cell to cell adhesion factor. As an adhesion factor, CD34 is expressed during stem/progenitor stage of lymphohematopoietic development and possibly mediates the stem cell attachment to the bone marrow, ECM or stromal cells. CD34 is expressed on hematopoietic stem/progenitor cells, endothelial cells, fibroblasts and other stromal components. CD34 is an important marker for quantifying and purifying hematopoietic progenitor/stem cells. It is useful in identification of tumors with endothelial or lymphoid differentiation. In addition, CD34 aids in detection of gastrointestinal stromal tumors.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0082A 1 ml ..... #AC-0082	placenta, angiosarcoma	membrane

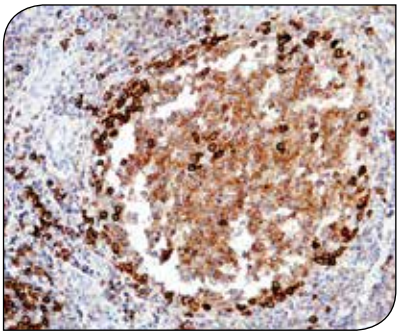


Tonsil stained with anti-CD35

CD35 (EP197)

CD35, also named as erythrocyte complement receptor 1 (CR1), is a member of the complement activation (RCA) family and is located in the 'cluster RCA' region of chromosome 1. CD35 mediates cellular binding to particles and immune complexes that have activated complement. CD35 is present on erythrocytes, various leukocytes and renal glomerular podocytes. In addition, plasma contains a soluble form of CR1 (Scr1). CD35 also can be detected on follicular dendritic cells. It is a marker for the diagnosis of follicular dendritic cell sarcoma. This antibody labels dendritic cells in tonsil and spleen and glomerular podocytes in kidney.

Product Availability:	Control:	Visualization:
0.1 ml . . . . . .#AC-0172A 1 ml . . . . . #AC-0172	tonsil, follicular dendritic cell sarcoma	membrane

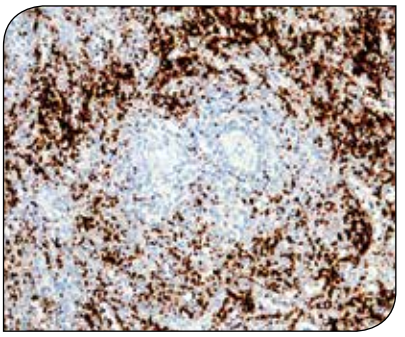


Tonsil stained with anti-CD38

CD38 (EP135)

CD38, also called ADP-ribosyl cyclase, is an ectoenzyme that uses nicotinamide adenine dinucleotide (NAD) as a substrate to generate second messengers. In particular, it synthesizes cyclic ADP-ribose, a second messenger for glucose-induced insulin secretion. CD38 also has cADPR hydrolase activity. It is preferentially expressed at both early and late stages of B- and T-cell maturation. CD38 is expressed in a variety of non-hematopoietic and hematopoietic cells, the latter comprising early bone marrow progenitor cells, thymic cells, natural killer cells, activated T cells, and B cells at early and late stages of differentiation, such as plasma cells. In normal lymph nodes and tonsils, the antigen is detected mainly on B cells in germinal centers and plasma cells. An antibody to CD38 is helpful in the identification of plasma cells and tumors with plasmablastic differentiation. A prognostic value of CD38 in B-cell chronic lymphocytic leukemia (CLL) has been reported. Expression of CD38 is linked to unmutated IgVH genes and a worse prognosis.

Product Availability:	Control:	Visualization:
0.1 ml . . . . . .#AC-0133A 1 ml . . . . . #AC-0133	tonsil, lymphoma	membrane

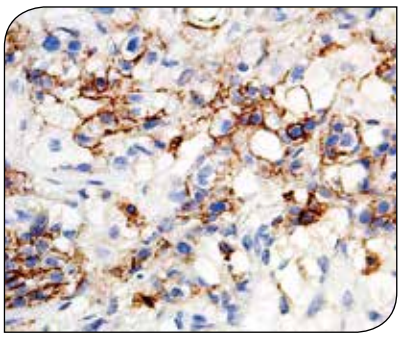


Spleen stained with anti-CD41

CD41/Integrin alpha 2b (EP178)

CD41, also named GP IIb, is a protein that in human is encoded by the ITGA2B gene. This protein can be associated with GPIIIa to form a heterodimer complex (GPIIb-IIIa) in the presence of Ca2+. This complex can bind one of four different adhesive proteins (ie, fibrinogen, fibronectin, von Willebrand factor [Vwf], or vitronectin). CD41 expression has been found on platelets, megakaryocytes, and, more recently, on immature hematopoietic progenitors. CD41 is a reliable marker of early steps of hematopoiesis during ES cell differentiation. CD41 has been used as a marker for megakaryocytic differentiation.

Product Availability:	Control:	Visualization:
0.1 ml . . . . . #AC-0174RUO 1 ml . . . . . #AC-0174RUOC	spleen	cytoplasm/membrane

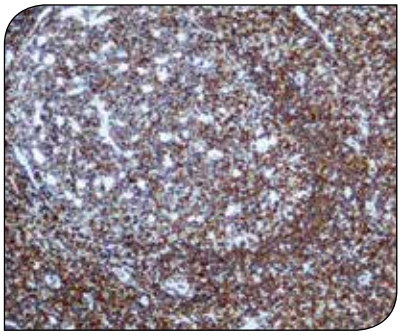


Breast cancer stained with anti-CD44

CD44 (EP44)

CD44 is a cell-surface glycoprotein postulated to play a role in a variety of biological processes, including cell-to-cell and cell-to-matrix adhesion, lymphocyte homing and tumor cell metastasis. Several isoforms of CD44 have been identified in human cells, and the genesis of some of these isoforms has been attributed to alternative splicing. Understanding of mechanisms regulating CD44 alternative splicing may provide insights into diverse processes, including tumor-cell metastasis and lymphocyte homing. CD44 is widely expressed on many types of cells with mesodermal and hematopoietic origin, epithelial cells and a variety of tumors derived from these cells. Loss of CD44 expression has been linked to tumor invasion, metastasis and progression in carcinomas of breast, prostate, lung, ovary and malignant melanoma.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0044A 1 ml ..... #AC-0044	tonsil, breast carcinoma	membrane

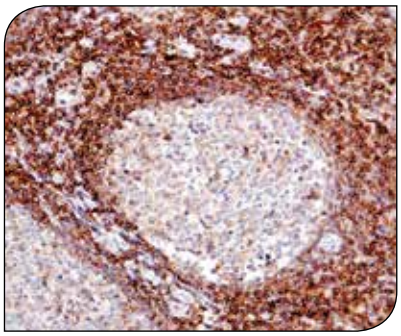


Tonsil stained with anti-CD45

CD45 (EP68)

CD45, also known as the leukocyte common antigen (LCA), is a transmembrane protein-tyrosine phosphatase (PTPase) that is expressed in almost all hematolymphoid cells including lymphocytes, granulocytes, monocytes and macrophages, but not in mature erythrocytes and megakaryocytes. CD45 antibody labelling of majority of hematolymphoid neoplasms, is a first line of marker for the identification of tumors with hematopoietic origin. Rare cases of undifferentiated and neuroendocrine carcinomas with CD45 positive staining have been reported.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0065A 1 ml ..... #AC-0065	tonsil, lymphoma	cytoplasm/membrane

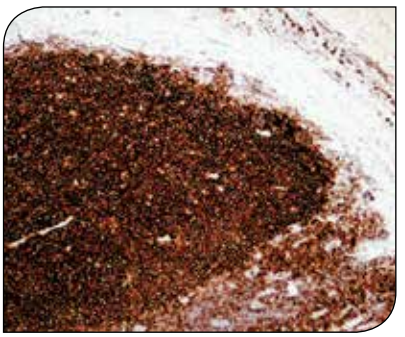


Tonsil stained with anti-CD48

CD48 (EP148)

CD48 (BLAST1) is an activation-associated, glycosylphosphatidylinositol (GPI)-anchored cell surface glycoprotein expressed primarily in mitogen-stimulated human lymphocytes. CD48 is expressed on T cells, B cells, thymocytes and splenocytes. Both normal and malignant white blood cells express CD48 on their membrane surface, but greater than 95% of CD34+ hematopoietic stem cells do not express CD48. CD48 is expressed at higher levels on human Burkitt's lymphoma cell lines, Raji and most acute myeloid leukemia cells with phenotype CD34-/CD13+/CD33+. Although much remains to be elucidated, CD48 is a critical marker for human immunity, and will most likely be of use in the treatment of many diseases like hematopoietic tumors, autoimmunity, allergy and chronic inflammatory diseases.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0142RUO 1 ml ..... #AC-0142RUOC	tonsil, myeloid leukemia	membrane

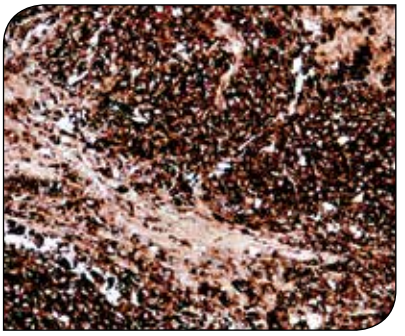


Tonsil stained with anti-CD53

CD53 (EP179)

CD53 is a member of the transmembrane 4 superfamily, also known as the tetraspanin family. The function of this family in a number of different cell types may be involved in transmembrane signal transduction and regulation of cell proliferation and differentiation, or both. CD53 is broadly expressed on leukocytes, including B cells, T cells, monocytes and granulocytes. It has been demonstrated to be a specific and reliable marker for leukocytes. This antibody strongly labels normal and neoplastic cells with hematopoietic origin.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0176A 1 ml ..... #AC-0176	tonsil, lymphoma	membrane

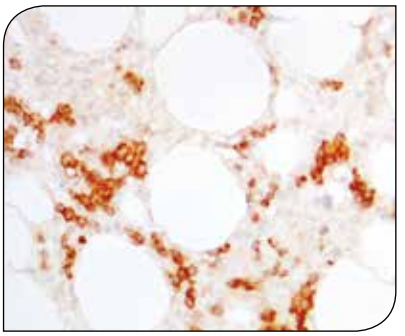


Melanoma stained with anti-CD63

CD63 (EP211)

CD63 is a 53 kDa lysosomal membrane glycoprotein that has been identified as a platelet activation molecule that belongs to the tetraspanin family, which is characterized by the presence of four hydrophobic domains. CD63 can mediate signal transduction events that play a role in the regulation of cellular adhesion, cell differentiation, migration, carcinogenesis and tumor progression. CD63 shows a broad tissue distribution and is predominantly localized in cytoplasmic lysosomes. It is mainly present on platelet lysosomes, granulocytes, basophils and a small percentage of resting T cells, while it is also strongly expressed in early melanoma, breast carcinoma, merkel cell carcinoma, astrocytoma and lung adenocarcinoma. Recent reports also indicate that CD63 is a good prognostic biomarker for human astrocytomas and earlier stages of lung carcinoma. Additionally, CD63 has been useful in differentiating renal oncocytomas (RO) from eosinophilic variants of chromophobe renal cell carcinomas (RCCs).

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0177RUO 1 ml ..... #AC-0177RUOC	spleen, melanoma	cytoplasm/membrane

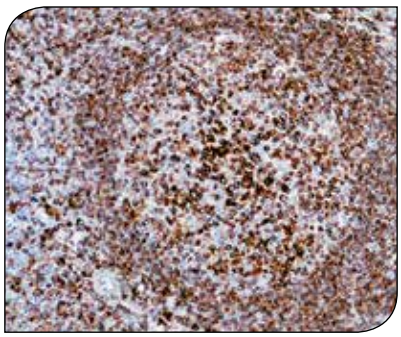


Bone marrow stained with anti-CD71

CD71 (EP232)

CD71, the transferrin receptor, is a type II trans-membrane homodimer glycoprotein (180 kDa) involved in the cellular uptake of iron via internalization of iron-loaded transferring. CD71 is highly expressed in immature erythroid cells, placental tissue and rapidly dividing cells. Loss of CD71 is observed in mature erythrocytes. Over expression of CD71 has also been described for various types of cancers including lung, colon, breast and pancreas. CD71 antibody is useful in identifying erythroid precursors.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0245A 1 ml ..... #AC-0245	bone marrow, breast carcinoma	cytoplasm/membrane

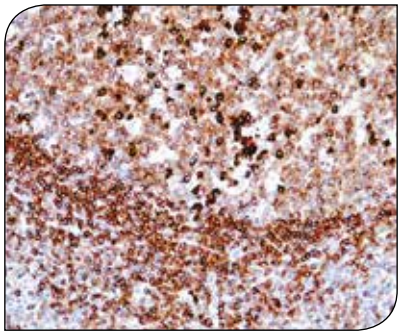


Tonsil stained with anti-CD74

CD74 (EP167)

Cluster of Differentiation 74 (CD74) is a type II transmembrane protein. In normal tissues, CD74 is expressed in B cells, monocytes, macrophages, Langerhans cells, dendritic cells, subsets of activated T cells, and thymic epithelium. Under inflammatory conditions, CD74 expression may be observed in endothelial and certain epithelial cells. CD74 expression has been observed in ~90% of B-cell cancers evaluated, as well as the majority of cell lines derived from these cancers. CD74 is a marker for distinguishing atypical fibroxanthoma from malignant fibrous histiocytoma, and it is also a useful marker for distinguishing leiomyosarcoma from leiomyoma.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0143A 1 ml ..... #AC-0143	tonsil	cytoplasm/membrane

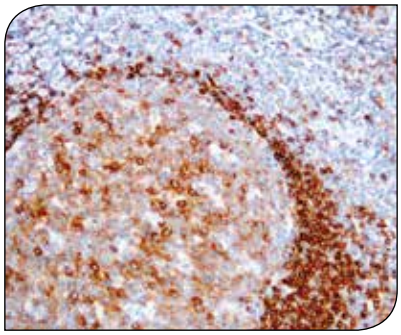


Tonsil stained with anti-CD79a

CD79a (EP82)

CD79 consists of two proteins, CD79a (mb-1) and CD79b (B29). CD79a recognizes the Ig-alpha protein, and CD79b recognizes the Ig-beta protein of the B-cell antigen component of the B lymphocyte antigen receptor. The expression of CD79 precedes immunoglobulin (Ig) gene, heavy-chain gene rearrangement and CD20 expression. In precursor B cells, the CD79 protein chains are already expressed in the cytoplasm (CyCD79). Surface expression of CD79 begins at the pro-B-cell stage and persists throughout the B-cell differentiation, and continues presents on plasma cells. CD79a is an excellent marker for identification of normal and neoplastic B lymphocytes. This CD79a antibody has been validated by the 9th International Conference on Human Leukocyte Differentiation Antigens (HLDA9).

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0079A 1 ml ..... #AC-0079	tonsil, B-cell lymphoma	cytoplasm/membrane

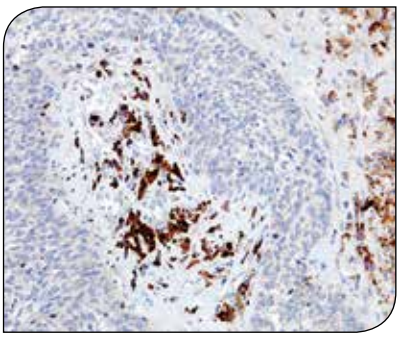


Tonsil stained with anti-CD79b

CD79b (EP214)

CD79 consists of two proteins, CD79a (mb-1) and CD79b (B29). CD79a recognizes the Ig-alpha protein, and CD79b recognizes the Ig-beta protein of the B-cell antigen component of the B lymphocyte antigen receptor. CD79b is a multimeric complex that includes the antigen-specific component, surface immunoglobulin (Ig). Surface Ig non-covalently associates with two other proteins, Ig-alpha and Ig-beta, which are necessary for the expression and function of the B-cell antigen receptor. In normal B-cell differentiation, CD79b (B29) is first expressed in cells that have Ig μ chains and remains expressed throughout B-cell differentiation up to the plasma cell stage. Cells from most chronic B-cell disorders, for example, most B-cell lymphomas and B-cell prolymphocytic leukaemias, are CD79b positive. However, CD79b is either absent or weakly expressed in neoplastic B cells from chronic lymphocytic leukaemia (CLL) and hairy cell leukaemia.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0204A 1 ml ..... #AC-0204	tonsil, B-cell lymphoma	membrane

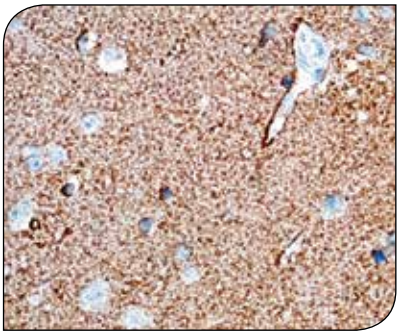


Lung carcinoma stained with anti-CD82

CD82 (EP160)

CD82, also known as metastasis suppressor Kangai-1 (KAI1). Recent studies have shown its function as a metastasis suppressor in various tumors. In addition, it may also serve as a marker for activation/differentiation of mononuclear cells. In normal tissue, CD82 labels activated/differentiated hematopoietic cells and some glandular epithelial cells. In tumors, the expression of CD82 has been shown to be downregulated in tumor progression. CD82 can be activated by p53 through a consensus binding sequence in the promoter. Loss of p53 function, which is commonly observed in many types of cancers, may lead to the downregulation of the CD82 gene. The correlation between lower or no expression of CD82 and poor tumor prognosis is observed in many types of tumors, including prostate, breast, colon, stomach, bladder, lung, liver, pancreas, and ovary tumors.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0144RUO 1 ml ..... #AC-0144RUOC	spleen, myeloid leukemia	cytoplasm/membrane

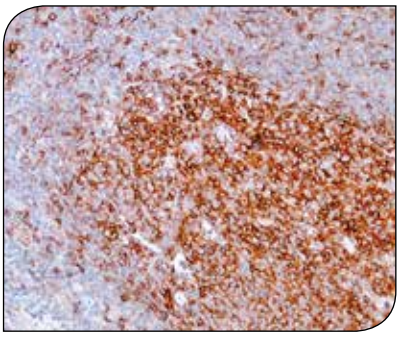


Brain stained with anti-CD90

CD90 (EP56)

Thy-1 or CD90 (Cluster of Differentiation 90) is a 25 - 37 kDa heavily N-glycosylated, glycophosphatidylinositol (GPI) anchored conserved cell surface protein with a single V-like immunoglobulin domain originally discovered as a thymocyte antigen. CD90 is expressed on thymocytes, neurons, glial cells, endothelial cells, fibroblasts, fetal liver cells and haematopoietic stem cells in normal bone marrow and cord blood. Thy-1 has been used as a marker for a variety of stem cells and for the axonal processes of mature neurons. CD90 is associated with unfavorable clinical and biological features in acute myeloid leukemia. In prostate cancer, CD90 has been reported to be overexpressed in cancer associated fibroblasts and serve as a marker for prostate cancer-associated stroma.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0054A 1 ml ..... #AC-0054	thymus	cytoplasm/membrane

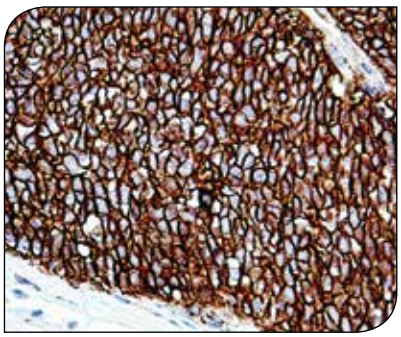


Tonsil stained with anti-CD95

CD95 (EP208)

The CD95 (Fas) protein is a cell surface receptor belonging to the tumor necrosis factor (TNF) family that transduces death signaling on engagement by multimeric Fas ligand (CD95L), of which there are eight in its membrane-bound form or in its soluble form resulting from cleavage by a putative metalloproteinase. CD95 is a widely expressed protein. CD95-mediated apoptosis is an essential mechanism for the maintenance of normal tissue homeostasis, and disruption of this death pathway has been associated with a wide range of human diseases, including autoimmune diseases, lymphoproliferative disorders and malignancies. The Fas death system also plays important roles in various apoptosis conditions such as those evoked by irradiation, chemotherapeutic agents and viral infections. The expression of CD95 serves as a prognostic marker in predicting the outcome of disease progression and treatment in many types of tumors.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0178RUO 1 ml ..... #AC-0178RUOC	tonsil	cytoplasm/membrane

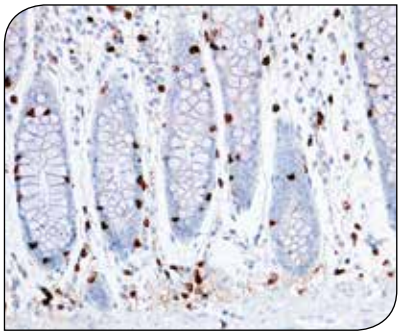


Ewing's sarcoma stained with anti-CD99

CD99 (EP8)

CD99 is a transmembrane glycoprotein, also known as MIC2. It is involved in T-cell adhesion, leukocyte migration and differentiation of primitive neuroectodermal cell. CD99 labels lymphocyte, ovarian granulosa cells, pancreatic islet cells, Sertoli cells, CNS ependymal cells and endothelial cells. CD99 has been useful in diagnosis of Ewing's sarcoma, sex cord-stromal tumor, endocrine tumor of pancreas. Additionally, it is found in a subset of other tumors including lymphoblastic lymphoma, breast carcinoma and other malignancies. This CD99 antibody has been validated with excellent staining result by Nordic Immunohistochemical Quality Control (NordiQC).

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0013A 1 ml ..... #AC-0013	tonsil, Ewing's sarcoma	cytoplasm/membrane

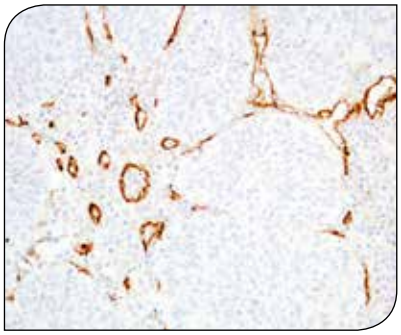


Colon stained with anti-CD103

CD103 (EP206)

CD103, also known as integrin alpha E (ITGAE), is an integrin protein that in humans is encoded by the ITGAE gene. It binds integrin beta 7 to form the complete heterodimeric molecular αEβ7 that binds to an extracellular matrix component and cellular counter receptor. They mediate cell adhesion, migration and signaling and are important for T lymphocyte localization. CD103 is expressed on intraepithelial lymphocytes in mucosal areas, including lung and GI tract. In malignancies, CD103 is present on all enteropathy-type T-cell lymphomas. Additionally, CD103 has been a useful marker for hairy cell leukemia.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0170RUO 1 ml ..... #AC-0170RUOC	colon, hairy cell leukemia	membrane

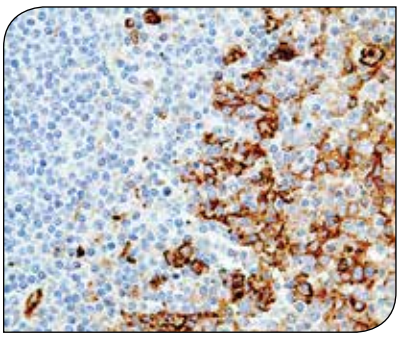


Lung squamous cell carcinoma stained with anti-CD105

CD105 (EP274)

CD105 (endoglin) is a disulfide-linked homodimeric cell membrane glycoprotein. It was initially discovered in a human pre-B-cell line. CD105 functions as a receptor for transforming growth factor (TGF)-β1 and -β3, and modulates TGF-β signaling through interactions with TGF-β receptors 1 and/or 2. CD105 is a proliferation-associated and hypoxia-inducible protein abundantly expressed in angiogenic endothelial cells. Tumor microvessel density assessed by CD105 immunohistochemical staining in paraffin-embedded tissue sections correlates significantly with tumor aggressiveness and prognosis in many types solid tumors.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0243A 1 ml ..... #AC-0243	vascular tissue	cytoplasm

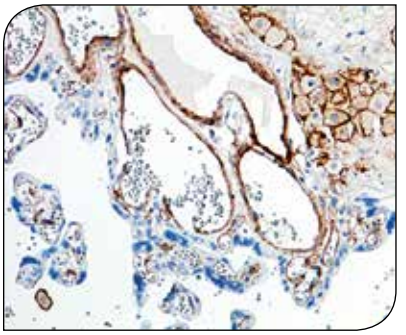


Tonsil stained with anti-CD138

CD138 (EP201)

CD138, also known as Syndecan-1, is a member of the transmembrane heparan sulfate proteoglycan family, acts as an extracellular matrix receptor and is involved in many cellular functions, including cell-cell adhesion and cell-matrix adhesion. CD138 expression is found in both hematopoietic and non-hematopoietic cells. In the hematopoietic system, CD138 labels plasma cells. It is an excellent marker for plasmacytic differentiation within the spectrum of hematologic malignancy. Among non-hematolymphoid cells, CD138 reactivity is observed in many types of epithelial cells and stromal cells in both normal and tumor tissues.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0171A 1 ml ..... #AC-0171	tonsil, plasmacytoma	cytoplasm/membrane

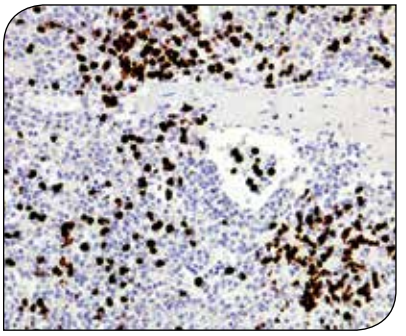


Placenta stained with anti-CD146

CD146 (EP54)

CD146 (melanoma-associated antigen A32), also known as MUC18, is a transmembrane glycoprotein expressed on endothelial cells and is located at the intercellular junction where it plays a role in cell adhesion, and in the cohesion of the endothelial monolayer. CD146 labels endothelial cells, smooth muscle cells, intermediate trophoblast, subpopulation of T cells, and peripheral neuronal cells. In tumor, CD146 is expressed on tumor cells derived from the peripheral nervous system, melanoma and clear cell sarcoma. CD146 has been used as a marker for intermediate trophoblasts. It has been reported that CD146 is useful in differentiation of mesothelioma (CD146 positive) and reactive mesothelium (CD146 negative). CD146 is associated with tumor progression and the development of metastasis in human malignant melanoma.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0052A 1 ml ..... #AC-0052	placenta, melanoma	cytoplasm/membrane

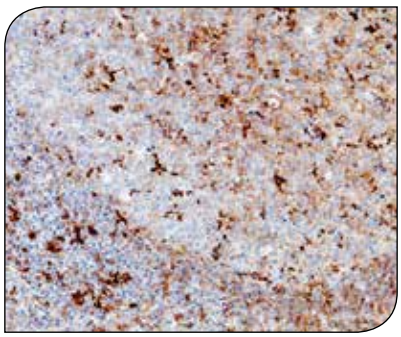


Spleen stained with anti-CD163B

CD163B (EP152)

CD163B is an acute phase-regulated receptor involved in the clearance and endocytosis of hemoglobin/haptoglobin complexes by macrophages, thereby protecting tissues from free hemoglobin mediated oxidative damage. Expression of CD163B is restricted to cells of the monocyte/macrophage lineage. This antibody predominantly labels monocytes in the spleen and peripheral blood. It is negative in most mature macrophages. The CD163B antibody might be used for identifying tumors of monocytic origin.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0138RUO 1 ml ..... #AC-0138RUOC	spleen	cytoplasm/membrane

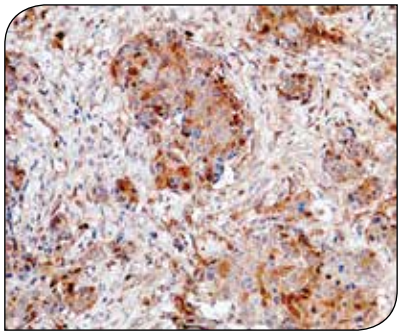


Tonsil stained with anti-CD205

CD205 (EP176)

CD205, also named DEC-205, belongs to the macrophage mannose receptor family of C-type lectin endocytic receptors. CD205 is predominantly expressed by the thymic cortical epithelium and by dendritic cells (DC), but can also be detected at low levels in T and B-lymphocytes and several other epithelial cell types. CD205 is a novel thymic epithelial marker that is important for the positive selection process of thymocytes. It is a sensitive and specific marker for thymoma, while the sensitivity to thymic carcinoma is lower than CD5 and CD117.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0140RUO 1 ml ..... #AC-0140RUOC	tonsil	cytoplasm/membrane

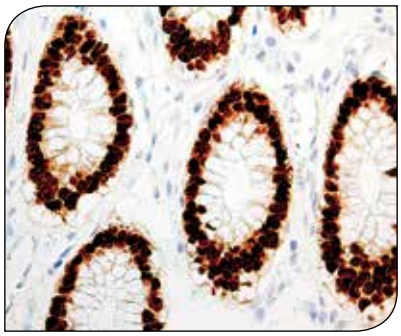


Breast carcinoma stained with anti-CDK4

CDK4 (EP180)

Cyclin-dependent kinase 4 (CDK4) is a member of the Ser/Thr protein kinase family. It is a catalytic subunit of the protein kinase complex that is important for cell cycle G1 phase progression. The activity of this kinase is restricted to the G1-S phase, which is controlled by the regulatory subunits D-type cyclins and CDK inhibitor p16 (INK4a). Overexpression of CDK4 has been observed in many tumor types, including oral squamous cell carcinoma and cancers of the pancreas (endocrine tumors), lung, breast and colon. The expression of CDK4 is associated with tumor progression. Binh et al. reported a high expression of CDK4 (92%) in atypical lipomatous tumor/well-differentiated liposarcomas (ALT-WDLPS) and dedifferentiated liposarcomas (DDLPS) by immunostaining. CDK4 is useful in differentiating ALT-WDLPS from benign adipose tumors and to separate DDLPS from poorly differentiated sarcomas.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0179RUO 1 ml ..... #AC-0179RUOC	colon, breast carcinoma	cytoplasm/nuclear

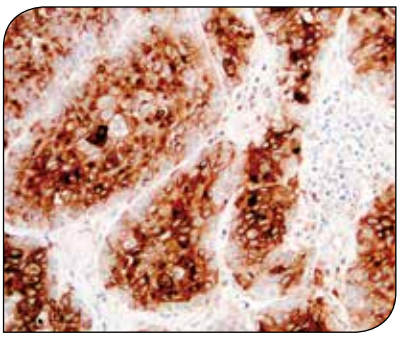


Colon stained with anti-CDX-2

CDX-2 (EP25)

The caudal-related homeodomain protein 2, CDX-2, is a transcription factor which is expressed in the intestine and is thought to play an important role in the proliferation and differentiation of intestinal epithelial cells. The CDX-2 protein is expressed in primary and metastatic colorectal carcinomas, intestinal metaplasia of the stomach and intestinal type gastric cancer. In human colorectal cancer, the expression of both CDX2 and carbonic anhydrase 1, a gene regulated by CDX-2, is reduced or absent. CDX-2 is one of the important regulators in defining pathways for coordinate control of drug metabolism in the gastrointestinal tract.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0008A 1 ml ..... #AC-0008	colon, colon adenocarcinoma	nuclear

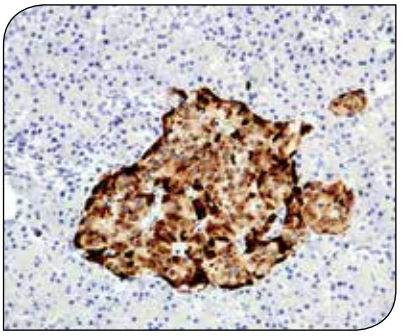


Colon cancer stained with anti-CEA

CEA (EP216)

Carcinoembryonic Antigen (CEA), also known as CD66e, is a cell surface glycoprotein that exhibits several functions, including regulation of intercellular adhesion, differentiation and anoikis, cell polarization and tissue architecture. CEA is present in fetal colon and many types of epithelial tumors, including adenocarcinomas of the GI tract, lung and breast. Antibody to CEA is useful in differentiating lung adenocarcinoma (positive) from mesothelioma (negative). CEA has been helpful in monitoring tumor progression.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0203A 1 ml ..... #AC-0203	fetal colon, colon carcinoma	cytoplasm/membrane

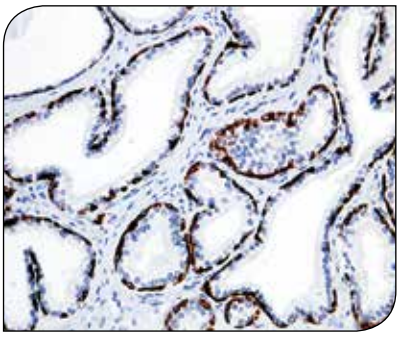


Pancreas stained with anti-Chromogranin A

Chromogranin A (EP38)

Chromogranin A (CgA) is an 86 kDa protein that is the major member of the granin family of acidic secretory glycoproteins located in neurosecretory granules of neuroendocrine cells. Chromogranin A showed broad expression in endocrine tissues including pituitary, adrenal medulla, thyroid, pancreatic islets and gastrointestinal tract. Chromogranin A represents the single most specific marker of neuroendocrine differentiation in general use. It is useful for identification of neuroendocrine tumors.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0037A 1 ml ..... #AC-0037	pancreas, neuroendocrine tumor	cytoplasm

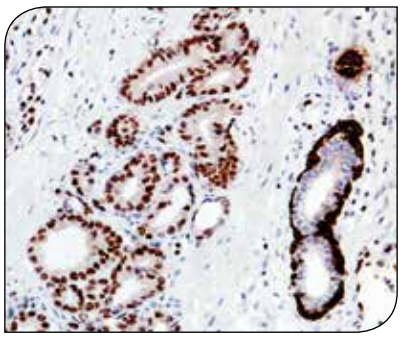


Prostate hyperplasia stained with anti-CK5 & CK6 cocktail

CK5 & CK6 Cocktail (EP24 & EP67)

Keratins are cytoplasmic intermediate filament proteins expressed by epithelial cells. CK5 is a type II cytokeratin. Loss-of-function mutations in the keratin 5 gene (KRT5) affected family members and in six unrelated patients with Dowling-Degos disease (DDD), an autosomal dominant genodermatosis. This suggests a crucial role for keratins in the organization of cell adhesion, melanosome uptake, organelle transport, and nuclear anchorage. CK5 labels myoepithelial cells of breast and prostate basal cells. CK5 and calretinin have been useful in different studies as immunohistochemical markers suggestive of mesothelioma, and their expression is analyzed for the histological differentiation with adenocarcinomas, especially when confronting metastatic tumors of unknown origin. The human type II Cytokeratin 6 (CK6; 56 kDa) is well known for its strong induction in stratified epithelia that feature an enhanced cell proliferation rate or abnormal differentiation during wound healing, in several diseases (e.g. psoriasis, actinic keratosis) and cancer. CK6 is expressed on stratified epithelia including oral mucosa, esophagus, basal layer of epidermis, the outer root sheath of hair follicles, and in glandular epithelia. CK6 is a marker of hyperproliferative and activated keratinocytes found in psoriasis. Anti-CK6 paired with the CK5 antibody is useful for differentiating mesothelioma (positive) from lung carcinoma (negative) or metastatic carcinoma (negative) in the pleura. An antibody against CK5/6 has also been used to distinguish usual ductal hyperplasia of the breast (strong staining) from solid papillary DCIS (negative).

Product Availability:	Control:	Visualization:
0.1 ml.....NA 1 ml .....#AC-9001RUOC	prostate, mesothelioma	cytoplasm

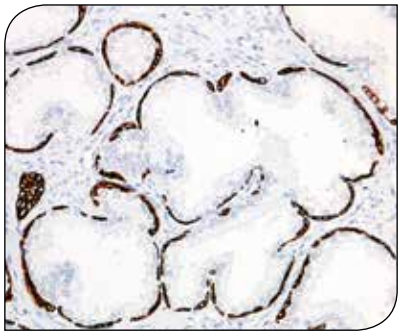


Prostate cancer stained with anti-CK5 & CK6 & ERG cocktail

CK5 & CK6 & ERG Cocktail (EP24 & EP67 & EP111)

Cytokeratin 5 (CK5) is a type II cytokeratin. CK5 labels myoepithelial cells of breast and prostate basal cells. The human type II Cytokeratin 6 (CK6) is expressed on stratified epithelia including oral mucosa, esophagus, basal layer of epidermis, the outer root sheath of hair follicles, and in glandular epithelia. CK6 is a marker of hyperproliferative and activated keratinocytes found in psoriasis. Eighty percent of prostate tumors contain genomic fusions of TMPRSS2 and members of the ETS family of transcription factors. Of these, about 50% contain TMPRSS2-ERG fusions. CK5 & CK6 & ERG cocktail might be used for differentiate benign abd malignant prostate tumor. The ERG antibody labels prostate cancer cells, endothelial cells, and lymphocytes.

Product Availability:	Control:	Visualization:
0.1 ml . . . . . NA 1 ml . . . . . #AC-9004RUOC	prostate, prostate cancer	cytoplasm (CK5, CK6)/nuclear (ERG)

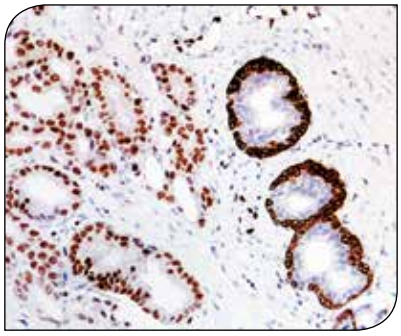


Prostate hyperplasia stained with anti-CK5 & CK14 cocktail

CK5 & CK14 Cocktail (EP24 & EP61)

CK5 is a type II cytokeratin. Antibody to CK5 labels myoepithelial cells of breast and prostate basal cells. CK5 has been useful in different studies as immunohistochemical markers suggesting mesothelioma, and their expression is analyzed for the histological differentiation of adenocarcinomas, especially when facing metastatic tumors of unknown origin. Cytokeratin 14 (CK14) is a 50-kDa keratin expressed in abundance in stratified epithelial, epidermal, basal, mesothelial, and myoepithelial cells in various tissues including breast and prostate. The CK14 antibody is helpful in the identification of breast cancer with a basal phenotype. It has been reported that Cytokeratin 5/14-positive breast cancers are true basal phenotype confined to BRCA1 tumors.

Product Availability:	Control:	Visualization:
0.1 ml . . . . . NA 1 ml . . . . . #AC-9005RUOC	prostate	cytoplasm

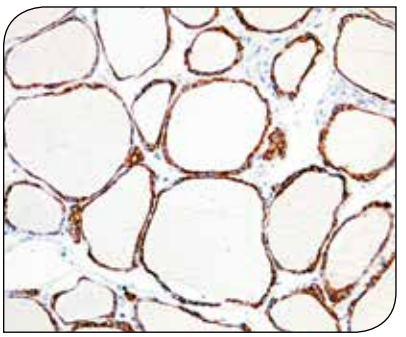


Prostate cancer stained with anti-CK5 & ERG cocktail

CK5 & ERG Cocktail (EP24 & EP111)

Cytokeratin 5 (CK5) is a type II cytokeratin. CK5 labels myoepithelial cells of breast and prostate basal cells. Eighty percent of prostate tumors contain genomic fusions of TMPRSS2 and members of the ETS family of transcription factors. Of these, about 50% contain TMPRSS2-ERG fusions. Interestingly, prostate cancers with TMPRSS2-ERG fusion have been found to have five morphological features: blue-tinged mucin, cribriform growth pattern, macronucleoli, intraductal tumor spread, and signet-ring cell features. ERG overexpression is associated with aggressive tumor behavior and patient survival in prostate cancer. The ERG antibody labels prostate cancer cells, endothelial cells, and lymphocytes.

Product Availability:	Control:	Visualization:
0.1 ml . . . . . NA 1 ml . . . . . #AC-9007RUOC	prostate, prostate cancer	cytoplasm (CK5)/nuclear (ERG)

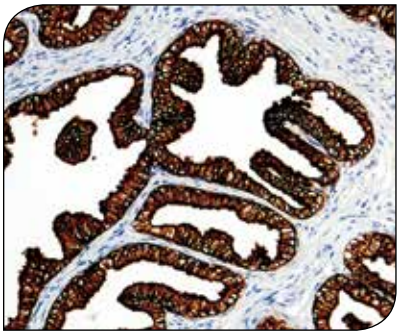


Thyroid stained with anti-CK7 & CDX-2 cocktail

CK7 & CDX-2 Cocktail (EP16 & EP25)

Cytokeratin 7 (CK7) is a cytoplasmic intermediate filament protein expressed on most ductal and glandular epithelium including lung, breast, bladder and the female genital tract, but not in most gastrointestinal epithelium, prostate, hepatocyte and squamous epithelium. CK7 expression is absent in colon cancer, prostate cancer and squamous carcinomas. CDX-2 is a transcription factor that is expressed in the intestine. The CDX-2 protein is expressed in primary and metastatic colorectal carcinomas, intestinal metaplasia of the stomach and intestinal type gastric cancer.

Product Availability:	Control:	Visualization:
0.1 ml . . . . . NA 1 ml . . . . . #AC-9006RUOC	thyroid (CK7), colon (CDX2)	cytoplasm (CK7)/nuclear (CDX2)

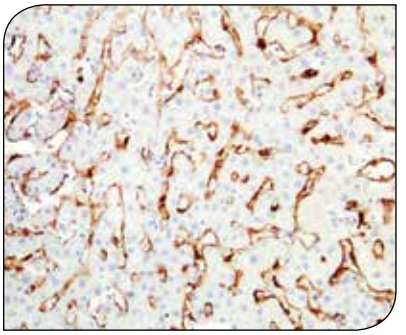


Colon cancer stained with anti-CK8 & CK18 cocktail

CK8 & CK18 Cocktail (EP17 & EP30)

Cytokeratin 8 (CK8) is an intermediate filament protein produced early in embryogenesis. It is the only type-II CK occurring in many simple epithelial cells in respiratory, gastrointestinal, male and female reproductive tracts, and thyroid. CK8 is often co-expressed with Cytokeratin 18. CK8 & CK18 is the major keratin pair in simple-type epithelia, as found in the liver, pancreas, and intestine. The CK8 antibody is used to detect adenocarcinomas of simple epithelium origin. The difference in staining pattern is useful to distinguish ductal (peripheral staining) from lobular (perinuclear staining) breast carcinoma. Cytokeratin 18 (CK18) is an intermediate filament phosphoglycoprotein that is expressed in simple and glandular and transitional epithelial cells, but not in stratified epithelial cells. CK18 is often co-expressed with CK8. CK8 & 18 is the major keratin pair in simple-type epithelia. Adenocarcinomas originated from simple and glandular epithelium showed CK18 positive staining. In squamous carcinoma, poorly differentiated tumor cells show CK18 reactivity. Loss of CK18 expression is associated with progression of breast carcinoma.

Product Availability:	Control:	Visualization:
0.1 ml . . . . . NA 1 ml . . . . . #AC-9002RUOC	colon, colon cancer	cytoplasm

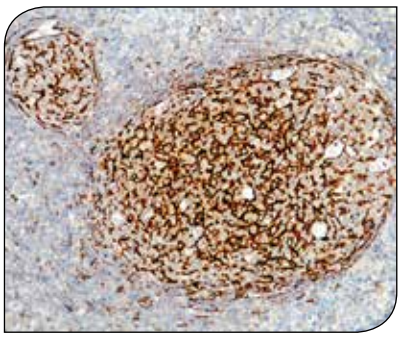


Liver stained with anti-Claudin-5

Claudin-5 (EP224)

Claudin-5 is a member of the claudin family. Claudins are integral membrane proteins and components of tight junction strands. Tight junction (TJ) strands serve as a physical barrier to prevent solutes and water from passing freely through the paracellular space between epithelial or endothelial cell sheets. Claudin-5 is an endothelial cell-specific component of TJ strands. Mutations in Claudin-5 have been found in patients with velocardiofacial syndrome. Claudin-5 labels endothelial cells. It has been used as a marker for endothelial lesions. Claudin-5 is also found in bronchial and lung epithelial cells. In tumors, Claudn-5 expression has been found in lung adenocarcinoma and squamous carcinoma. In serous ovarian adenocarcinoma, increased Claudin-5 expression is associated with aggressive behavior.

Product Availability:	Control:	Visualization:
0.1 ml . . . . . #AC-0212A 1 ml . . . . . #AC-0212	vascular tissue	cell junction/membrane

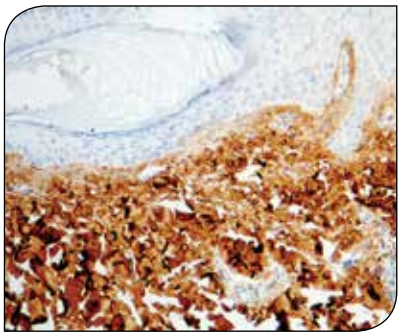


Tonsil stained with anti-Clusterin

Clusterin/Apolipoprotein J (EP181)

Clusterin (apolipoprotein J) is a 75 - 80 kDa disulfide-linked heterodimeric protein associated with the clearance of cellular debris and apoptosis. It is a stress-induced cytoprotective chaperone protein regulated by HSF1 and functions similarly to a small heat-shock protein. Clusterin is distributed widely in human tissues and fluids, including normal epithelial cells, plasma, cerebrospinal fluid, breast milk, semen and urine. Clusterin is expressed in a wide variety of hematopoietic and non-hematopoietic tumors. It is present in 80–100% of systemic anaplastic large cell lymphomas. Adding clusterin to antibody panels designed to distinguish systemic anaplastic large cell lymphoma from classical Hodgkin's disease is useful. In a study by Grogg et al. on 202 spindle cell tumors, Clusterin was found to be highly sensitive and specific for follicular dendritic cell tumors. Overexpression of Clusterin is associated with poor prognosis and recurrence in breast cancer. Expression of Clusterin in cervical cancer is correlated with chemosensitivity and predicts poor survival.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0180RUO 1 ml ..... #AC-0180RUOC	tonsil, breast carcinoma	cytoplasm

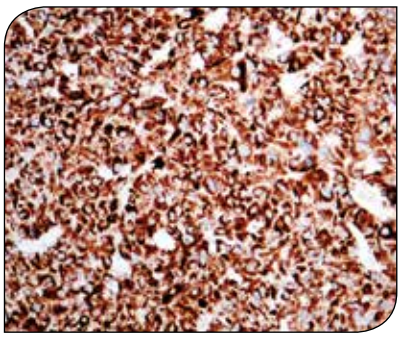


Skin stained with anti-COL1A1

COL1A1 (EP236)

COL1A1 comprises the pro-alpha 1 chains of type I collagen whose triple helix comprises two alpha 1 chains and one alpha 2 chain. Type I collagen is a fibril-forming collagen found in most connective tissues. Mutations in COL1A1 are associated with osteogenesis imperfecta types I-IV, Ehlers-Danlos syndrome type VIIA, Ehlers-Danlos syndrome Classical type, Caffey disease and idiopathic osteoporosis. COL1A1 mutations are also associated with a particular type of skin tumor called dermatofibrosarcoma protuberans, resulting from upregulated expression of the growth factor. A suppressive biological function of COL1A1 in glioma progression has also been reported. The expression of Collagen I is abundant in all tissues including skin and bone. Type I collagen has been used as a marker of osteoblastic differentiation.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0223RUO 1 ml ..... #AC-0223RUOC	skin, breast carcinoma	cytoplasm

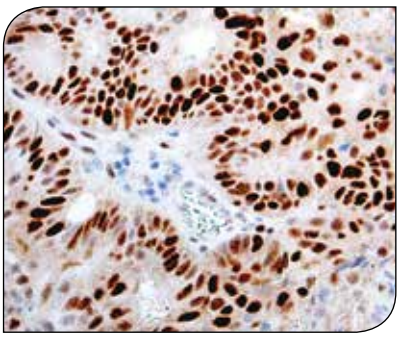


Hepatocellular carcinoma stained with anti-CPS1

CPS1 (Hep Par-1) (EP265)

CPS1 is a mitochondrial enzyme that catalyzes synthesis of carbamoyl phosphate from ammonia and bicarbonate. This reaction is the first committed step of the urea cycle, which is important in the removal of excess urea from cells. CPS1 also represents a core mitochondrial nucleoid protein. CPS1 is primarily expressed in hepatocytes in the liver. The antigen for Hep par-1 (Hepatocyte) antibody has been identified as CPS1. This CPS1 antibody shows a similar staining profile to Hep par-1 antibody, which is highly specific and sensitive for hepatocytes and derived tumors with rare positivity in hepatoid adenocarcinomas in GI tract as well as several other types of nonhepatic tumors.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0229A 1 ml ..... #AC-0229	liver, hepatocellular carcinoma	cytoplasm

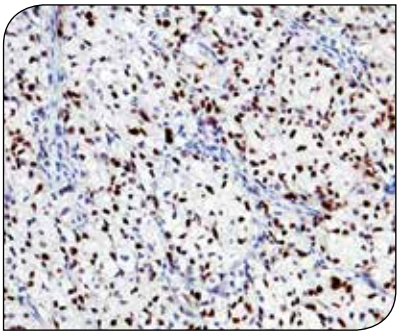


Colon cancer stained with anti-Cyclin D1

Cyclin D1 (EP12)

Cyclin D1 belongs to the Cyclin D family. Cyclin D1 is required for the cell cycle G1/S transition. Amplification or overexpression of cyclin D1 plays a pivotal role in the development of various human cancers including breast cancer, colon cancer, melanoma, prostate cancer and lymphoma. It is useful to differentiate mantle cell lymphoma from small cleaved cell lymphoma. Rabbit monoclonal antibodies to Cyclin D1 showed the highest sensitivity to detect this antigen in formalin fixed paraffin embedded tissue as compared to several other clones.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0017A 1 ml ..... #AC-0017	tonsil, mantle cell lymphoma	nuclear

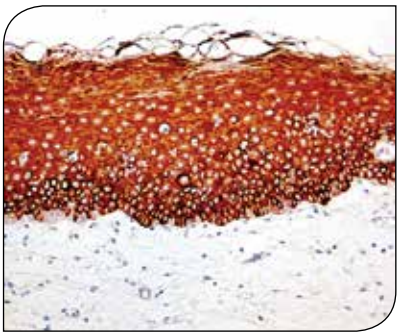


Breast cancer stained with anti-Cyclin E1

Cyclin E1 (EP126)

Cyclin E1 is a member of the Cyclin E family that can associate with and activate cyclin-dependent kinase CDK2. Expression of cyclin E1 is essential for the control of the cell cycle at the late G1 and early S phase. Ubiquination by the Cul-3 pathway and Fbw7 regulates cyclin E1 levels and is critically important in normal cells. In normal cells, Cyclin E1 protein expression is tightly controlled through a combination of transcriptional and proteolytic regulatory processes. However, in many types of human tumors, Cyclin E1 expression is frequently dysregulated, including overexpression, non-periodic expression relative to cell division, and generation of low molecular weight (LMW) derivatives. Several studies have consistently demonstrated that Cyclin E1 is associated with disease progression or patient survival in various malignancies including carcinomas of the breast, bladder, colon, and ovary. A recent study indicated that Cyclin E amplification/overexpression is responsible for trastuzumab resistance in HER2 positive breast cancer patients.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0120RUO 1 ml ..... #AC-0120RUOC	placenta, breast cancer	nuclear

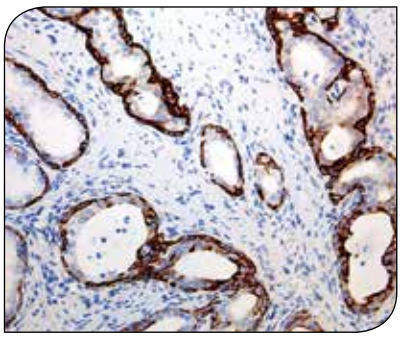


Oral epithelium stained with anti-Cytokeratin 4

Cytokeratin 4 (EP4)

Cytokeratin 4 (CK4) is a 59 kDa intermediate filament protein associated with Cytokeratin 13. It is expressed in suprabasal cells of non-keratinized stratified squamous epithelium of esophagus, cornea, anus, larynx, pharynx and tongue. A mutation in CK4 gene causes white sponge nevus. A decreased expression of CK4 is associated with head and neck squamous carcinoma. It is helpful in differentiation of squamous cell carcinoma of esophagus origin from thyroid origin.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0011A 1 ml ..... #AC-0011	esophagus, cervical squamous, carcinoma	cytoplasm

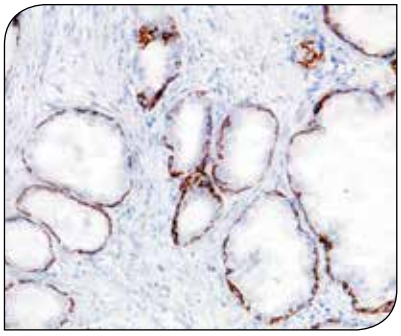


Prostate hyperplasia stained with anti-Cytokeratin 5

Cytokeratin 5 (EP24)

Keratins are cytoplasmic intermediate filament proteins expressed by epithelial cells. The mitotically active basal layers of most stratified squamous epithelia express 10% to 30% of their total protein as keratin. The two keratins specifically expressed in these cells are the type II keratin CK5 and its corresponding partner, type I keratin CK14, both of which are essential for the formation of 8-nm filaments. CK5 and calretinin have been useful in different studies as immunohistochemical markers suggestive of mesothelioma, and their expression is analyzed for the histological differential diagnosis with adenocarcinomas, especially when confronting with metastatic tumors of unknown origin. CK5 labels myoepithelial cells of breast and prostate basal cells. A cocktail of CK5, CK14 and p63, has been used as sensitive and specific basal cell marker of basal-like phenotype of breast carcinoma and to differentiate and prostate cancer. Loss-of-function mutations in the keratin 5 gene (KRT5) affected family members and in six unrelated patients with Dowling-Degos disease (DDD), an autosomal dominant genodermatosis. This suggests a crucial role for keratins in the organization of cell adhesion, melanosome uptake, organelle transport, and nuclear anchorage.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0027A 1 ml ..... #AC-0027	skin, mesothelioma	cytoplasm



Prostate hyperplasia stained with anti-Cytokeratin 5

Cytokeratin 5 (EP42)

Keratins are cytoplasmic intermediate filament proteins expressed by epithelial cells. The mitotically active basal layers of most stratified squamous epithelia express 10% to 30% of their total protein as keratin. The two keratins specifically expressed in these cells are the type II keratin CK5 and its corresponding partner, type I keratin CK14, both of which are essential for the formation of 8-nm filaments. CK5 and calretinin have been useful in different studies as immunohistochemical markers suggestive of mesothelioma Their expression is analyzed for the histological differential diagnosiswith adenocarcinomas, especially when confronted with metastatic tumors of unknown origin. CK5 labels myoepithelial cells of breast and prostate basal cells. A cocktail of CK5, CK14 and p63 has been used as a sensitive and specific basal cell marker of basal-like phenotype of breast carcinoma and to differentiate benign prostate from prostate cancer. Loss-of-function mutations in the keratin 5 gene (KRT5) affected family members and in six unrelated patients with Dowling-Degos disease (DDD) caused an autosomal dominant genodermatosis. This suggests a crucial role for keratins in the organization of cell adhesion, melanosome uptake, organelle transport and nuclear anchorage.

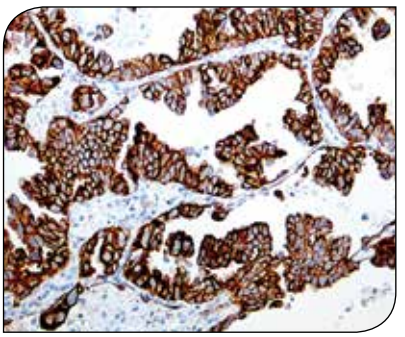
Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0181A 1 ml ..... #AC-0181	skin, mesothelioma	cytoplasm

Squamous cell carcinoma stained with anti-Cytokeratin 6

Cytokeratin 6 (EP67)

The human type II Cytokeratin 6 (CK6; 56 kDa) is well known for its strong induction in stratified epithelia that feature an enhanced cell proliferation rate or abnormal differentiation during wound healing, in several diseases (e.g. psoriasis, actinic keratosis) and in cancer. CK6 is expressed on stratified epithelia including oral mucosa, esophagus, basal layer of epidermis, the outer root sheath of hair follicles, and in glandular epithelia. CK6 is a marker of hyperproliferative and activated keratinocytes found in psoriasis. CK6 paired with CK5 is useful to differentiate mesothelioma (positive) from lung carcinoma (negative) or metastatic carcinoma (negative) in the pleura. CK5/6 has also been used to distinguish usual ductal hyperplasia of the breast (strong staining) from solid papillary DCIS (negative).

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0064A 1 ml ..... #AC-0064	skin, squamous cell carcinoma	cytoplasm/membrane

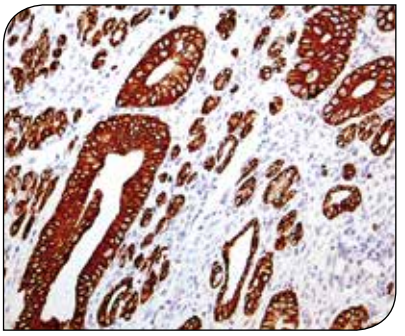


Lung cancer stained with anti-Cytokeratin 7

Cytokeratin 7 (EP16)

Cytokeratin 7 (CK7) is a cytoplasmic intermediate filament protein expressed on most ductal and glandular epithelium including lung, breast, bladder and female genital tract, but not in most gastrointestinal epithelium, prostate, hepatocyte and squamous epithelium. CK7 expression is absent in colon cancer, prostate cancer and squamous carcinomas. The restricted expression of CK7 in some epithelium makes it useful to identify the organ origin of adenocarcinomas when combined with staining of Cytokeratin 20 and other cell specific markers.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0020A 1 ml ..... #AC-0020	salivary gland, lung adenocarcinoma	cytoplasm

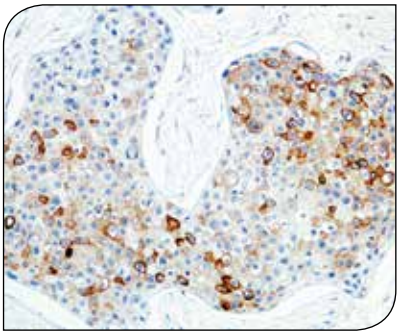


Gastric cancer stained with anti-Cytokeratin 8

Cytokeratin 8 (EP17)

Cytokeratin 8 (CK8) is an intermediate filament protein produced early in embryogenesis. It is the only type-II CK occurring in many simple epithelial in respiratory, gastrointestinal, male and female reproductive tract and thyroid. CK8 is often co-expressed with Cytokeratin 18. CK8 & CK18 is the major keratin pair in simple-type epithelia, as found in the liver, pancreas, and intestine. CK8 is used to detect adenocarcinomas with simple epithelium origin. The difference in staining pattern is useful to distinguish ductal (peripheral staining) from lobular (perinuclear staining) breast carcinoma.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0007A 1 ml ..... #AC-0007	colon, colon carcinoma	cytoplasm/membrane

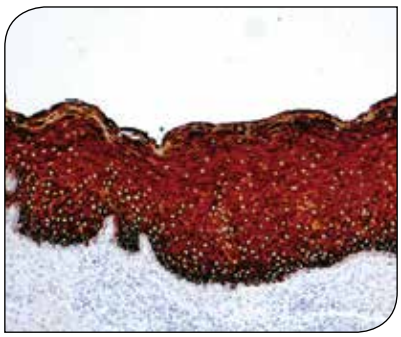


Squamous cell carcinoma stained with anti-Cytokeratin 10

Cytokeratin 10 (EP97)

Cytokeratin 10 (CK10) is an intermediate filament protein and typically associated with cytokeratin 1 (CK1). CK10 is expressed in the suprabasal cell layers of certain stratified epithelia, notably epidermis. CK10 has been used as a marker of epidermal differentiation. Antibody against CK10 is helpful in the identification of more differentiated squamous cell carcinomas.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0086A 1 ml ..... #AC-0086	skin, squamous cell carcinoma	cytoplasm

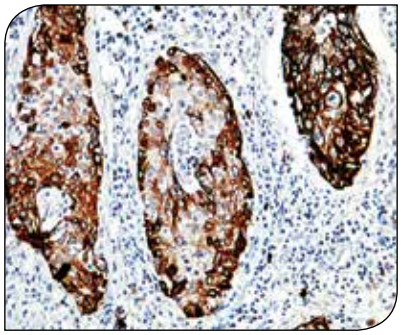


Esophagus stained with anti-Cytokeratin 13

Cytokeratin 13 (EP69)

Keratins are a family of highly homologous proteins expressed as pairs of acidic and basic forms which make intermediate filaments in epithelial cells. Cytokeratin 13 (CK13) is the major acidic keratin, which together with CK4, its basic partner, is expressed in the suprabasal layers of non-cornified stratified epithelia including tongue mucosa, esophagus, anal canal epithelium, tracheal epithelium, uterine cervix, and urothelium. CK13 has been used as a marker for non-keratinized squamous epithelium. It is also expressed in various squamous metaplasia, but it is down regulated in squamous dysplasia and squamous carcinoma.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0066A 1 ml ..... #AC-0066	esophagus	cytoplasm

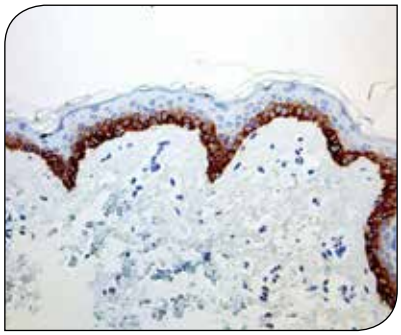


Squamous cell carcinoma stained with anti-Cytokeratin 14

Cytokeratin 14 (EP61)

Cytokeratin 14 (CK14) is a 50-kDa keratin expressed in abundance in stratified epithelial cells, epidermal cells, basal cells, mesothelial cells, and myoepithelial cells in various tissues including breast and prostate. CK14 is helpful in the identification of breast cancer with basal phenotype. It has been reported that cytokeratin 5/14-positive breast cancers are true basal phenotype confined to BRCA1 tumors. Along with p63 and CK5, CK14 has been a useful marker for cells with basal, squamous and myoepithelial differentiation.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0058A 1 ml ..... #AC-0058	skin, squamous cell carcinoma	cytoplasm

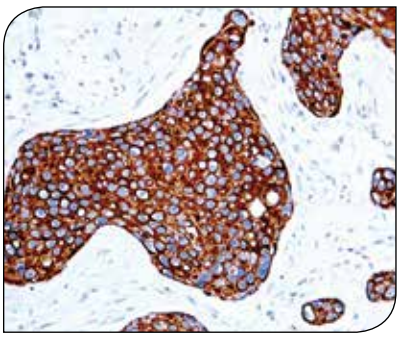


Skin stained with anti-Cytokeratin 15

Cytokeratin 15 (EP14)

Cytokeratin 15 (CK15) is involved in the development of stratified epithelia from one-layered polar epithelia and continues to be expressed in several adult epithelial tissues. It labels the basal keratinocytes of stratified tissues, including the fetal epidermis and fetal nail. Although CK15 in normal hair follicles was virtually absent from hair bulbs, it was expressed by a subset of keratinocytes in the outer root sheath. In human conjunctival epithelium, strong expression of CK15 was observed in basal cells, whereas Cytokeratin 19 was expressed in both basal and suprabasal layers. CK15 may be used to differentiate primary from metastatic skin cancer. It may be a useful stem cell marker for hair follicle and breast epithelium.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0018A 1 ml ..... #AC-0018	skin, skin squamous carcinoma	cytoplasm

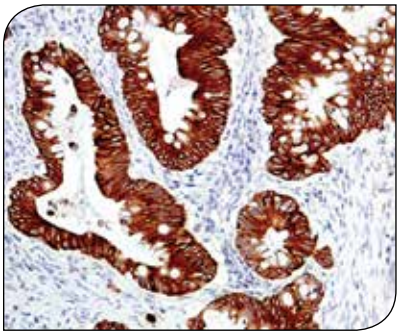


Squamous cell carcinoma stained with anti-Cytokeratin 17

Cytokeratin 17 (EP98)

Cytokeratin 17 (CK17) is an intermediate filament protein expressed in the basal cells and myoepithelial cells of complex epithelia, including glandular epithelium with myoepithelial component, transitional and pseudostratified epithelia. CK17 is a marker in the identification of breast cancer with basal phenotype. Squamous cell carcinoma is also labeled by CK17 antibody. Antibody against CK17 may be an aid in distinguishing cholangiocarcinoma (CK17+) from hepatocellular carcinoma (CK17-). In combination with MUC1, CK17 antibody has been found to be useful in distinguishing pancreatobiliary adenocarcinoma (CK17+) from extrapancreatobiliary nonmucinous adenocarcinoma (CK17-).

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0081A 1 ml ..... #AC-0081	prostate, squamous cell carcinoma	cytoplasm

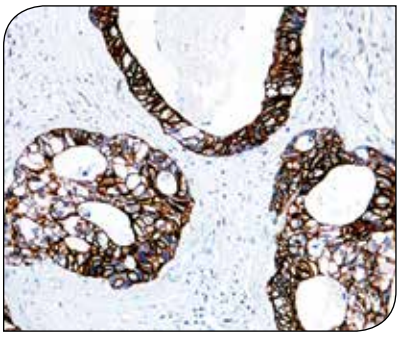


Colon cancer stained with anti-Cytokeratin 18

Cytokeratin 18 (EP30)

Cytokeratin 18 (CK18) is intermediate filament phosphoglycoprotein that is expressed in simple and glandular and transitional epithelial cells but not in stratified epithelial cells. CK18 is often co-expressed with CK8. CK8 & CK18 is the major keratin pair in simple-type epithelia. Adenocarcinomas originated from simple and glandular epithelium showed CK18 positive staining. In squamous carcinoma, poorly differentiated tumor cells show CK18 reactivity. Loss of CK18 expression is associated with progression of breast carcinoma.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0001A 1 ml ..... #AC-0001	breast, breast carcinoma	cytoplasm

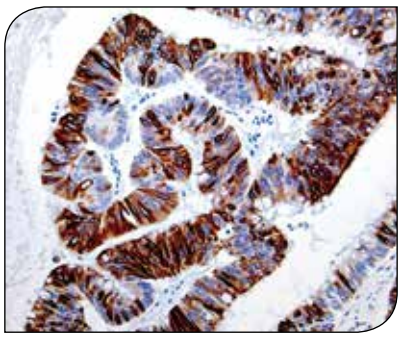


Colon stained with anti-Cytokeratin 19

Cytokeratin 19 (EP72)

Cytokeratin polypeptide 19 (CK19) is a type I intermediate filament protein that is expressed in stratified and simple-type epithelia. CK19 is synthesized mainly in embryonic and adult simple epithelia, but has also been found in non-keratinizing stratified epithelia as well. CK19 is the smallest known keratin and is remarkable in that, contrary to all other keratins, it does not have a designated partner for the formation of filaments, implying that regulation of its expression is different from other keratin-encoding genes. CK19 antibody is a useful tool for the identification of epithelial tumors. It is helpful in distinguishing hepatocellular carcinoma (CK19-) from cholangiocarcinoma (CK19+) or metastatic carcinoma in liver (CK19+).

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0073A 1 ml ..... #AC-0073	colon, colon carcinoma	cytoplasm

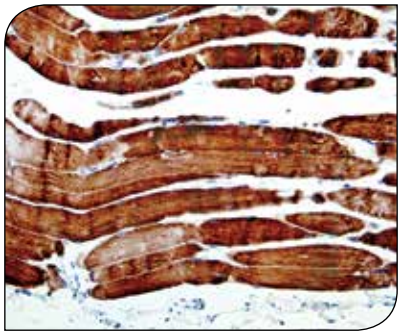


Colon cancer stained with anti-Cytokeratin 20

Cytokeratin 20 (EP23)

Intermediate-sized filament (IF) protein designated Cytokeratin 20 (CK20) is a major cellular protein of mature enterocytes and goblet cells commonly found in mucosal epithelium of the mammalian gastrointestinal tract. Results strongly suggest that transcriptional regulation of keratin genes in the intestinal epithelium occurs at the level of both immature and terminally differentiated epithelial cells, and is tightly regulated during both fetal development and crypt-to-villus differentiation of the intestinal epithelium. CK20 has recently been reported to be useful to distinguish between primary and metastatic lung adenocarcinoma. CK20 expression was significantly more prevalent in adenocarcinoma that originated in the GI tract than that of pulmonary or breast origin.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0026A 1 ml ..... #AC-0026	colon, colon carcinoma	cytoplasm

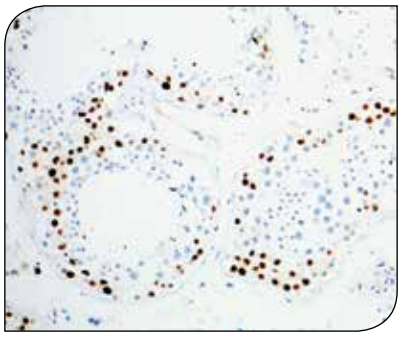


Skeletal muscle stained with anti-Desmin

Desmin (EP15)

Desmin is a class-III intermediate filament protein expressed on smooth, skeletal and cardiac muscle cells. In adult striated muscle they form a fibrous network connecting myofibrils to each other and to the plasma membrane from the periphery of the Z-line structures. Desmin is useful in diagnosis of tumor with myoid origin. It can also be used to differentiate mesothelioma from carcinoma.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0019RUO 1 ml ..... #AC-0019RUOC	skeletal muscle, leiomyoma	cytoplasm

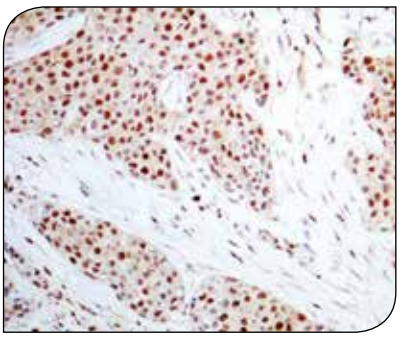


Testis stained with anti-DMRT1

DMRT1 (EP264)

Doublesex- and mab-3-related transcription factor 1 (DMRT1) is a transcription factor that plays a key role in male sex determination and differentiation by controlling testis development and male germ cell proliferation. DMRT1 plays a central role in spermatogonia by inhibiting meiosis in undifferentiated spermatogonia and promoting mitosis. DMRT1 is specifically expressed in spermatogonia and spermatocytes in normal tissues. Amplification of DMRT1 is associated with spermatocytic seminomas. Antibody to DMRT1 may be useful for identification of spermatocytic seminoma.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0230A 1 ml ..... #AC-0230	testis, embryonal carcinoma	nucleus

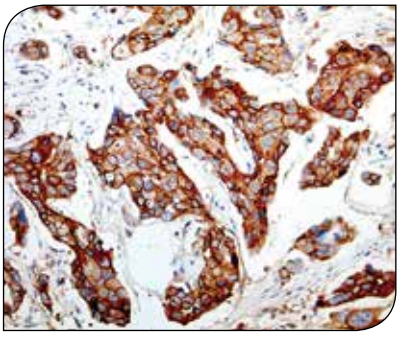


Skin squamous carcinoma stained with anti-DNMT1

DNMT1 (EP269)

DNMT1 is one of three families of enzymes (DNMT1, DNMT2 and DNMT3) that play a role in the establishment and regulation of tissue-specific patterns of methylated cytosine residues. Abnormal methylation patterns are associated with certain human tumors and developmental abnormalities. DNMT1 is responsible for maintenance of the DNA methylation pattern after DNA replication. DNMT1 is the major methyltransferase responsible for methylating DNA. It is widely expressed in normal tissue and increased expression has been observed in many types of cancers. Overexpression of DNMT1 has been associated with early cancer development and cancer progression.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0231RUO 1 ml ..... #AC-0231RUOC	tonsil, hepatocellular carcinoma	cytoplasm/nuclear

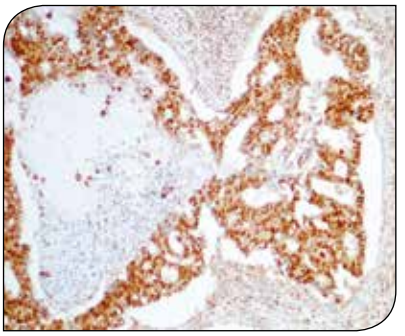


Breast ductal carcinoma stained with anti-E-cadherin

E-cadherin (EP6)

E-cadherin is a transmembrane glycoprotein and plays an important role in epithelial cell adhesion. A decreased expression of E-cadherin is associated with metastatic potential and poor prognosis in breast cancer and esophagus cancer. In combination with p120 Catenin, it is useful for the differentiation between ductal (E-cadherin +) and lobular (E-cadherin -) breast carcinomas. It may also help in diagnosis of mesothelioma.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0003A 1 ml ..... #AC-0003	colon, colon carcinoma	membrane

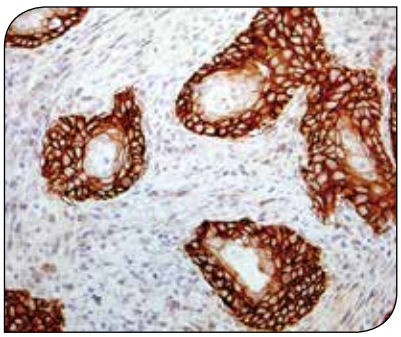


Colon carcinoma stained with anti-E2F4

E2F4 (EP252)

E2F4 is a member of the E2F family of transcription factors. The E2F family plays a crucial role in the control of cell cycle and action of tumor suppressor proteins and is also a target of the transforming proteins of small DNA tumor viruses. This protein binds to all three of the tumor suppressor proteins pRB, p107 and p130, but with higher affinity to the last two. In quiescent cells, E2F4 is primarily localized in the nucleus but translocate to cytoplasm when the retinoblastoma family members are phosphorylated in response to mitogen. E2F4 is constitutively expressed throughout the cell. Squamous cell carcinomas of the salivary gland show a high E2F4 cytoplasmic staining score, while most of the pleomorphic adenoma cells show nuclear reactivity of E2F4. Reduced expression of E2F4 has been reported in sporadic Burkitt lymphoma (sBL). E2F4 may play a role in Burkitt lymphoma tumorigenesis.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0225RUO 1 ml ..... #AC-0225RUOC	colon, colon carcinoma	cytoplasm/nuclear

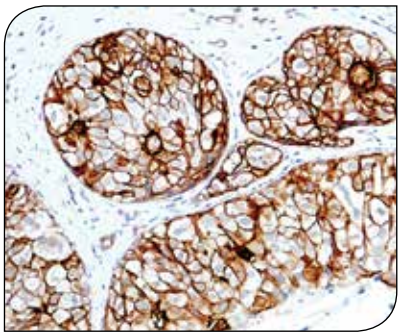


Squamous carcinoma stained with anti-EGFR

EGFR (EP22)

Epidermal growth factor receptor (EGFR) is a 170 kDa transmembrane glycoprotein receptor tyrosine kinase that, activated by epidermal growth factor (EGF), affects cell growth and differentiation. Binding of EGF or TGF alpha to EGFR activates tyrosine kinase activity of the receptor. Phosphorylation of Tyr 992, Tyr 1068 and Tyr 1086 is required for conformational change in the C-terminal of EGFR. Autophosphorylation of Tyr 992 creates a binding site for the phospholipase C-gamma (PLC-gamma) SH2 domain, inducing downstream signaling. In breast cancer, EGFR is predominately expressed in basal cell-like carcinoma, it has been recommendated for identification of basal-like breast carcinoma along with Cytokeratin 5 & 6.

Product Availability:	
0.1 ml.....#AC-0025A 1 ml ..... #AC-0025	**USA:** ASR **Japan:** RUO
0.1 ml..... #AC-0025EUA 1 ml ..... #AC-0025EU	**Europe:** IVD

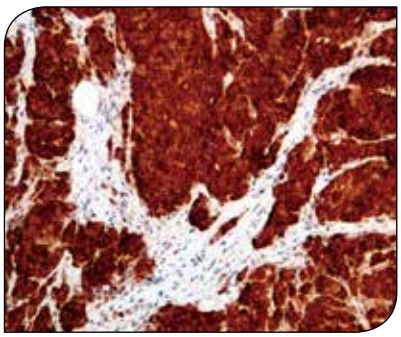


Breast cancer stained with anti-EGFR Phospho (pY1068)

EGFR Phospho (pY1068) (EP11)

Epidermal growth factor receptor (EGFR) is a 170 kDa transmembrane glycoprotein receptor tyrosine kinase that, when activated by epidermal growth factor (EGF), affects cell growth and differentiation in normal and cancer cells. Binding of EGF or TGF alpha to EGFR activates tyrosine kinase activity of the receptor. The carboxy-terminal tyrosine residues on EGFR, Tyr 1068, Tyr 1148, and Tyr 1173, are the major sites of autophosphorylation, which occurs as a result of EGF binding. EGFR overexpression is exhibited in various cancers, such as glioma, colorectal carcinoma, breast carcinoma, and head and neck carcinoma. The phosphorylation level of EGFR is considered to be one of the most important predictors for the clinical outcome of non-small cell lung and breast cancer.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0016RUO 1 ml ..... #AC-0016RUOC	skin, breast cancer	membrane

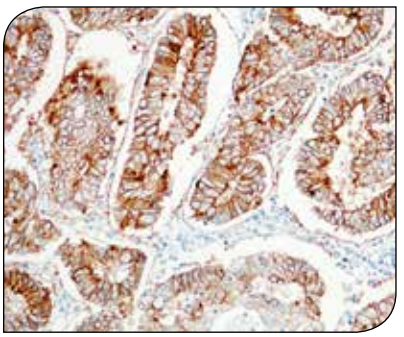


Breast carcinoma stained with anti-eIF-4E

eIF-4E (EP280)

Eukaryotic initiation factor 4E (eIF-4E), a 25-kDa cap binding protein, delivers cellular mRNAs to the eIF4F translation initiation complex by binding the 5'-cap structure of these mRNAs. Studies suggested that increased expression and activity of eIF-4E might be one of the key effects on oncogene expression, resulting in neoplastic transformation. eIF-4E is overexpressed in many types of cancers, including carcinoma of the breast, colon, bladder, cervix, lung, and squamous cell carcinoma of the head and neck. Increased expression of eIF-4E has been associated with tumor progression in breast cancer, prostate cancer, and acute myeloid leukemia (AML).

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0262RUO 1 ml ..... #AC-0262RUOC	breast, prostate cancer	cytoplasm/nuclear

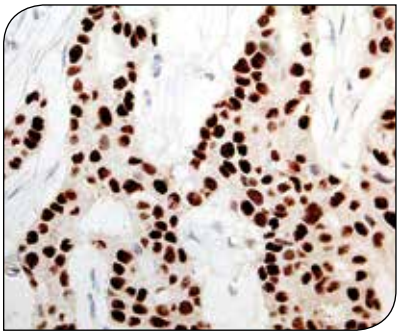


Endometrial carcinoma stained with anti-EpCAM

Ep-CAM (EP155)

Ep-CAM is a highly conserved type I transmembrane glycoprotein and is expressed on most normal and malignant epithelial cells. Ep-CAM is also known as epithelial cell adhesion molecule or MOC31 or Ber-EP4. It is detected at the membrane/cytoplasm of the majority of epithelial tissues (all simple, pseudo-stratified and transitional epithelium), with the exception of the adult squamous epithelium and some epithelium-derived cells, such as hepatocytes, epidermal keratinocytes, gastric parietal cells, myoepithelial cells, and thymic cortical epithelium. In tumors, Ep-CAM is over expressed by the majority of human epithelial carcinomas, except hepatocellular carcinomas (HCC).

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0145A 1 ml ..... #AC-0145	colon, colon carcinoma	cytoplasm/membrane

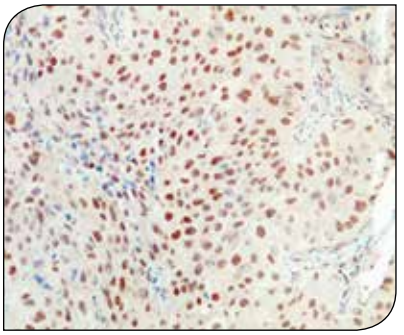


Breast cancer stained with anti-ER Alpha

ER Alpha (EP1)

Estrogen Receptor Alpha (ER Alpha) is a nuclear protein and member of the steroid hormone receptor family. ER alpha possesses both DNA binding and ligand binding domains, and exerts a significant role in activating the transcription of certain genes. Ligand-dependent dimerization and phosphorylation both function to regulate the transcriptional activation of ER alpha.

Product Availability:	
0.1 ml.....#AC-0015A 1 ml ..... #AC-0015	**USA:** ASR **Japan:** RUO
0.1 ml..... #AC-0015EUA 1 ml ..... #AC-0015EU	**Europe:** IVD



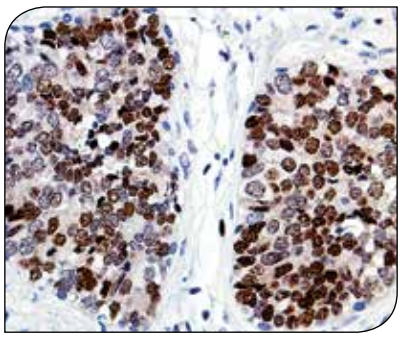
Hepatocellular carcinoma stained with anti-ERCC1

ERCC1 (EP219)

Excision Repair Cross Complementing 1 (ERCC1) is a mammalian nucleotide excision repair (NER) enzyme involved in repair of damaged DNA. ERCC1 is a homologous to RAD10 in Saccharomyces cerevisiae, which is required in mitotic intrachromosomal recombination and repair. ERCC1 is required in repair of cisplatin-induced DNA adducts and ultraviolet (UV)-induced DNA damage. High expression of ERCC1 has been linked to tumor progression in a variety of cancers including non-small cell lung cancer (NSCLC), squamous cell carcinoma of the head, ovarian cancer and esophageal cancer.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0206RUO 1 ml ..... #AC-0206RUOC	gastrointestinal tract, lung carcinoma	nuclear

All designations for USA and Europe are IVD unless otherwise noted.
Research Use Only products will have RUO stated in the product number.
All designations for Japan are RUO.

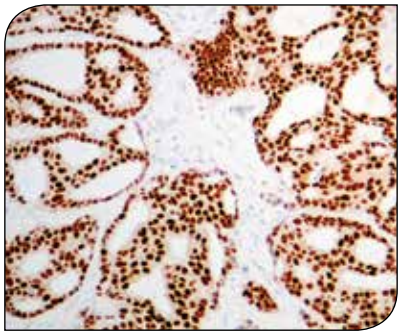


Prostate cancer stained with anti-ERG

ERG (EP111)

ERG, the ETS related gene, belongs to the ETS family that plays important roles in cell development, differentiation, proliferation, apoptosis and tissue remodeling. This family of transcription factors contains approximately 30 members that share a highly conserved DNA-binding domain (ETS domain) and differs from each other in other domains (such as absence or presence of the Pointed/SAM domain) and are thus distinguished in sub-families. The aberrant expression of several ETS proteins is involved in tumor development and progression. ERG belongs to the Erg/Fli-1 sub-family. Its involvement in human cancers has been widely studied. ERG is linked to normal processes such as mesoderm formation and is found to form functional complexes with Jun/Fos, with the resulting ternary complexes regulating expression of proteins such as metalloprotease-1 (MMP-1) and MMP-3. EWS-ERG, or EWS-Fli-1 fusion, is a characteristic of Ewing's sarcoma. TMPRSS2-ERG fusion, which occurs on account of translocations and interstitial deletions, is implicated in aggressive forms of prostate cancer. Eighty percent of prostate tumors contain genomic fusions of TMPRSS2 and members of the ETS family of transcription factors. Of these, about 50% contain TMPRSS2-ERG fusions. Interestingly, prostate cancers with TMPRSS2-ERG fusion have been found to have five morphological features: blue-tinged mucin, cribriform growth pattern, macronucleoli, intraductal tumor spread, and signet-ring cell features. ERG overexpression is associated with aggressive tumor behavior and patient survival in prostate cancer. The ERG antibody labels endothelial cells, lymphocytes and prostate cancer cells. This ERG antibody also recognizes Fli-1 by western blot analysis.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0105A 1 ml ..... #AC-0105	prostate carcinoma	nuclear



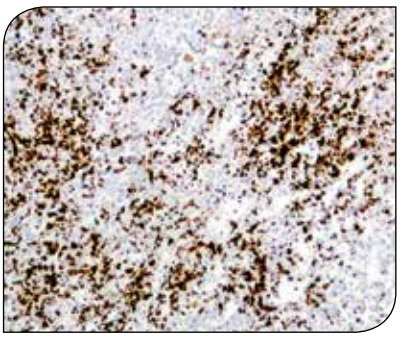
Breast carcinoma stained with anti-ER alpha

Estrogen Receptor (EP220)

Estrogen Receptor Alpha (ER Alpha) is a nuclear protein and member of the steroid hormone receptor family. ER alpha possesses both DNA binding and ligand binding domains, and exerts a significant role in activating the transcription of certain genes. Ligand-dependent dimerization and phosphorylation both function to regulate the transcriptional activation of ER alpha.

Product Availability:	
0.1 ml.....#AC-0232A 1 ml ..... #AC-0232	**USA:** ASR **Japan:** RUO
0.1 ml..... #AC-0232EUA 1 ml ..... #AC-0232EU	**Europe:** IVD

All designations for USA and Europe are IVD unless otherwise noted.
Research Use Only products will have RUO stated in the product number.
All designations for Japan are RUO.

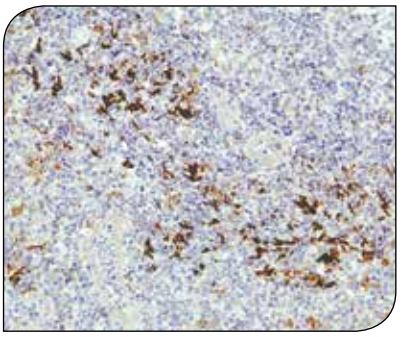


Spleen stained with anti-Factor XIII A

Factor XIII A (EP292)

Factor XIII (plasma transglutaminase, fibrin stabilizing factor) is a glycoprotein that circulates in blood as a tetramer, consisting of two A and two B subunits. Subunit A of factor XIII is an un-glycosylated 730-residue peptide with a molecular mass of 83 kD. It is the last enzyme generated in the blood coagulation cascade and is the zymogen for fibrinoligase, a transglutaminase that forms intramolecular gamma-glutamyl-epsilon-lysine crosslinking between fibrin molecules and thus stabilizes blood clots. Factor XIII A is present in plasma, platelets, and monocytes, as well as macrophages and bone marrow precursors of these cell types and selective expression in subsets of stromal inflammatory cells. Factor XIII A is a marker for alternatively activated macrophages, while absence of Factor XIII A in monocyte-derived macrophages is an indicator of their activated state. In addition, Factor XIII A is useful in distinguishing malignant fibrous histiocytoma (positive) from soft tissue tumor (negative).

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0263A 1 ml ..... #AC-0263	spleen, fibrous histiocytoma	cytoplasm

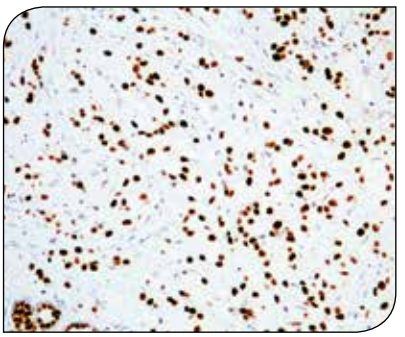


Tonsil stained with anti-Fascin

Fascin (EP116)

Fascin, an actin-binding protein, induces parallel actin bundles in cell protrusions and cell motility after the formation of lamellipodia or filopodia. The Fascin antibody labels dendritic cells in normal and tumor tissues. It is a sensitive marker for Reed-Sternberg cells in Hodgkin's lymphoma (HL). Thus, Fascin is useful for the identification of Hodgkin's lymphoma as well as dendritic tumors. Given its primary function in inducing membrane protrusions and increasing cell motility, in addition to serving as a marker for the identification of HL and dendritic tumors, overexpression of fascin has been shown to be correlated with disease progression in several types of human tumors including cancers of the lung, ovary, breast, pancreas, esophagus, stomach, colon, and skin. An IHC study of 58 primary breast carcinomas suggested that estrogen (ER) and progesterone (PR) receptor levels were inversely correlated with the expression of fascin.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0112A 1 ml ..... #AC-0112	tonsil, Hodgkin's lymphoma	cytoplasm

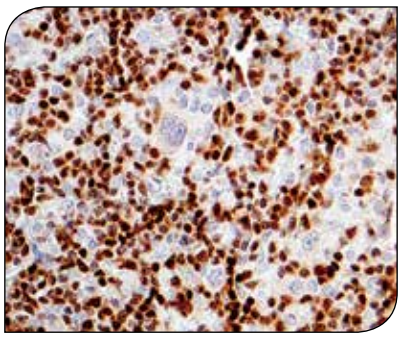


Breast lobular carcinoma stained with anti-FOXA1

FOXA1 (EP277)

The transcription factor Forkhead-box A1 (FOXA1), also known as hepatocyte nuclear factor 3-alpha, is a member of the FOX class of transcription factors. FOXA1 has been identified as a hepatocyte enriched factor required for the expression of transthyretin and α1-antitrypsin. Recently, FOXA1 has been shown to be a major determinant of estrogen-ER activity and endocrine response in breast cancer cells. FOXA1 expression correlates with estrogen receptor (ER)-positivity, especially in luminal subtype A breast cancers, which is associated with favorable prognosis.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0246RUO 1 ml ..... #AC-0246RUOC	breast carcinoma	nuclear



Hodgkin's lymphoma stained with anti-FOXO1

FOXO1 (EP290)

FOXO1 belongs to the winged helix/forkhead family of transcription factors that is characterized by a 100-amino acid monomeric DNA-binding domain called the FOX domain. *In vitro* and *in vivo* studies have shown that FOXO transcription factors control the regulation of many genes involved in fundamental cellular processes, including cell cycle regulation, cell death, modulation of inflammation, metabolism, protection from oxidative stress, and cell survival. FOXO1 is broadly expressed in different types of cells with high level of expression in lymphoid cells and non-Hodgkin's lymphomas. In contrast, in most of classical Hodgkin lymphoma (cHL), Reed-Sternberg cells were FOXO1 negative.

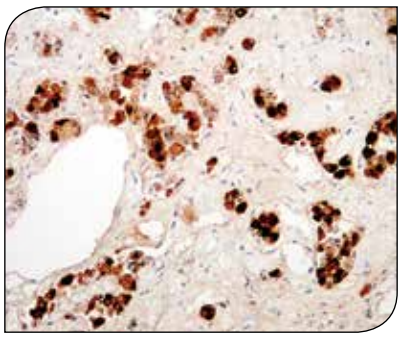
Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0264RUO 1 ml ..... #AC-0264RUOC	tonsil, non Hodgkin's lymphomas	nuclear

Tonsil stained with anti-FOXP1

FOXP1 (EP137)

The FOXP1 protein belongs to a functionally diverse family of winged-helix or forkhead transcription factors that have diverse roles in cellular proliferation, differentiation, and neoplastic transformation. The FOXP1 gene has been mapped to chromosome 3p14.1, a region that commonly shows loss of heterozygosity in a wide range of tumors and is reported to contain a tumor suppressor gene(s). The FOXP1 protein is widely expressed in normal human tissues. It labels activated B cells in the mantle zone and germinal center of lymphoid tissues. In lymphoid malignancies, FOXP1 protein expression may be found in diffuse large B-cell lymphomas and extranodal marginal zone B-cell lymphomas of mucosa-associated lymphoid tissue (MALT). Strong expression of FOXP1 is associated with poor disease-free survival and transformation to diffuse large B-cell lymphomas. Recently, studies suggested a role of FOXP1 in the regulation of ER expression. FOXP1 expression is correlated with ER expression and improved survival in breast cancer patients. Nuclear expression of FOXP1 is associated with ER expression, while cytoplasmic expression of FOXP1 is linked to myometrial invasion in endometrial cancer.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0129RUO 1 ml ..... #AC-0129RUOC	tonsil, diffuse large B-cell lymphoma (DLBCL)	cytoplasm/nuclear

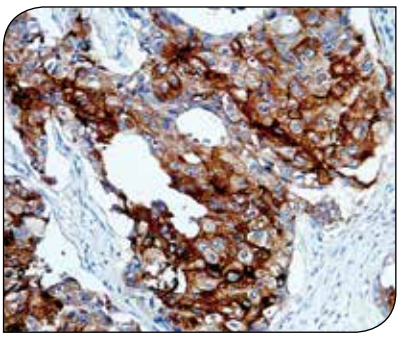


Pituitary gland stained with anti-FSH

FSH (EP257)

The pituitary glycoprotein hormone family includes follicle-stimulating hormone, luteinizing hormone, chorionic gonadotropin, and thyroid-stimulating hormone. All of these glycoproteins consist of an identical alpha subunit and a hormone-specific beta subunit. FSH beta is the beta subunit of follicle-stimulating hormone. In conjunction with luteinizing hormone, follicle-stimulating hormone induces egg and sperm production. The FSH antibody specifically labels gonadotrophs in pituitary. It may be useful in the classification of pituitary tumors.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0233A 1 ml ..... #AC-0233	pituitary, pituitary tumor	cytoplasm

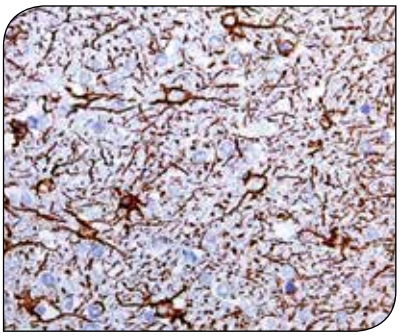


Breast cancer stained with anti-GCDFP-15

GCDFP-15 (EP95)

Gross cystic disease fluid protein (GCDFP-15), also called prolactin inducible protein (PIP), is a single polypeptide chain with a versatile function in human reproductive and immunological systems. GCDFP-15 binds to CD4, exerts a potent inhibition on T lymphocyte apoptosis mediated by CD4/T-cell receptor (TCR) activation, and carries a fibronectin-specific aspartyl protease activity. It is up regulated by prolactin and androgens, while it is down regulated by estrogen. In normal adult tissues, GCDFP-15 expression was found in all apocrine, lacrimal, ceruminous, and Moll's glands and in numerous serous cells of the submandibular, sublingual, and minor salivary glands. The serous cells of nasal and bronchial glands were also positive. It is used as a marker of apocrine differentiation. GCDFP-15 has been found in the cyst fluid of cystic breast disease and primary and metastatic breast cancer, and considered a highly specific marker for identification of breast cancer. GCDFP-15 expression has also been found in other cancer types including salivary glands, sweat glands, prostate, and lung.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0085A 1 ml ..... #AC-0085	skin, breast carcinoma	cytoplasm

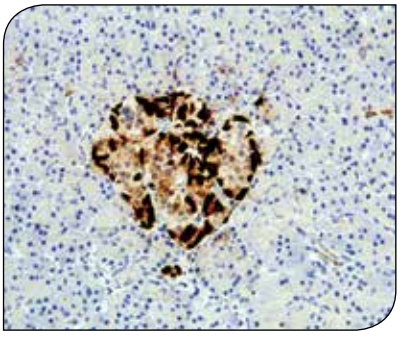


Brain stained with anti-GFAP

GFAP (EP13)

Glial Fibrillary Acidic Protein (GFAP) belongs to the class III of the intermediate filament proteins highly specific to astrocytes in the brain. It is also expressed on some ependymal cells in the central nervous system and Schwann cells, enteric glial cells and satellite cells in the peripheral nervous system. GFAP is used to differentiate astrocytoma from nonglial cell tumors.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0002A 1 ml ..... #AC-0002	Brain, astrocytoma	cytoplasm

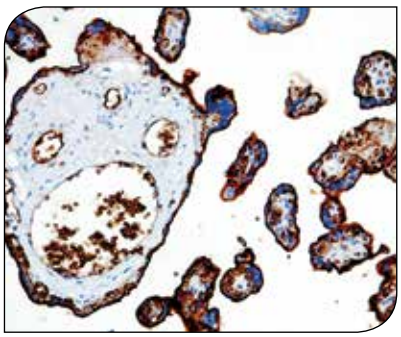


Pancreas stained with anti-Glucagon

Glucagon (EP74)

Glucagon is synthesized and released by the alpha-cells of the islets of Langerhans in pancreas. It regulates blood glucose by increasing gluconeogenesis and decreasing glycolysis, stimulates fluid secretions from the intestine and suppresses the release of gastrin. Anti-glucagon is useful in identification of glucagonoma.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0074A 1 ml ..... #AC-0074	pancreas, glucagonoma	cytoplasm/nuclear

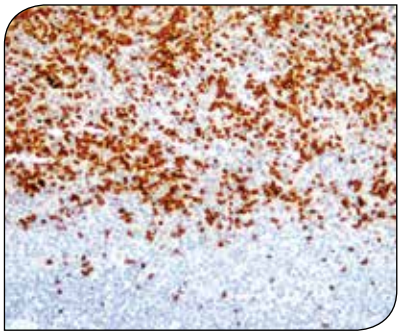


Placenta stained with anti-Glut-1

Glut-1 (EP141)

Glucose transporters are integral membrane glycoproteins involved in transporting glucose into most cells. There are many types of glucose transport carrier proteins, designated as Glut-1 to Glut-12. Glut-1, also known as SCL2A1, is a major glucose transporter in the mammalian blood-brain barrier. It is expressed in high density on the membranes of human erythrocytes and the brain capillaries that comprise the blood-brain barrier. Glut-1 is expressed at variable levels in many human tissues. Overexpression of Glut-1 has been linked to tumor progression or poor survival of patients with carcinomas of the colon, breast, cervical, lung , bladder and mesothelioma. Glut-1 is a sensitive and specific marker for the differentiation of malignant mesothelioma (positive) from reactive mesothelium (negative).

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0132A 1 ml ..... #AC-0132	erythrocytes, mesothelioma	membrane

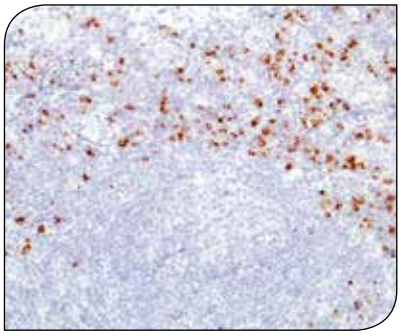


Spleen stained with anti-Glycophorin A

Glycophorin A (EP213)

Glycophorin A, also known as CD235a, is the major intrinsic membrane protein of the erythrocyte. The N-terminal glycosylated segment, which lies outside of the erythrocyte membrane, has MN blood group receptors. It is important for the function of SLC4A1 and required for the high activity of SLC4A1. Glycophorin A may be involved in the translocation of SLC4A1 to the plasma membrane. It is a receptor for the influenza virus and Plasmodium falciparum erythrocyte-binding antigen 175 (EBA-175); binding of EBA-175 is dependent on sialic acid residues of the O-linked glycans. Glycophorin A is exclusively expressed on erythroid cells and their precursors. It is a useful marker for identification of erythroid differentiation in hematopoietic malignancies.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0202A 1 ml ..... #AC-0202	spleen, erythroleukemia	membrane

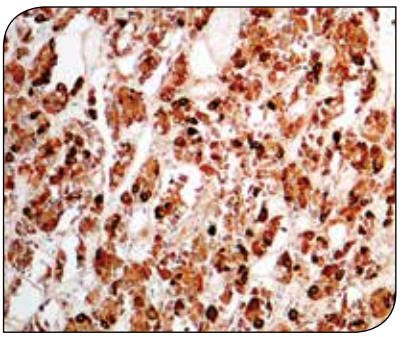


Tonsil stained with anti-Granzyme B

Granzyme B (EP230)

Granzyme B is a member of the granule serine protease family stored specifically in NK cells or cytotoxic T cells. Cytolytic T lymphocytes (CTL) and natural killer (NK) cells share the ability to recognize, bind, and lyse specific target cells. They are thought to protect their host by lysing cells bearing on their surface 'nonself' antigens, usually peptides or proteins resulting from infection by intracellular pathogens. Granzyme B is crucial for the rapid induction of target cell apoptosis by CTLs in the cell-mediated immune response. Granzyme B is useful as a marker in the identification of NK/T-cell lymphomas in conjunction with CD56.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0213A 1 ml ..... #AC-0213	tonsil, Hodgkin's lymphoma	cytoplasmic granule

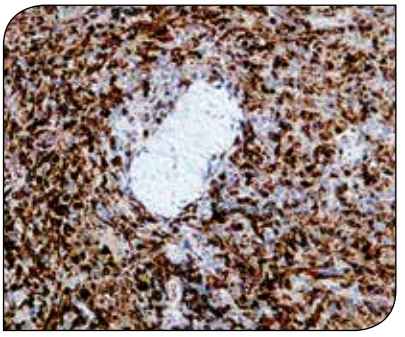


Pituitary gland stained with anti-Growth Hormone

Growth Hormone (EP267)

Growth hormone (GH or hGH), also known as somatotropin or somatropin, is a peptide hormone that is produced and secreted by somatotrophs of the anterior pituitary gland. GH exerts a wide variety of biological actions in many different tissues and cell types. The actions of GH at the cellular level can be divided into three categories: those affecting mitogenesis, differentiation, and metabolism. The GH antibody specifically labels somatotrophs in pituitary in normal tissues. It is useful in classification of pituitary tumor.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0234A 1 ml ..... #AC-0234	pituitary	cytoplasm

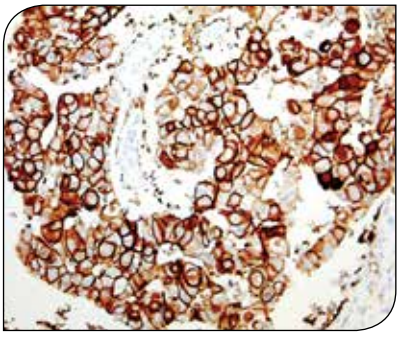


Spleen stained with anti-Hemoglobin Alpha

Hemoglobin Alpha (EP124)

Hemoglobin alpha chain belongs to the globin family and is involved in oxygen transport from the lung to various peripheral tissues. It is a heterotetramer of two alpha chains and two beta chains in adult hemoglobin A (HbA); two alpha chains and two delta chains in adult hemoglobin A2 (HbA2). Hemoglobin alpha chain is expressed in red blood cells, and defects in HBA1/HBA2 can lead to alpha thalassemia, the most common of monogenic diseases (1). Hemoglobin alpha chain is a useful marker for erythroid cells. An antibody to Hemoglobin alpha has been used for the identification of erythroid cells in myeloproliferative disease.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0121A 1 ml ..... #AC-0121	spleen, erythroleukemia	cytoplasm

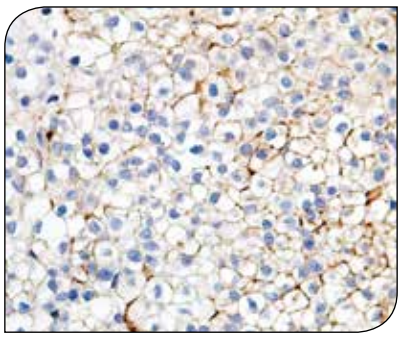


Breast cancer stained with anti-HER2/ErbB2

HER2 / ErbB2 (EP3)

HER2 / ErbB2 is one of the four members of the ErbB receptor family of transmembrane receptor-like tyrosine kinases. The kinase activity of ErbB2 can be activated without ligand if it is overexpressed, and by association with other ErbB proteins. Overexpression of ErbB2 is detected in almost 40% of human breast cancers. Each laboratory should validate it by its own procedure.

Product Availability:	
0.1 ml.....#AC-0014A 1 ml ..... #AC-0014	**USA:** ASR **Japan:** RUO
0.1 ml..... #AC-0014EUA 1 ml ..... #AC-0014EU	**Europe:** IVD

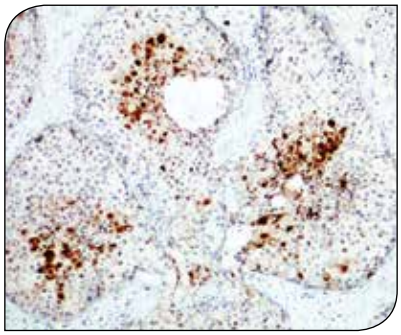


Breast carcinoma stained with anti-HER2 / ErbB2 Phospho (pY877)

HER2 / ErbB2 Phospho (pY877) (EP123)

HER2 / ErbB2 is one of four members of the ErbB receptor family of transmembrane receptor-like tyrosine kinases. The kinase activity of ErbB2 can be activated without a ligand if it is overexpressed, and by association with other ErbB proteins. HER2 is overexpressed in 25-30% of all breast cancers, including primary as well as metastatic breast tumors. HER2 has been widely investigated as a prognostic indicator. Detection of phosphorylated HER2 may aid in predicting breast cancer progression.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0146RUO 1 ml ..... #AC-0146RUOC	breast carcinoma	membrane

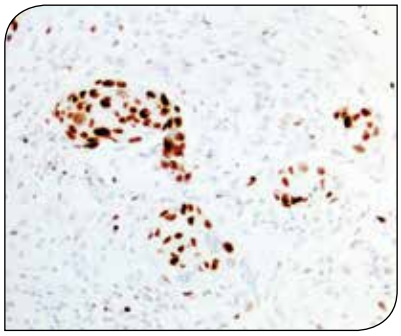


Breast cancer stained with anti-HIF-1 Alpha

HIF-1 Alpha (EP118)

The HIF-1 Alpha subunit of hypoxia-inducible factor 1 is a transcription factor that functions as a master transcriptional regulator of the adaptive response to hypoxia. HIF-1 activates the transcription of many genes, thus playing a role in various biological processes, including cardiovascular development, angiogenesis, energy metabolism, and cell survival.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0108RUO 1 ml ..... #AC-0108RUOC	breast carcinoma	cytoplasm/nuclear

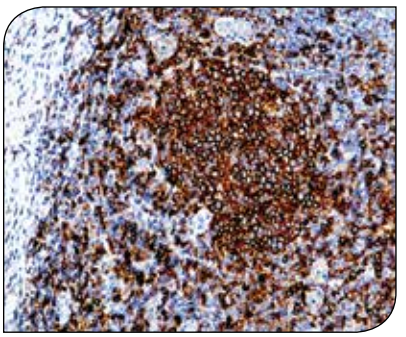


Skin squamous cell carcinoma stained with anti-Histone H3 Phospho (pT3)

Histone H3 Phospho (pT3) (EP233)

Histone H3 is a core histone protein, which complexes with the other histones to form the major constituents of chromatin in eukaryotic cells. In mammalian cells, phosphorylation of Threonine 3 residue in histone H3 reaches a maximum for condensation during mitosis. Phosphorylation of histone H3 (pHH3) occurs only during late G2 phase and mitosis. pHH3 is a marker for mitoses in various types of tumors. It is particularly useful in identifying mitotic figures in tumors with dense cellularity, limited mitotic activity, and/or abundant apoptotic, pyknotic or distorted nuclei.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0250A 1 ml ..... #AC-0250	tonsil, breast carcinoma	nuclear

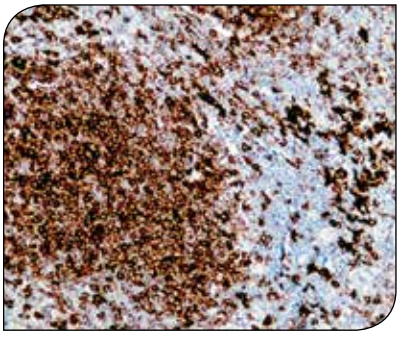


Tonsil stained with anti-HLA-Dra

HLA-Dra (EP96)

Human class II major histocompatibility complex (MHC) products are essential initiators of cellular immune responses. There are three major isotypes of human class II MHC molecules; HLA-DR, HLA-DP, and HLA-DQ, each of which consists of an alpha and beta chain. HLA-DR alpha is a polymorphic cell surface glycoprotein that is crucial for the cellular interaction in the immune response. Class II molecules have limited tissue distribution and are predominantly expressed on B lymphocytes and macrophage; these class II molecules present peptides derived from extracellular proteins to T cells.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0088RUO 1 ml ..... #AC-0088RUOC	tonsil, ovarian cancer	cytoplasm



Tonsil stained with anti-HLA-DRB1

HLA-DRB1 (EP191)

HLA-DRB1 belongs to the HLA class II beta chain paralogs. Known as MHC class II antigen DRB1*15. The class II molecule is a heterodimer consisting of an alpha (DRA) and a beta chain (DRB), both anchored in the membrane. It plays a central role in the immune system by presenting peptides derived from extracellular proteins. HLA-DRB1 is expressed mainly on antigen-presenting cells, such as B lymphocytes, monocytes and dendritic cells but can also be detected on activated T lymphocytes and activated granulocytes. In abnormal tissues, it has been found in different types of acute lymphoblastic leukaemias and acute myeloid leukaemias. Additionally, HLADR was also found in some nonhemato, including carcinomas of the colon and breast.

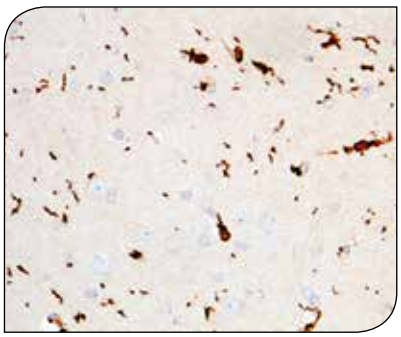
Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0183RUO 1 ml ..... #AC-0183RUOC	tonsil	cytoplasm/membrane

Placenta stained with anti-HPL

Human Placental Lactogen (HPL) (EP241)

Human placental lactogen (also called CSH1 or HPL), is a member of the human growth hormone (hGH)/human placental lactogen gene family. It is important in the regulation of maternal and fetal metabolism, as well as the growth and development of the fetus. HPL is a secreted by the syncytiotrophoblast during pregnancy. Antibody to HPL reacts with syncytiotrophoblastic cells in choriocarcinoma and intermediate trophoblasts in trophoblastic tumors. It is a useful marker for tumors with trophoblast differentiation.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0215A 1 ml ..... #AC-0215	placenta, trophoblast tumor	cytoplasm

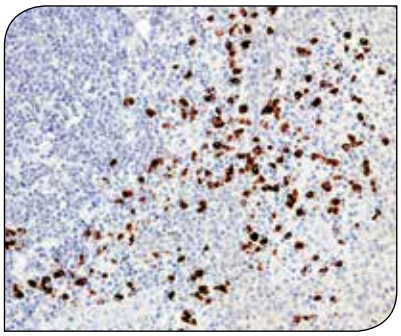


Brain stained with anti-Iba-1

Iba-1 (AIF1) (EP289)

Iba-1, designated as allograft inflammatory factor 1 (AIF1), is a 17 kDa cytoplasmic calcium-binding protein that is constitutively expressed in monocytes, macrophages and CD3+ lymphocytes, but can also be induced by cytokines and interferon α. Iba-1 is a key molecule that co-localizes with Rac in the membrane ruffling process, a feature of actively migrating cells. Iba-1 may promote the proliferation of vascular smooth muscle cells and T-lymphocytes, enhancing lymphocytic migration, and plays a role in vascular inflammation. In addition to leukocytes, Iba-1 expression has been described in the testis and spleen, and weakly expressed in the brain, lung and kidney. Within the brain, Iba-1 was specifically localized in microglia. Iba-1 may be an indicator of macrophage activation in the body since it is also expressed in various human immune-related tissues, including rheumatoid arthritis, inflammatory skin disorders, system sclerosis, and cardiac allograft vasculopathy. A recent study suggested that Iba-1 expression was associated with breast ductal tumors and may be helpful for the prognosis and therapy of breast cancer.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0265A 1 ml ..... #AC-0265	brain microglia, astrocytomas	cytoplasm

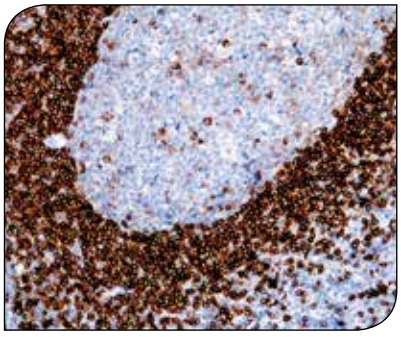


Tonsil stained with anti-IgA

IgA (Heavy Chain) (EP170)

Immunoglobulins are produced by cells of the B-lymphocyte lineage. Based on differences in the heavy chain, five immunoglobulin isotypes are known as IgA, IgG, IgM, IgD and IgE. IgA is the predominant immunoglobulin for mucosal immunity. It is found abundantly in mucosal tissues, such as gut, respiratory tract and urogenital tract. It is also found in saliva, tears and breast milk. An antibody to IgA is useful for the identification and classification of B-cell derived lymphomas and plasmacytomas.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0147A 1 ml ..... #AC-0147	tonsil	cytoplasm/membrane

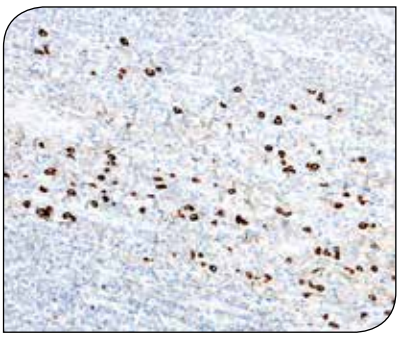


Tonsil stained with anti-IgD

IgD (EP173)

Immunoglobulins are produced by cells of the B-lymphocyte lineage. Based on differences in the heavy chain, five immunoglobulin isotypes are known as IgA, IgG, IgM, IgD and IgE. Human IgD exists in two forms: secreted IgD (secIgD), present in small amounts in human serum, and membrane-bound IgD (mIgD), present on the surface of mature B cells. MIgD is co-expressed with membrane-bound IgM (mIgM) and plays a major role as an antigenic receptor on the surface of B-lymphocytes. IgD is expressed in normal and neoplastic mantle B cells. It is absent in most cells of normal splenic marginal zone but present in 30% to 40% of splenic marginal zone lymphomas (MZLs). Additionally, IgD may be a marker for the identification of nodular lymphocyte predominant hodgkin lymphoma. Antibody to IgD is useful for classification of B-cell derived lymphomas and plasmacytomas.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0184A 1 ml ..... #AC-0184	tonsil	cytoplasm/membrane

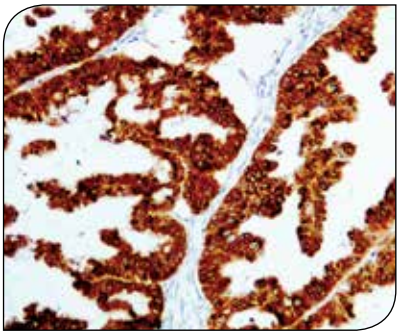


Tonsil stained with anti-IgG4

IgG4 (EP138)

Human IgG4 accounts for less than 6% of the total IgG serum level. Recent studies show that serum levels and immunohistochemistry staining with IgG4 antibody is a useful diagnosis marker for IgG4-related sclerosing diseases. A new concept of IgG4-related systemic disease (ISD) has been established recently. The ISD is characterized by elevated serum IgG4 levels and extensive IgG4+ plasma cell infiltrate in pancreas and/or in other organs, including peripancreatic tissue, bile duct, gallbladder, portal area of the liver, gastric mucosa, colonic mucosa, salivary glands, lymph nodes, and bone marrow. Immunohistochemistry analysis of IgG4 is useful for identifying ISD.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0148A 1 ml ..... #AC-0148	tonsil	cytoplasm

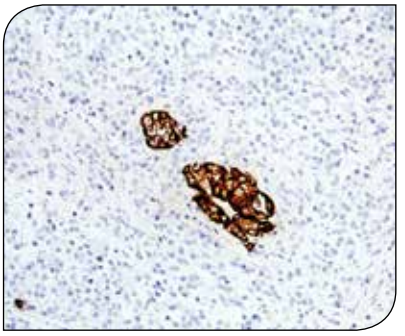


Ovarian carcinoma stained with anti-IMP-3

IMP-3 (EP286)

IMP-3, known as Insulin-like growth factor 2 (IGF-II) mRNA-binding protein 3, is an oncofetal protein that stabilizes IGF-II mRNA for trafficking and plays an important role in cell growth and migration. This 65-70 kDa protein is expressed normally in developing tissues during early embryogenesis in a variety of fetal tissues including the liver, lung kidney, thymus, and placenta, but at low or undetectable levels in normal adult tissues. Recent studies have demonstrated IMP-3 expression in various malignant tumors of the lung, gastrointestinal tract, liver, endometrium, and bladder, while undetectable in adjacent benign tissues. IMP-3 may have a critical role in tumor proliferation, invasion and metastasis, and has been suggested to be an independent marker for poor prognosis in patients with clear cell carcinomas.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0266A 1 ml ..... #AC-0266	fetal liver, esophageal carcinoma	cytoplasm/nuclear

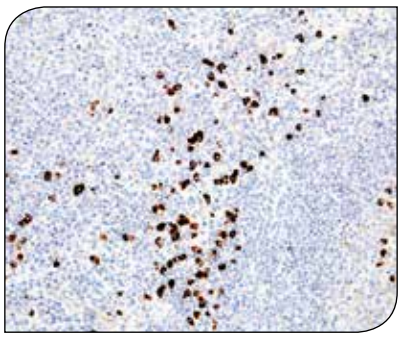


Pancreas stained with anti-Insulin

Insulin (EP125)

Insulin is a hormone that regulates glucose homeostasis. It increases cell permeability to monosaccharides, amino acids and fatty acids, and it accelerates glycolysis, the pentose phosphate cycle, and glycogen synthesis in liver. It is synthesized in the beta cell of the pancreas. The antibody labels both normal and neoplastic insulin-producing cells. It is useful in identifying insulinoma.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0119A 1 ml ..... #AC-0119	pancreas, insulinoma	cytoplasm

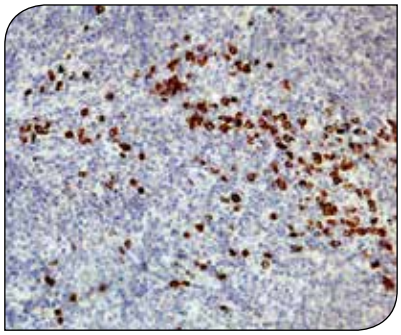


Tonsil stained with anti-Kappa Light Chain

Kappa Light Chain (EP171)

Each immunoglobulin molecule consists of two identical heavy chains and two identical light chains. There are two types of light chains designated as kappa and lambda. The kappa light chain antibody labels kappa light chain expressing B lymphocytes and plasma cells. Other cells may also express kappa light chain due to nonspecific uptake of immunoglobulin. Individual B cells express either kappa or lambda light chains. Monoclonality is generally assumed to be evidence of a malignant proliferation. The pairing of an anti-lambda with a kappa light chain antibody is useful for identifying monoclonality of lymphoid malignancies.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0149A 1 ml ..... #AC-0149	tonsil, B-cell lymphoma	cytoplasm/membrane

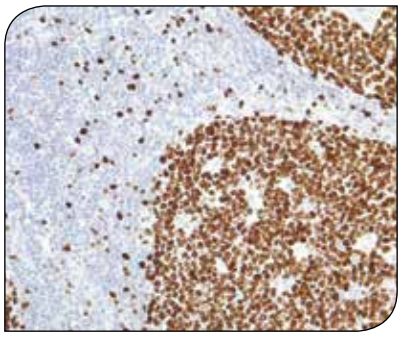


Tonsil stained with anti-Kappa Light Chain

Kappa Light Chain (Polyclonal)

Each immunoglobulin molecule consists of two identical heavy chains and two identical light chains. There are two types of light chains designated as kappa and lambda. The gene rearrangement process that generates the immunoglobulin molecule results in either a productive kappa gene or a productive lambda gene. The mechanics of the rearrangement process normally produce approximately twice as many kappa-bearing cells as lambda. However this ratio loses during malignant transformation. The kappa light chain antibody labels kappa light chain expressing B lymphocytes and plasma cells. Other cells may also express kappa light chain due to nonspecific uptake of immunoglobulin. Individual B cells express either kappa or lambda light chains. Monoclonality is generally assumed to be evidence of a malignant proliferation. Paired with lambda, kappa light chain is useful in identifying monoclonality of lymphoid malignancies.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0069A 1 ml ..... #AC-0069	tonsil, B-cell lymphoma	cytoplasm/membrane

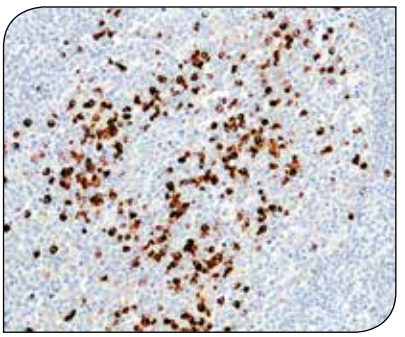


Tonsil stained with anti-Ki-67

Ki-67 (EP5)

Ki-67 antigen is a nuclear antigen specifically associated with cell proliferation. Ki-67 is expressed in all proliferating cells which are in the active phases of the cell cycle (late G1, S, G2, and mitosis), but absent in resting cells. Ki-67 labeling index has been show to be elevated in early stage and further increased in advanced stage of various types of cancer including breast cancer, colon cancer, prostate cancer and brain cancer.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0009A 1 ml ..... #AC-0009	tonsil, lymphoma	nuclear

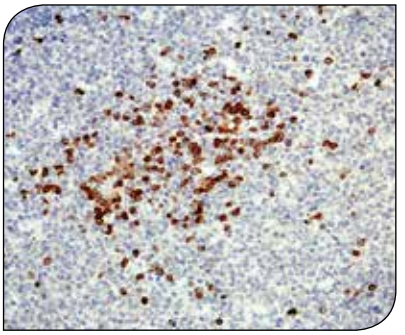


Tonsil stained with anti-Lambda Light Chain

Lambda Light Chain (EP172)

Each immunoglobulin molecule consists of two identical heavy chains and two identical light chains. There are two types of light chains designated as kappa and lambda. The gene rearrangement process that generates the immunoglobulin molecule results in either a productive kappa or lambda gene. The lambda light chain antibody labels the lambda light chain that expresses normal and neoplastic B lymphocytes and plasma cells. Other cells may also express lambda light chain due to nonspecific uptake of immunoglobulin. Individual B cells express either kappa or lambda light chains. Monoclonality is generally assumed to be evidence of a malignant proliferation. The pairing of a kappa with a lambda light chain antibody is useful for identifying monoclonality of lymphoid malignancies.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0150A 1 ml ..... #AC-0150	tonsil, B-cell lymphoma	cytoplasm/membrane

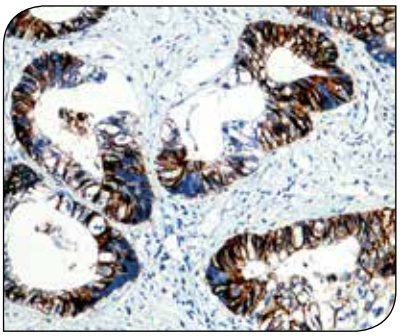


Tonsil stained with anti-Lambda Light Chain

Lambda Light Chain (Polyclonal)

Each immunoglobulin molecule consists of two identical heavy chains and two identical light chains. There are two types of light chains designated as kappa and lambda. The gene rearrangement process that generates the immunoglobulin molecule results in either a productive kappa gene or a productive lambda gene. The mechanics of the rearrangement process normally produce approximately twice as many kappa-bearing cells as lambda. However this ratio loses during malignant transformation. The lambda light chain antibody labels lambda light chain expressing normal and neoplastic B lymphocytes and plasma cells. Other cells may also express lambda light chain due to nonspecific uptake of immunoglobulin. Individual B cells express either kappa or lambda light chains. Monoclonality is generally assumed to be evidence of a malignant proliferation. Paired with kappa, lambda light chain is useful in identifying monoclonality of lymphoid malignancies.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0068A 1 ml ..... #AC-0068	tonsil, B-cell lymphoma	cytoplasm/membrane

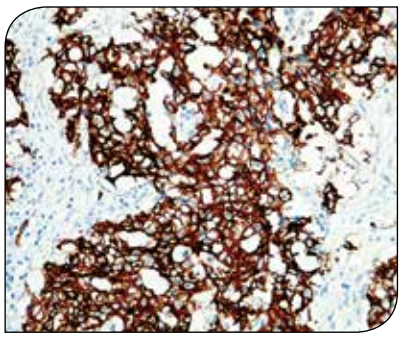


Colon cancer stained with anti-LI-Cadherin

LI-Cadherin (EP86)

LI-Cadherin (Liver-intestine cadherin), also known as Cadherin 17 (CDH17), is a member of the cadherin family. Cadherins are Ca(2+)- dependent transmembrane glycoproteins that mediate cell-cell adhesion and are important for the structural integrity of epithelia. LI-cadherin and the classical E-cadherin are the predominant two cadherins in the intestinal epithelium. LI-cadherin contains seven cadherin repeats and a short cytoplasmic domain that does not interact with catenins or the actin cytoskeleton. It is involved in intestinal peptide transport. In normal tissues, the CDH17 antibody labels epithelial cells in the gastrointestinal tract and pancreatic duct, but not in kidney, liver and other tissues. In tumors, CDH17 is also specifically expressed on adenocarcinoma of the digestive system including liver cancer. Less than 1% of non-GI tract tumors showed immunoreactivity with CDH17. CDH17 is thus considered to be a useful marker for tumors derived from the digestive system. It is a sensitive marker for the identification of gastric intestinal metaplasia and well differentiated adenocarcinomas.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0095RUO 1 ml ..... #AC-0095RUOC	colon, colon carcinoma	membrane

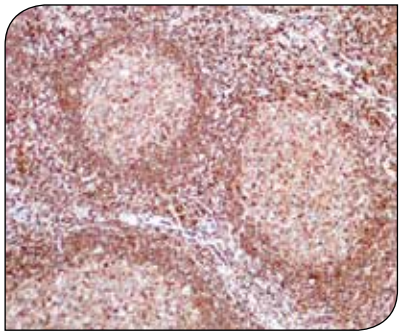


Seminoma stained with anti-LIN28

LIN28 (EP150)

LIN28 is a highly conserved, RNA-binding protein (RBP). It plays an important role as a translational enhancer, leading specific mRNAs to polysomes and therefore increasing the competence of protein synthesis. LIN28 was identified as a negative regulator of miRNA biogenesis and suggested to play a central role in blocking miRNA-mediated differentiation in stem cells and certain cancers. LIN28 is expressed by various undifferentiated embryonic cell types. Anti-LIN28 has been used as a sensitive marker for germ cell tumors. The positive staining of LIN28 in yolk sac tumors showed an advantage over OCT-4, which is negative in these tumors. The nuclear reactivity of this antibody may be observed in the myoepithelial cells of the salivary gland.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0151A 1 ml ..... #AC-0151	germ cell tumor	cytoplasm

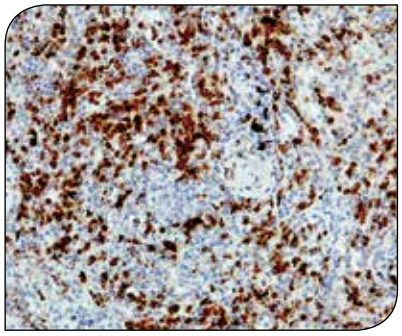


Tonsil stained with anti-LSP1

LSP1 (EP164)

LSP1 (leukocyte-specific protein 1) is an intracellular F-actin binding protein. This protein may regulate neutrophil motility, adhesion to fibrinogen matrix proteins, and transendothelial migration. LSP1 is expressed in lymphocytes, macrophages, and neutrophils. It is a specific marker of human leukocytes. The LSP1 protein was detected in a wide range of leukemias and lymphomas, particularly of B-cell origin, and in tumor cells in classical Hodgkin's disease. In combination with PU.1, LSP1 may be useful in differentiating T-cell-rich B-cell lymphoma (LSP1+, PU.1-) from lymphocyte-predominant Hodgkin's disease (LSP-, PU.1 expression variable).

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0152RUO 1 ml ..... #AC-0152RUOC	tonsil, B-cell lymphoma	cytoplasm/membrane

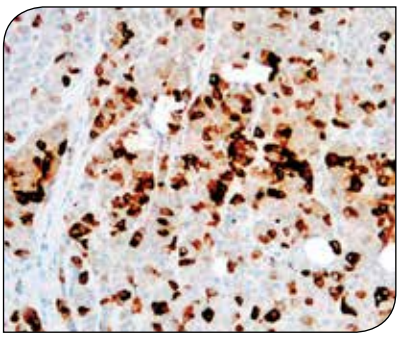


Tonsil stained with anti-Lysozyme

Lysozyme (EP134)

Lysozyme is a ubiquitous enzyme defined as muraminidase catalyzing the hydrolysis of the beta glycosidic bond in bacterial peptidoglycan, a major component of the bacterial cell wall. Lysozyme in tissues and body fluids is associated with the monocyte-macrophage system and enhances the activity of immunoagents. Lysozyme C catalyzes the hydrolysis of certain mucopolysaccharides of bacterial cell walls. Specifically, it catalyzes the hydrolysis of the bacterial cell wall beta glycosidic linkages between N-acetylmuramic acid and N-acetylglucosamine. It is found in the spleen, lung, kidney, white blood cells, plasma, saliva, milk, and tears. Defects in Lysozyme C are a cause of amyloidosis type 8 (AMYL8), also known as systemic non-neuropathic amyloidosis or Ostertag-type amyloidosis. Lysozyme immunoreactivity has been found in myeloid cells, histiocytes, granulocytes, macrophages, and monocytes. It is a good marker for macrophages that are activated in phagocytosis. Lysozyme has been useful in the identification of histiocytoma.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0126RUO 1 ml ..... #AC-0126RUOC	spleen, histiocytic tumor	cytoplasm

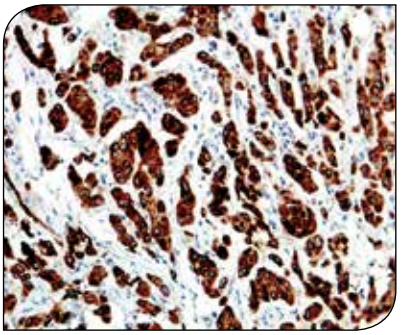


Breast cancer stained with anti-Mammoglobin

Mammaglobin (EP249)

The Mammaglobin gene encodes a 10-kDa glycoprotein that is homolog to human Clara cell 10-kDa protein (CC10)/ uteroglobin. SCGB2A2. Expression of the mammaglobin gene is highly restricted to the adult mammary gland. Antibody to Mammaglobin labels normal breast epithelial cells and breast tumor cells. It is a useful marker for identification of primary and metastatic breast cancer.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0219A 1 ml ..... #AC-0219	breast, breast carcinoma	cytoplasm

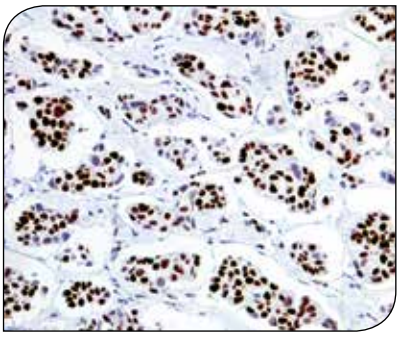


Malignant melanoma stained with anti-MART-1

MART-1 (EP43)

MART-1, also known as Melan-A, is a melanocyte lineage-specific protein (MART-1; melanoma antigen recognized by T cells 1) recognized by the T lymphocytes of patients with established malignancy. MART-1 labels both normal melanocyte and diseased cell with melanocyte differentiation. It is useful for diagnosis of tumors with melanocyte differentiation, especially metastatic melanoma. Identification of MART-1 also opens possibilities for the development of immunotherapies for patients with melanoma.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0041A 1 ml ..... #AC-0041	skin, melanoma	cytoplasm

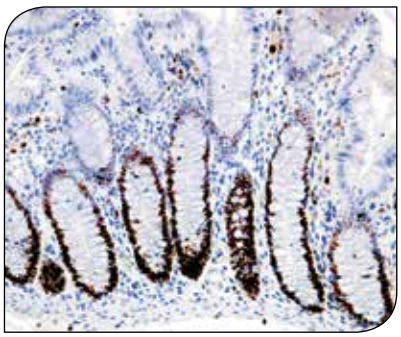


Breast cancer stained with anti-MCM2

MCM2 (EP40)

Minichromosome maintenance protein 2 (MCM2), also known as DNA replication licensing factor MCM2, is a member of the MCM family that regulates mammalian DNA replication. This family is composed of six related subunits, called the hexameric MCM2-7 complex, that are conserved in all eukaryotes. It functions as a replicative helicase, the molecular motor that both unwinds duplex DNA and powers fork progression during DNA replication. MCM2 acts as a factor to license DNA for one and only one round of replication per cell cycle. In the cell cycle, levels of the MCM family gradually increase in a variable manner from G0 into the G1/S phase. In the G0 stage, the amounts of MCM2 and MCM5 proteins are much lower than that of MCM7 and MCM3 proteins, so some of them participate in cell cycle regulation. MCM2 is localized in the nucleus throughout interphase. It is required for entry into the S phase and cell division. Anti-MCM2 labels proliferating cells in normal and tumor tissue. MCM2 has been used as a proliferation marker superior to Ki-67 for identification of premalignant lesions in colon, lung and other epithelial tissues. In addition, the MCM2 antibody is helpful in the distinction of malignant mesothelioma (higher labeling index) from reactive mesothelial proliferation.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0039RUO 1 ml ..... #AC-0039RUOC	tonsil, breast cancer	nuclear

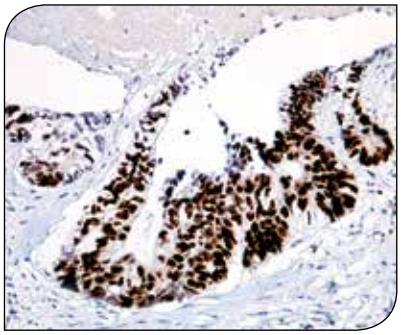


Colon stained with anti-MCM3

MCM3 (EP202)

MCM3 is one of the highly conserved mini-chromosome maintenance proteins (MCM) that are involved in the initiation of eukaryotic genome replication. It is a subunit of the protein complex that consists of MCM2-7, which has been shown to interact directly with MCM5/CDC46. MCM3 also interacts with, and thus is acetylated by, MCM3AP, a chromatin-associated acetyltransferase. The acetylation of this protein inhibits the initiation of DNA replication and cell cycle progression. Increased expression of MCM3 has been demonstrated in various tumors by immunohistochemistry. Studies suggest that MCM3 may be a more reliable proliferation marker than Ki-67 in assessing the growth of tumor. It is a marker for tumor progression.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0187RUO 1 ml ..... #AC-0187RUOC	colon, colon carcinoma	nuclear

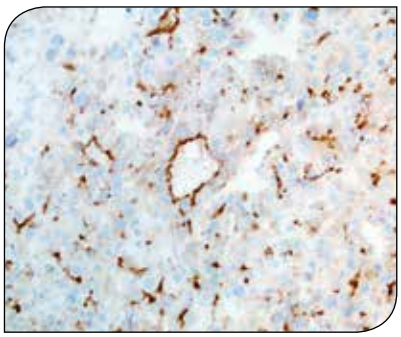


Colon cancer stained with anti-MCM5

MCM5 (EP84)

Minichromosome maintenance protein 5 (MCM5), also known as DNA replication licensing factor MCM5, is a member of the MCM family that regulates mammalian DNA replication. This family is composed of six related subunits, called the hexameric MCM2-7 complex, that are conserved in all eukaryotes. It functions as a replicative helicase, the molecular motor that both unwinds duplex DNA and powers fork progression during DNA replication. MCM proteins are also implicated in other chromosome transactions including damage response, transcription, and chromatin structure. MCM's are central players in many aspects of genome stability. The MCM5 protein is upregulated in the transition from the G0 to G1/S phase of the cell cycle and may actively participate in cell cycle regulation. There is a strong positive correlation between MCM2 or MCM5 expression levels and Ki-67 labeling index. MCM5 may be a useful proliferation marker for skin cancer, colon cancer and is of prognostic value in colon cancer and ovarian cancer in combination with p16/*NK4A* expression

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0094RUO 1 ml ..... #AC-0094RUOC	tonsil, colon carcinoma	nuclear



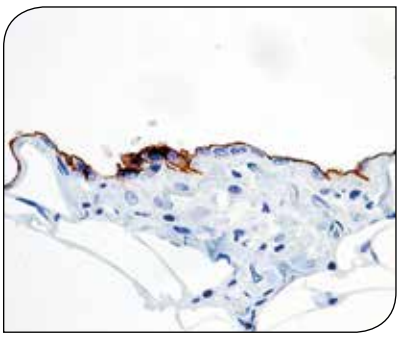
Hepatocellular carcinoma stained with anti-MDR-1

MDR-1 (EP271)

The multidrug resistance protein 1 (MDR-1), also known as P-glycoprotein 1 (PgP), is a conserved plasma membrane protein that functions as an ATP-dependent efflux pump with broad specificity. MDR-1 expression is thought to cause cross-resistance to structurally unrelated anti-cancer drugs, which may decrease intracellular drug concentrations. MDR-1 is typically expressed primarily in regions that act as epithelial barriers or perform excretory function in the liver, kidney, gastrointestinal tract, and the blood-brain barrier. In tumors, MDR-1 is widely expressed in many human cancers, commonly found in colon cancer, renal cancer, hepatocellular carcinoma and hematopoietic malignancies.

Product Availability:	
0.1 ml.....#AC-0251A 1 ml ..... #AC-0251	**USA:** ASR **Japan:** RUO
0.1 ml..... #AC-0251AEU 1 ml ..... #AC-0251EU	**Europe:** IVD

All designations for USA and Europe are IVD unless otherwise noted.
Research Use Only products will have RUO stated in the product number.
All designations for Japan are RUO.

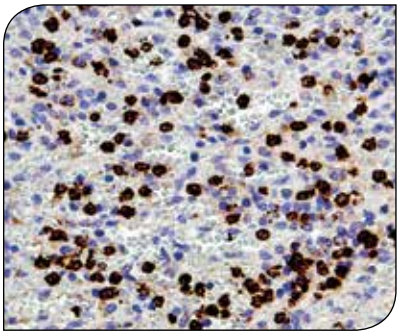


Omentum with anti-Mesothelin

Mesothelin (EP140)

The mesothelin gene encodes a 69-kDa precursor protein that is processed to a 40-kDa glycosylphosphatidylinositol (GPI)-anchored protein, the mature mesothelin, present on the cell surface. Its biological function is not known, but recent studies have shown that it forms a strong and specific complex with MUC16; a binding which has been suggested to be the basis of ovarian cancer metastasis. Mesothelin is present on normal mesothelial cells lining the pleura, peritoneum, and pericardium. In tumors, overexpression of Mesothelin has been observed in mesotheliomas, and other tumors including ovarian, pancreatic carcinomas, and cholangiocarcinoma. By using immunotoxin targeting immunotherapy, mesothelin has also been reported as a new therapeutic target in various types of cancers, such as human cholangiocarcinoma.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0130A 1 ml ..... #AC-0130	mesothelioma	cytoplasm/membrane

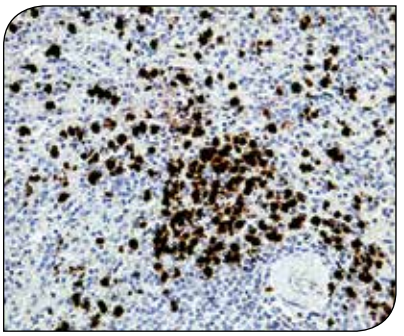


Spleen stained with anti-MMP9

MMP9 (EP127)

Matrix metalloproteinases (MMPs), a family of peptidase enzymes, plays a critical role in degradation of extracellular matrix components in normal physiological processes, such as embryonic development, reproduction, and tissue remodeling, as well as in disease processes. MMP-9, also designated as 92-kDa Type IV Collagenase or gelatinase B is a member of MMPs, which is produced as a 92- kDa pro-enzyme by neutrophils and macrophages as a normal constituent and released into the extracellular environment after activation in inflammatory tissues. MMP-9 is predominantly expressed in neutrophils, macrophages, mast cells and stromal cells. The expression levels of MMP-9 in tumors are elevated compared with the corresponding normal tissues in a variety of cancer types, including breast, colon, gastric and nasopharyngeal cancers.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0122RUO 1 ml ..... #AC-0122RUOC	spleen, breast carcinoma	cytoplasm

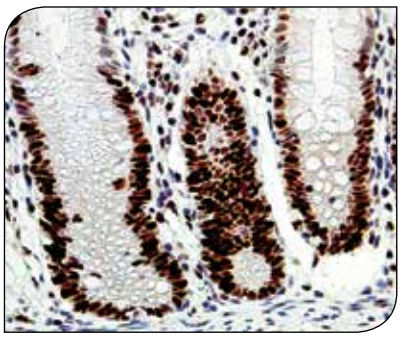


Spleen stained with anti-MRP8 / S100A8

MRP8 / S100A8 (EP90)

Myeloid Related Protein 8 (MRP8), also known as S100A8, is a calcium binding protein that belongs to the S100 family. By a Ca2+ dependent manner, S100A8/A9 forms Calprotectin, a heterodimeric inflammatory mediator of inflammation found in the cytoplasm of neutrophils and expressed on the membrane of monocytes. S100A8 is expressed during myeloid differentiation and chronic inflammations, and it is expressed constitutively or induced in epithelial cells during dermatose. MRP8 is expressed in cells with myeloid origin, including granulocytes, monocytes and macrophages, and it is observed in blood granulocytes and monocytes. It is also expressed in infiltrate macrophages during inflammatory reactions, but not in normal tissue macrophages. MRP8 also reacts with activated microglial cells in human cerebral malaria. In tumors, positive staining of MRP8 has been observed in various cancers including pancreatic cancer, and it has been linked to inflammation-associated cancers.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0097RUO 1 ml ..... #AC-0097RUOC	spleen	cytoplasm/membrane

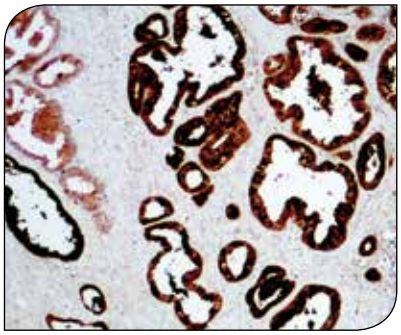


Colon stained with anti-MSH6

MSH6 (EP49)

The MutS homologue 6 protein (MSH6) is a member of the MutS homolog family required in the DNA mismatch repair system. Carriers of the mismatch repair gene mutations have a high lifetime risk of developing Hereditary Non-Polyposis Colon Cancer (HNPCC) and several other cancers, including endometrial cancer due to microsatellite instability (MSI) caused by accumulation of DNA replication errors in proliferating cells. MSH6 antibody is useful for screening and diagnosis of patients with MSI. The level of MSI has been reported to be associated with prognosis in colon cancer.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0047A 1 ml ..... #AC-0047	colon, breast carcinoma	nuclear

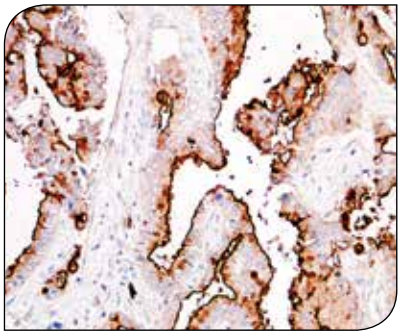


Prostate hyperplasia stained with anti-MSMB

MSMB (PSP94) (EP203)

Beta-microseminoprotein (MSMB) also called prostate secretory protein of 94 amino acids (PSP94), is one of the three predominant proteins secreted by the prostate gland and found in human seminal fluid along with prostate-specfic antigen and prostatic acid phosphatase. Using exogenous MSMB, in vitro and in vivo studies indicate that MSMB may have several anti-tumor effects on prostate tumor cells. MSMB expression is high in normal prostate epithelial cells, but is decreased in prostate cancer cells. Studies have shown that MSMB is a strong independent factor indicating favorable outcome after radical prostatectomy for localized prostate cancer.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0198RUO 1 ml ..... #AC-0198RUOC	prostate	cytoplasm/nuclear

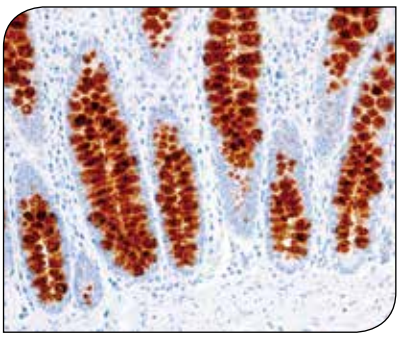


Lung cancer stained with anti-MUC1

MUC1 (EP85)

Mucins are a family of heavily glycosylated high molecular weight glycoproteins. A total 21 mucins have been identified to date. Mucins are well known for its involvement in the protection and lubrication of luminal epithelial surfaces. MUC1, a transmembrane mucin, has been shown to be involved in several signaling pathways, including Ras, beta-catenin, p120 catenin, p53 and estrogen receptor alpha. When MUC1 forms a complex with beta-catenin, it enters the nucleus to activate T-cell factor/leukocyte enhancing factor 1 transcription factors and gene expression. In addition, MUC1 may inhibit cell-cell and cell-stroma interactions and function as a signal transducer, participating in cancer progression. MUC1 is expressed in many types of epithelial cells in gastrointestinal tract, lung, breast, pancreas and genitourinary tract. MUC1 is also detected in activated and unactivated T cells. In some tumors derived from epithelial cells, MUC1 expression is associated with tumor type and invasiveness. MUC1 expression has been correlated with invasive growth of ductal carcinomas (IDC) in the pancreas and cholangiocarcinomas in the liver. MUC2 expression has been associated with the intraductal papillary mucinous tumors of the pancreas, a non-invasive carcinoma. Additionally, MUC1 antibody aids in the prediction of the aggressiveness of carcinomas of the breast, stomach, colon, ampulla of Vater and renal cell carcinoma. Strong correlation has been observed between MUC1 expression and breast cancer progression.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0091A 1 ml ..... #AC-0091	colon, colon carcinoma	cytoplasm/membrane

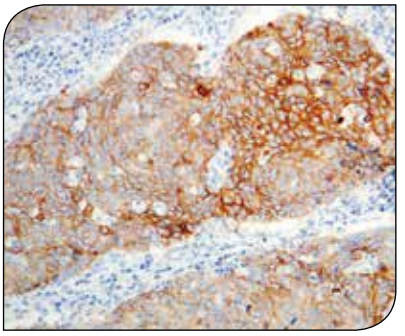


Colon stained with anti-MUC2

MUC2 (EP187)

Mucins are high molecular weight glycoproteins produced by many epithelial tissues. MUC2 is a member of the mucin protein family. MUC2 is secreted and forms an insoluble mucous barrier that protects the gut lumen. MUC2 is the major secretory glycoprotein specifically expressed in goblet cells of the intestinal and airway epithelium. Its expression is a common feature of all mucinous carcinomas derived from different organs including breast, stomach, colon and prostate, where it may act as a potential prognostic indicator.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0188RUO 1 ml ..... #AC-0188RUOC	colon, mucinous	cytoplasm

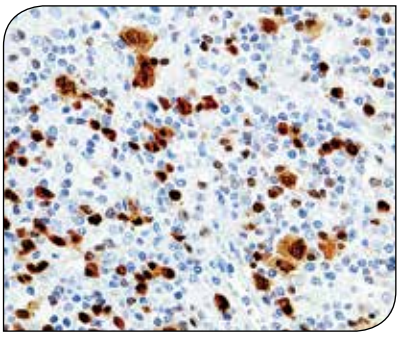


Cervical squamous carcinoma stained with anti-MUC4

MUC4 (EP256)

MUC4 is a high molecular weight glycoprotein that plays an important role in cell proliferation and differentiation of epithelial cells. The MUC4 gene is expressed in various normal epithelial tissues of endodermic origin and carcinomas derived from these tissues. MUC4 antibody labels normal epithelial cells in the trachea, GI tract and prostate, but not in the pancreas. Increased expression of MUC4 has been observed in pancreatic carcinoma and cervical squamous carcinoma. MUC4 is helpful in differentiating lung adenocarcinoma (positive) from malignant mesothelioma (negative). Additionally, MUC4 is useful in the identification of low-grade fibromyxoid sarcoma (LGFMS), and sclerosing epithelioid fibrosarcoma.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0235A 1 ml ..... #AC-0235	colon, lung carcinoma	cytoplasm/membrane

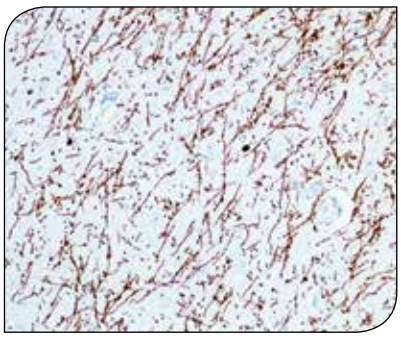


Hodgkin's lymphoma stained with anti-MUM1

MUM1 (EP190)

MUM1 (multiple myeloma oncogene-1, also called IRF4), a member of the IRF family transcriptional factors, is induced by antigen receptor mediated stimuli and plays a crucial role in cell proliferation, differentiation and survival. In the hematolymphoid system, MUM1 is primarily expressed in B cells and actived T-lymphoid cells. In B cells, it is expressed on a small subset of germinal center (GC) cells committed to plasmacytic or memory cell differentiation in the "light zone" and in plasma cells. MUM1 has been identified as a marker of non-germinal center-derived DLBCL, a subtype also associated with more aggressive clinical behavior and poor prognosis, but absent in mantle cell lymphoma (pre-GC B cells) and in follicular lymphoma (GC B cells). MUM1 may be a potential histo-genetic marker for B-cell lymphomas. Additionally, MUM1 is a useful marker for Reed-Sternberg (HRS) cells in Hodgkin's lymphoma.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0186A 1 ml ..... #AC-0186	tonsil, plasmacytoma	cytoplasm/nuclear

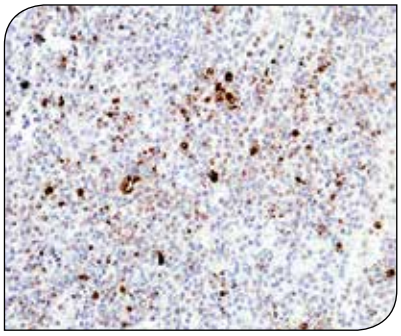


Brain stained with anti-Myelin Basic Protein

Myelin Basic Protein (EP207)

Myelin Basic Protein (MBP) is an intracellular protein with a highly flexible structure found in myelin of the central and peripheral nervous systems (CNS, PNS). MBP is often post-translationally modified in various ways, which includes citrullination, N-terminal acylation, deamidation and phosphorylation. MBP is expressed in oligodendrocytes in the CNS and Schwann cells in the peripheral nervous system. In the abnormal tissues, oligodendroglioma, considered to be derived from oligodendrocytes, highly expresses MBP. MBP has also been found in tumors of the nerve sheath, including schwannoma, neurofibroma, granular cell tumors and neurogenic sarcoma. Additionally, MBP is a sensitive marker for early human fetal myelination.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0189A 1 ml ..... #AC-0189	brain, oligodendroglioma	cytoplasm

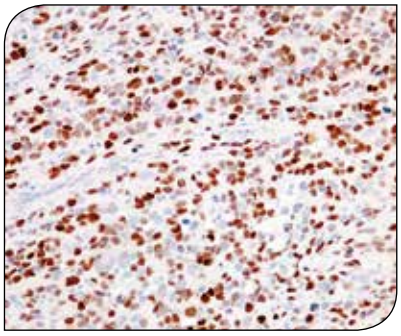


Spleen stained with anti-Myeloperoxidase

Myeloperoxidase (EP151)

Myeloperoxidase (MPO), a heme protein, is a major component of azurophilic granules of neutrophil granulocytes (NGs). Optimal oxygen-dependent microbicidal activity depends on MPO as the critical enzyme for the generation of hypochlorous acid and other toxic oxygen products, which are proposed to contribute to tissue damage during inflammation. MPO is a marker for myeloid cells. It may also be weakly expressed in cells of monocytic origin. It is useful for differentiating acute myelogenous leukemia from acute lymphoblastic leukemia. In addition, MPO is thought to be involved in the pathology Alzheimer's disease.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0153A 1 ml ..... #AC-0153	spleen, myelogenous leukemia	cytoplasm

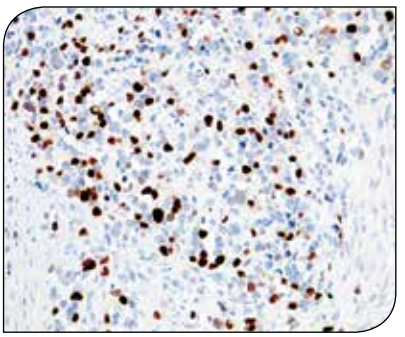


Rhabdomyosarcoma stained with anti-MyoD1

MyoD1 (EP212)

MyoD1 is a protein with a key role in regulating muscle differentiation. It regulates muscle cell differentiation by inducing cell cycle arrest, a prerequisite for myogenic initiation. The protein is also involved in muscle regeneration. MyoD1 is expressed in developing skeletal muscle tissue but faintly in adult skeletal muscle. In abnormal tissues, it labels tumor cells in rhabdomyosarcoma. MyoD1 is one of the earliest markers of myogenic commitment. Anti-MyoD1 has been useful in differentiating rhabdomyosarcomas from other tumors. It is a sensitive and specific marker for myogenic differentiation.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0190A 1 ml ..... #AC-0190	fetal muscle, rhabdomyosarcoma	nuclear

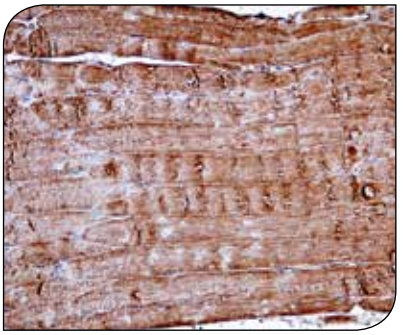


Rhabdomyosarcoma stained with anti-Myogenin

Myogenin (EP162)

Myogenic factors are transcription factors consisting of an amino acid-rich region and a helix-loop-helix (HLH) structure, which can promote muscle development and maintain muscle-specific gene expression by transactivation. Myogenin, one of the myogenic regulatory factors, plays a key role in determining the commitment and differentiation of primitive mesenchymal cells into skeletal muscle. The expression of Myogenin is restricted to cells of skeletal muscle origin, but it is not detected in adult skeletal muscles. It is therefore considered to be an extremely reliable and specific marker for diagnosing rhabdomyosarcomas.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0154A 1 ml ..... #AC-0154	fetal skeletal muscle, rhabdomyosarcoma	nuclear

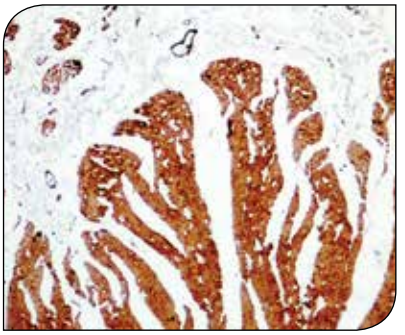


Skeletal muscle stained with anti-Myoglobin

Myoglobin (EP87)

Myoglobin, an intracellular hemoprotein expressed in the heart and oxidative skeletal myofibres of vertebrates, binds molecular oxygen and may facilitate oxygen transport from erythrocytes to mitochondria, thereby maintaining cellular respiration during periods of high physiological demand. Anti-Myoglobin labels skeletal and cardiac muscle cells. In combination with other striated muscle markers such as vimentin and myogenin, myoglobin is helpful in the identification of rhabdomyosarcoma and tumors with skeletal muscle differentiation. Recently, myoglobin has been reported to be expressed on epithelial cancer cells due to changed metabolic and environmental conditions. Myoglobin expression on cancer cells may play a causative role in tumor progression.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0084A 1 ml ..... #AC-0084	skeletal muscle, rhabdomyoma	cytoplasm/nuclear

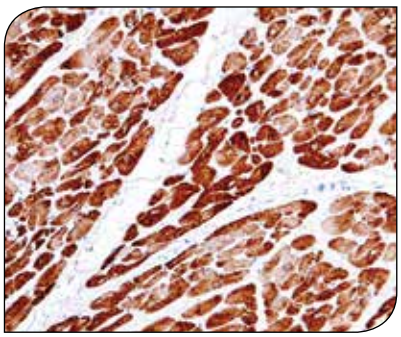


Colon stained with anti-Myosin Heavy Chain

Myosin Heavy Chain 11 (EP166)

Myosin heavy chain 11 (MYH11) is a smooth muscle myosin belonging to the myosin heavy chain family. It is a subunit of a hexameric protein that consists of two heavy chain subunits and two pairs of non-identical light chain subunits. Myosin heavy chain functions as a major contractile protein, converting chemical energy into mechanical energy through the hydrolysis of ATP. An aberration in this protein is associated with acute myeloid leukemia of the M4Eo subtype. MYH labels smooth muscle cells and myoepithelial cells in various tissues. The immunoreactivity in glial cells of the cerebellum and spermatocytes in the testis is also observed. MYH has been a useful marker for myoepithelial cell as well as smooth muscle cell differentiation.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0155RUO 1 ml ..... #AC-0155RUOC	smooth muscle	cytoplasm

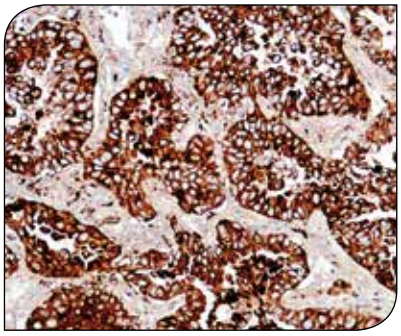


Cardiac muscle stained with anti-Myosin Light Chain 2

Myosin Light Chain 2 (EP99)

Myosin is a hexamer of 2 identical heavy chains and 2 pairs of light chains. The two pairs of light chains of muscle myosins are called essential light chains (ELC) and regulatory light chains (RLC). The light chains stabilize the long alpha helical neck of the myosin head. Myosin light chain-2 (MYL2), also known as the regulatory light chain of myosin, is an important protein involved in the regulation of myosin ATPase activity. Calcium triggers the phosphorylation of MYL2 that in turn triggers contraction. Defects in MYL2 are the cause of cardiomyopathy familial hypertrophic type 10 and mid-left ventricular chamber type 2. An increase in ventricular MYL2 is observed during myocardial hypertrophy in cardiac patients with valve stenosis. This antibody reacts with cardiac and skeletal muscle.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0099RUO 1 ml ..... #AC-0099RUOC	cardiac muscle	cytoplasm



Lung carcinoma stained with anti-Napsin A

Napsin A (EP205)

Napsin A is an aspartic proteinase that belongs to the peptidase A1 family and plays a role in pneumocyte surfactant processing. In normal tissue, Anti-Napsin A specifically labels type II pneumocytes in adult lung and epithelial cells in kidney tissues. In abnormal tissues, Napsin A is strongly positive in over 80% of primary lung adenocarcinomas and 79% of renal cell carcinoma by immunohistochemistry. Napsin A is a useful marker for lung adenocarcinoma. The combined use of Napsin A and thyroid transcription factor-1 (TTF-1) improves the sensitivity and specificity for identification of pulmonary adenocarcinoma.

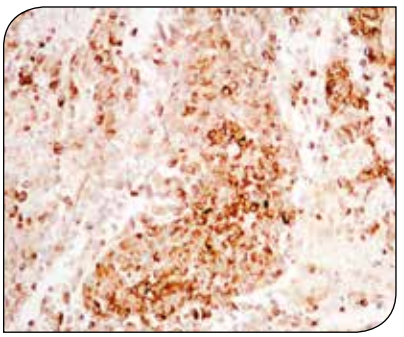
Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0191A 1 ml ..... #AC-0191	lung, lung adenocarcinoma	cytoplasm

Prostate hyperplasia stained with anti-NDRG1

NDRG1 (EP200)

The N-myc downregulated gene 1 (NDRG1) is a 43 KDa protein that contains a NDRG1 core domain and three unique tandem repeats of 10 hydrophilic amino acids near the COOH terminus, which is ubiquitously expressed in different mammalian tissues and modulates cell growth, differentiation and apoptosis. Although the exact biological function of NDRG1 remains obscure, studies suggest that NDRG1 is a direct transcriptional target gene of p53 to mediated cell death and apoptosis. NDRG1 has been identified as a protein involved in the differentiation of epithelial cells. One of the most well documented links between NDRG1and pathophysiology is its association with inhibition of tumor metastasis. The reduced expression of NDRG1 was found to be associated with tumor metastasis in a variety of tumors, including cancers of the breast, colon, prostate, oral cavity and oropharynx. On the other hand, overexpression of NDRG1 in hepatocellular carcinoma has been an indicator of tumor aggressiveness.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0199RUO 1 ml ..... #AC-0199RUOC	prostate hyperplasia	cytoplasm/membrane

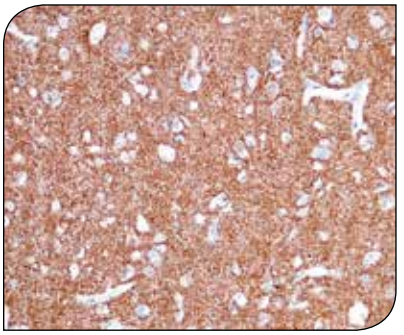


Melanoma stained with anti-Nestin

Nestin (EP287)

Nestin is a class VI intermediate filament involved in cytoskeletal formation. Nestin facilitates processes of cellular rearrangement such as migration and mitosis, which are characteristics of undifferentiated cells. Nestin was first identified in the nervous system present in mitotically active central and peripheral progenitor cells that developed into neurons and glia during early neurogenesis. Studies have shown that Nestin is expressed in proliferating endothelial cells, thus, may serve as an important marker for angiogenesis. Nestin expression has been reported in melanoma and a wide variety of brain tumors including schwannomas and gliomas. Nestin expression in glioma can be indicative of tumor progression.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0252A 1 ml ..... #AC-0252	fetal brain, glioma	cytoplasm

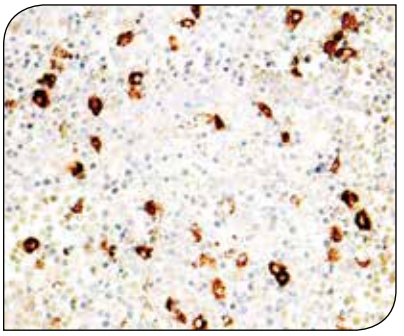


Brain stained with anti-Neurofilament

Neurofilament (EP79)

Neuofilaments (NF) are members of the intermediate filament protein family. These neuron-specific filaments are the major constituents of the axonal cytoskeleton. NFs are composed of three major proteins: NF-H is the heavy molecular weight protein (200 kDa), NF-M the medium (160 kDa) and NF-L the light protein (68 kDa). The NF-L and NF-M mRNAs are detected early in the embryonal brain, with a progressive increase in their levels during development, while the NF-H mRNA is barely detectable at embryonal stages but accumulates later in the postnatal brain. This antibody labels neurons of the central and peripheral nervous system, and is a useful for the identification of tumors with neuronal differentiation.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0075A 1 ml ..... #AC-0075	brain	cytoplasm

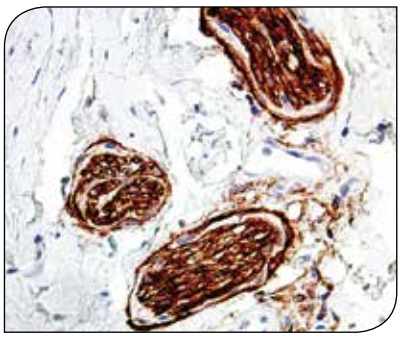


Bone marrow stained with anti-Neutrophil Elastase

Neutrophil Elastase (EP223)

Neutrophil Elastase (NE) is a 220 residue, single chain glycoprotein that functions as a potent serine protease. NE can degrade Omp, a structural protein localized on the cell wall of Gram-negative bacteria, and also has the capacity to attenuate the pathogenicity of invading microbes by targeting their virulence factor. NE is expressed in developing granulocytes in the bone marrow, stored in the azurophilic (primary) granules of mature neutrophils and released upon neutrophil activation or disintegration. Despite the fact that neutrophils carry large amount of NE, and are capable of synthesizing a variety of proteins, the NE gene is not expressed in mature neutrophils. Also, NE can be used as an additional marker to differentiate the involvement of neutrophilic myeloid cells. This marker is useful for differentiating leukemic infiltrates of myeloproliferative processes in lymph nodes and other organs from undifferentiated carcinomas and/or histiocytic sarcomas or large cell lymphomas.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0253A 1 ml ..... #AC-0253	spleen, granulocytic leukemia	cytoplasm

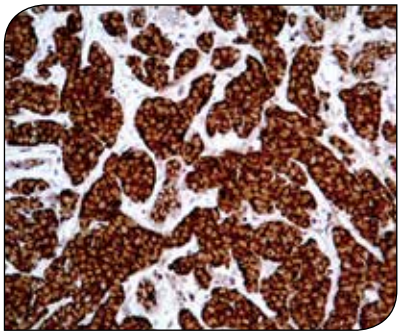


Neural tissue stained with anti-NGFR

NGFR (EP31)

NGFR, also known as p75NTR, is a receptor of neurotrophins and involved in survival, differentiation and apoptosis of neurons. It is expressed in neuronal cells in various tissues and tumors with neuronal origin. Recent studies suggested that NGFR is also expressed in melanocytes, myoepithelial cells, basal-like cells, perivascular cells and lymphoid dendritic cells. NGFR is helpful in identification of perineural invasion of malignant skin tumors with a panel of antibodies. It is also a complementary marker to S-100 for identification of desmoplastic melanomas. In addition, NGFR may be used in identifying myoepithelial or basal-like cell differentiation in breast cancer.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0030A 1 ml ..... #AC-0030	pancreas, melanoma	cytoplasm

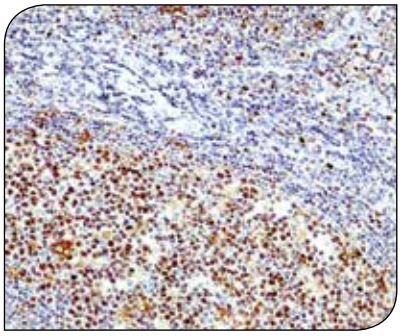


Breast carcinoma stained with anti-NM23

NM23 (EP276)

NM23 has been identified as a metastatic suppressor gene, encoding a nucleoside diphosphate kinase. It was reported that differential regulation of NM23 by p53 in different cell types is an important component in the molecular mechanisms of tumor metastasis. NM23 expression has been associated with tumor progression in many types of tumors including cancers of the breast, colon, ovarian, and pancreas.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0254RUO 1 ml ..... #AC-0254RUOC	breast carcinoma	cytoplasm/nuclear

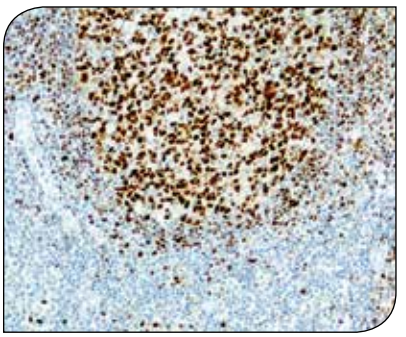


Tonsil stained with anti-OCT-2

OCT-2 (EP115)

Octamer transcription factor-2 (OCT-2) possesses a leucine zipper domain and belongs to the POU family of transcription factors. It specifically binds to the octamer motif (5-ATTTCAT-3), activates immunoglobulin gene expression and regulates transcription in a number of tissues. OCT-2 is important for the expression of B-cell specific genes, such as CD20 and CRISP-3. OCT-2 is expressed in mature B cells, predominantly germinal center B cells. Low expression of OCT-2 has been found in immature B cells, T cells and myelomonocytic cells. OCT-2 reactivity in epithelial cells and neuronal cells has also been reported. The OCT-2 antibody labels various B-cell lymphomas with strong expression in germinal center-derived lymphomas. In a study on Hodgkin's lymphoma (HL), OCT-2 positivity has been observed in 15 out of 15 lymphocyte predominance HLs, but none of the 29 classic HLs.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0111RUO 1 ml ..... #AC-0111RUOC	tonsil, lymphoma	nuclear

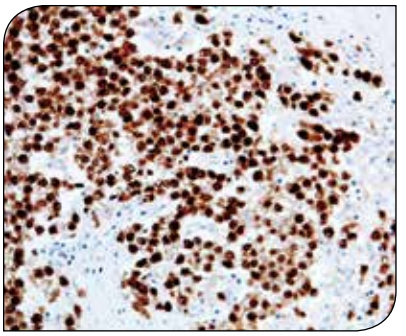


Tonsil stained with anti-OCT-2

OCT-2 (EP284)

Octamer transcription factor-2 (OCT-2) possesses a leucine zipper domain and belongs to the POU family of transcription factors. It specifically binds to the octamer motif (5-ATTTCAT-3), activates immunoglobulin gene expression and regulates transcription in a number of tissues. OCT-2 is important for the expression of B-cell specific genes, such as CD20 and CRISP-3. OCT-2 is expressed in mature B cells, predominantly germinal center B cells. Low expression of OCT-2 has been found in immature B cells, T cells and myelomonocytic cells. OCT-2 reactivity in epithelial cells and neuronal cells has also been reported. The OCT-2 antibody labels various B-cell lymphomas with strong expression in germinal center-derived lymphomas. In a study on Hodgkin's lymphoma (HL), OCT-2 positivity has been observed in 15 out of 15 lymphocyte predominance HLs, but none of the 29 classic HLs.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0274A 1 ml ..... #AC-0274	tonsil, non Hodgkin's lymphomas	nuclear

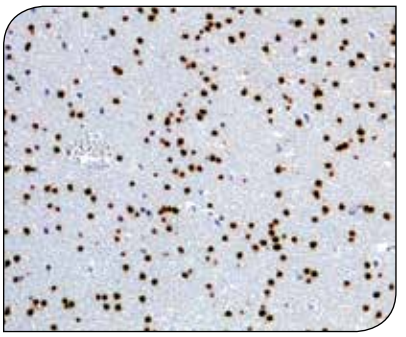


Seminoma stained with anti-OCT-4

OCT-4 (EP143)

OCT-4, also known as OTF3 or POU5F1, is a member of the POU family of transcription factors, involved in the regulation of pluripotency during normal development and is detectable in embryonic stem and germ cells. It can specifically bind to the octamer motif (5'-ATTTCAT-3'), and it is critical for the self-renewal of embryonic stem cells. Overall, OCT-4 is a key regulator of self-renewal in embryonic stem cells; its expression is potentially correlated with tumorigenesis and can affect some aspects of tumor behavior such as tumor recurrence or resistance to therapies. OCT-4 is expressed in undifferentiated pluriopotency cells, germ cells in ovary and testes. OCT-4 is a sensitive and specific marker for germ cell tumors. It is consistently detected in carcinoma *in situ*/gonadoblastoma, seminomas, germinoma, dysgerminoma, and embryonal carcinoma but not in the differentiated components of nonseminomas, i.e., teratomas, yolk sac tumors, and choriocarcinomas. An antibody to OCT-4 is useful in the identification of primary as well as metastatic germ cell tumors.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0128A 1 ml ..... #AC-0128	seminoma	nuclear

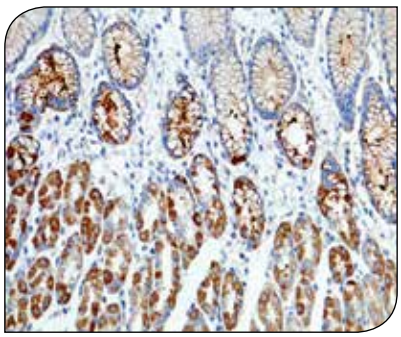


Brain stained with anti-OLIG2

OLIG2 (EP112)

Oligodendrocyte transcription factor 2 (OLIG2) is a transcription factor with basic helix-loop-helix (bHLH) domains that have fundamental roles in neuronal and glial production. It is required for oligodendrocyte and motor neuron specification in the spinal cord, as well as for the development of somatic motor neurons in the hindbrain. As a result, it plays a critical role in motor neuron and oligodendrocyte fate specification during development. It cooperates with OLIG1 to establish the pMN domain of the embryonic neural tube. The expression of OLIG2 is normally restricted to neural tissues; however, overexpression of OLIG2 has been shown in patients with precursor T-cell lymphoblastic lymphoma/leukemia. OLIG2 is a useful marker for the identification of oligodendroglioma. The expression level of OLIG2 in anaplastic oligodendrogliomas was more uniform and intense than in other glial tumors. Several primary brain tumors with clear cell histology, oligodendroglioma (OG), clear cell ependymoma (CCE) and central neurocytoma (CN) show different clinical and biological behavior; thus, prognosis and therapeutic approaches differ significantly. Anti-OLIG2 is useful in discriminating OG or dysembryoplastic neuroepithelial tumors (DNTs, OLIG2 positive) from CCE, CN and clear cell meningioma that are mostly negative for OLIG2.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0106RUO 1 ml ..... #AC-0106RUOC	brain, oligodendroglioma	nuclear

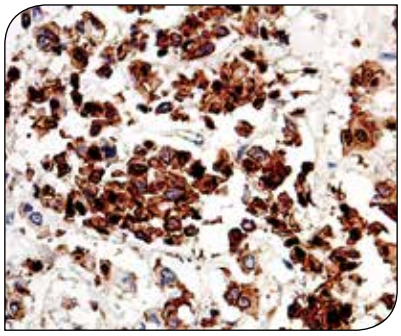


Stomach stained with anti-Osteopontin (SPP1)

Osteopontin (SPP1) (EP106)

Osteopontin, also known as Phosphoprotein 1 (SPP1), is an acidic, calcium-binding glycol-phosphoprotein of 44 to 66 kDa, depending on species and cell type. Osteopontin interacts with integrins and CD44. It has been shown to be multifunctional in cell migration, cell survival, inhibition of calcification, regulation of immune cell function, development and regeneration of skeletal muscle, and control of tumor cell phenotype. Osteopontin is found in all body fluids and secreted by osteoclasts, macrophages, cardiac fibroblasts, and activated T cells. Immunohistochemical analysis shows that Osteopontin is widely expressed in many types of cells including epithelial cells of the gastrointestinal tract, gall bladder, pancreas, urinary and reproductive tracts, lung, breast, salivary glands, and sweat glands. Osteopontin is overexpressed in a variety of human malignancies, including breast, lung, ovarian, gastric, hepatocellular, and prostate carcinomas, mesothelioma, and melanoma. It was proposed to be a potential prognostic marker in ovary cancer, prostate cancer, mesothelioma, and melanoma. In addition, Osteopontin is considered to be a potential marker for atypical teratoid/rhabdoid tumor, a highly malignant central nervous system tumor, commonly seen in infancy and childhood.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0102RUO 1 ml ..... #AC-0102RUOC	stomach, gastric carcinoma	cytoplasm

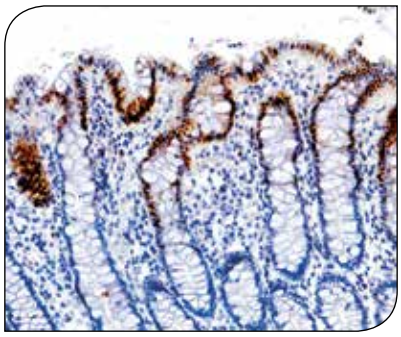


Breast lobular cancer stained with anti-p120 Catenin

p120 Catenin (EP66)

Catenins are proteins that are linked to the cytoplasmic domain of transmembrane cadherins. p120 Catenin is a member of this Armadillo gene family of junctional plaque proteins. The association of catenins to cadherins produces a complex which is linked to the actin filament network, and which seems to be important for cadherins cell-adhesion properties. Cytoplasmic accumulation of p120 Catenin has been observed in lung cancer, pancreatic cancer, gastric cancer and colon cancers and is associated with poor progress in colon cancer patients. In breast lobular neoplasia, p120 Catenin shows a diffuse cytoplasmic immunostaining pattern, while breast ductal neoplasia retains the membrane immunostaining pattern. p120 Catenin is useful in differentiation of lobular carcinoma from ductal carcinoma of the breast and in identifying early lesions of lobular neoplasia.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0063A 1 ml ..... #AC-0063	breast, breast lobular carcinoma	cytoplasm/membrane

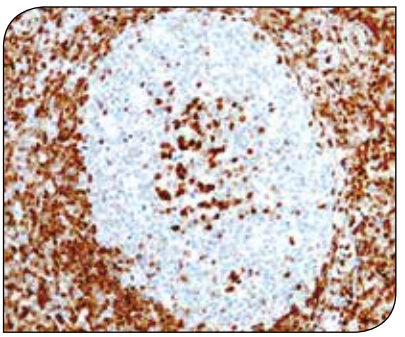


Colon stained with anti-p21

p21 (EP147)

p21 / WAF1, also known as cyclin-dependent kinase inhibitor 1 or CDK-interacting protein 1, is a protein that in humans is encoded by the CDKN1A gene located on chromosome 6 (6p21.2). The p21 protein binds to and inhibits the activity of cyclin-CDK2 or -CDK4 complexes, and thus functions as a regulator of cell cycle progression at G1. p21 is expressed in all adult human tissues. In tumors, the expression of p21 has been studied by immunohistochemical methods in a wide range of human tumors, such as gastric carcinoma, non-small cell lung carcinoma, and thyroid carcinoma. The expression of p21 is associated with favorable prognosis in various tumors.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0156A 1 ml ..... #AC-0156	colon, colon carcinoma	cytoplasm/nuclear

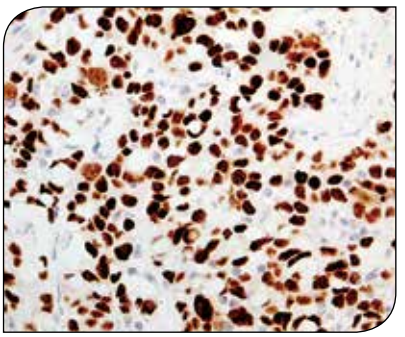


Tonsil stained with anti-p27^{Kip1}

p27^{Kip1} (EP104)

p27^{Kip1} is a cyclin-dependent kinase inhibitor involved in G1 arrest. p27^{Kip1} binds to and inhibits cyclinE-Cdk2 complex, cyclinA-CDK2 and cyclinD1-CDK4 (1). p27^{Kip1} is regulated by phosphorylation on serine 10 (S10) and threonine 187 (T187). Phosphorylation by CDK2 on T187 results in ubiquitination and degradation of p27^{Kip1}, while phosphorylation by hKIS on S10 signals nuclear export to the cytoplasm. The expression level of p27^{Kip1} is high in normal cells. Downregulation of p27^{Kip1} is found in many types of cancers, and decreased expression of p27^{Kip1} appears to be a poor prognostic factor in several tumor models, including carcinomas of the lung, breast, colon, and prostate.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0109A 1 ml ..... #AC-0109	tonsil	cytoplasm/nuclear

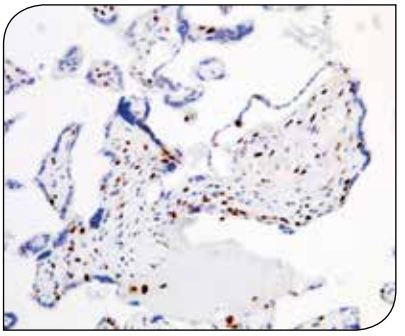


Breast cancer stained with anti-p53

p53 (EP9)

p53 acts as both a tumor-suppressor and transcription factor that, upon activation by DNA damage and other cellular stress signals, leads to the transcription of genes triggering cell-cycle arrest, apoptosis, and DNA repair. p53 is overexpressed in over 50% of human cancers. Positive staining of p53 detected by immunohistochemistry has been observed in colon cancer, breast cancer, lung cancer, prostate cancer and ovarian cancer.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0010A 1 ml ..... #AC-0010	colon carcinoma	nuclear

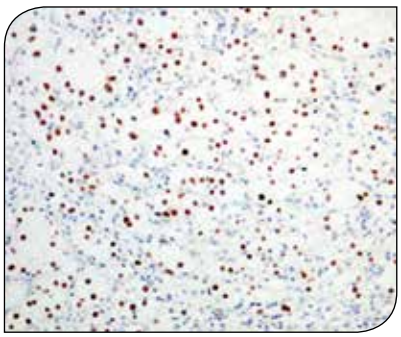


Placenta stained with anti-p57^{Kip2}

p57^{Kip2} (EP183)

p57^{Kip2} is a potent, tight-binding inhibitor of several G1 cyclin/Cdk complexes, and its binding is cyclin dependent. Its over-expression leads to arrest of the cell in G1 phase. Human p57^{Kip2} appears to have conserved the amino- and carboxy-terminal domains but has replaced the internal regions with sequences containing proline-alanine repeats. Expression patterns suggest a complex role for p57^{Kip2} cell cycle control and development. Because complete hydatidiform moles lack a maternal genome, p57^{Kip2} immunostaining is correspondingly absent, whereas hydropic abortuses and partial moles show positive staining. p57^{Kip2} is a marker distinguishing complete hydatidiform moles (negative) from partial moles (positive).

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0205A 1 ml ..... #AC-0205	placenta, partial moles	nuclear

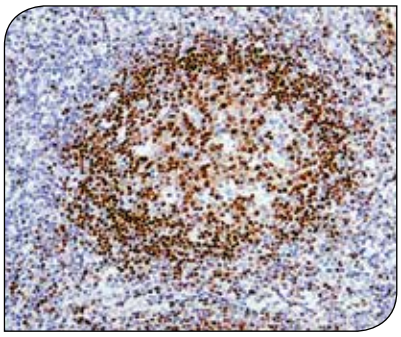


Renal clear cell carcinoma stained with anti-PAX2

PAX2 (EP235)

PAX2 is a member of the paired box family of transcription factors, which is required for development and proliferation of the kidney, brain, and müllerian organs. PAX2 genes contain a highly conserved DNA sequence within the paired box region, which encodes a DNA-binding domain, enabling PAX proteins to bind the promoters of specific genes to transcriptionally regulate their expression. PAX2 is specifically expressed in the developing central nervous system, eye, ear, and urogenital tract, and is essential for the development of these organs. In normal adult tissues PAX2 was mainly detected in the urogenital system, including kidney, ureteric epithelium, fallopian tube epithelium, ovary and uterus. In tumors, PAX2 has been detected in renal cell carcinomas, Wilms' tumors, nephrogenic adenomas and papillary serous carcinoma of the ovary. PAX2 has been used as a marker for the identification of renal cell carcinoma and ovarian carcinoma by immunohistochemistry.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0236A 1 ml ..... #AC-0236	fetal kidney, renal clear cell carcinoma	nuclear

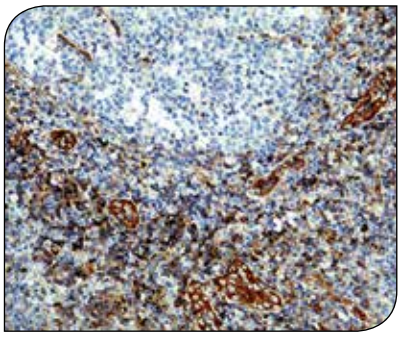


Tonsil stained with anti-PAX5

PAX5 (EP156)

PAX5 is a B-cell lineage specific activator protein (BSAP) that is essential for maintaining the identity and function of mature B cells during late B lymphopoiesis. It also plays a role in neural development and spermatogenesis. PAX5 is expressed in pro-, pre-, and mature B cells, and it is expressed in the vast majority of B-cell malignancies. Anti-PAX5 is a specific marker for the B-cell lineage. PAX5 is thus useful in a panel of antibodies for the identification of cellular origin of undifferentiated tumors. The expression of PAX5 in endocrine tumors has been shown to be high in Merkel cell carcinoma and small cell carcinoma, but not carcinoid tumor. PAX5 is also a marker for neuroendocrine carcinomas.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0158A 1 ml ..... #AC-0158	tonsil, B-lymphoblastic neoplasm	nuclear

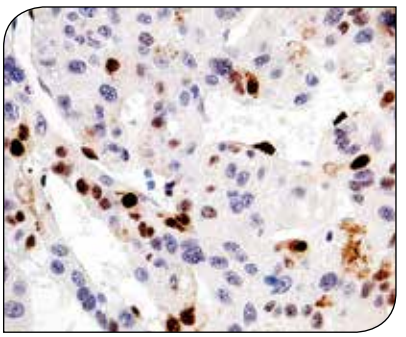


Tonsil stained with anti-Paxillin

Paxillin (EP89)

Paxillin is a cytoskeletal protein involved in actin-membrane attachment at sites of cell adhesion to the extracellular matrix (focal adhesion). It is a multidomain protein. The C-terminal region of paxillin contains four LIM domains that target paxillin to focal adhesions, presumably through a direct association with the cytoplasmic tail of beta-integrin. The N-terminus of paxillin controls most of its signaling activity. The proteins that bind to paxillin are diverse and include protein tyrosine kinases, such as Src and FAK, structural proteins, such as vinculin and actopaxin, and regulators of actin organization, such as COOL/PIX and PKL/GIT. Paxillin is widely expressed in epithelial cells of various tissues, neuronal cells and mesenchymal derived cells. An antibody to Paxillin is helpful in differentiating between renal cell carcinoma (Paxillin -) and chromophobe renal cell carcinoma or renal oncocytoma (Paxillin +), which are rare renal tumors originating from the intercalated cells of collecting ducts. Paxillin has been reported to be involved in tumor invasion and metastasis. Its expression in lung and liver cancers has been correlated with advanced tumor stage and metastasis.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0096RUO 1 ml ..... #AC-0096RUOC	tonsil	cytoplasm

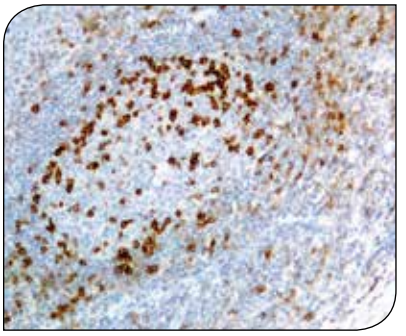


Liver cancer stained with anti-PCNA

PCNA (EP91)

Proliferating cell nuclear antigen (PCNA) is a DNA polymerase accessory factor that is required for DNA replication during S phase of the cell cycle and for resynthesis during nucleotide excision repair of damaged DNA. The PCNA antibody detects proliferating cells in both normal and tumor cells. Anti-PCNA labeling index has been shown to be associated with tumor prognosis.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0087A 1 ml ..... #AC-0087	tonsil, colon carcinoma	nuclear



Tonsil stained with anti-PD-1

PD-1 (PDCD1) (EP239)

Programmed death-1 (PD-1), also known as CD279, is a receptor for PDL1 and PDL2. PD-1 plays a crucial role in regulating peripheral tolerance and tumor immunity. PD-1 is expressed mainly on a subset of activated T cells, B cells and myeloid cells. Increased expression of PD-1 has been reported to be associated with poor prognosis in hepatocellular carcinoma (HCC) and renal cell carcinoma. PD-1 positivity has been found in angioimmunoblastic lymphoma, but not other subtypes of T-cell and B-cell non-Hodgkin lymphoma and classic Hodgkin lymphoma. PD-1 is a useful marker for angioimmunoblastic lymphoma.

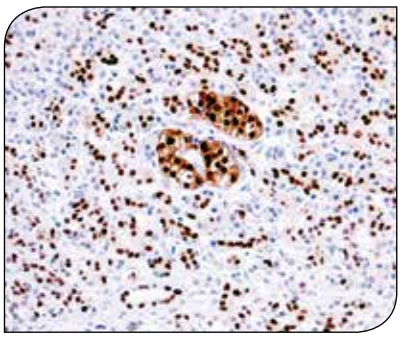
Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0255RUO 1 ml ..... #AC-0255RUOC	tonsil, renal cell carcinoma	cytoplasm/membrane

Colon stained with anti-PDCD4

PDCD4 (EP102)

Programmed cell death protein 4 (PDCD4) was initially identified as a differentially expressed protein during apoptosis. It acts as a tumor suppressor that inhibits tumor promoter-induced neoplastic transformation. It down-regulates the expression of MAP4K1, thus inhibiting events important in driving invasion, namely, MAPK85 activation and consequent JUN-dependent transcription. PDCD4 expression has been found in both normal and tumor cells. Reduced expression of PDCD4 is frequently observed in tumors. Loss of PDCD4 expression has been correlated with tumor progression and prognosis in cancers of the lung, ovary, pancreas and esophagus. Nuclear expression of PDCD4 was associated with a longer disease-free and overall survival rate of esophageal cancer.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0100RUO 1 ml ..... #AC-0100RUOC	colon, colon carcinoma	cytoplasm/nuclear

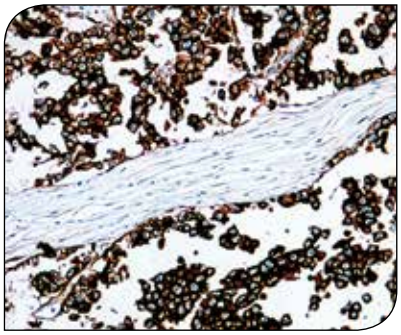


Pancreas stained with anti-PDX1

PDX1 (EP139)

PDX1 (Pancreatic and duodenal homeobox 1), also known as insulin promoter factor 1, is a transcription factor necessary for pancreatic development and β-cell maturation. Mutations in the PDX-1 gene have been shown to cause pancreatic agenesis, maturity-onset diabetes of the young, and type II diabetes. PDX1 is initially expressed in the gut region of the embryo and selectively expressed in adult endocrine glands such as pancreatic beta-cells, Brunner's glands of the duodenum and pyloric endocrine cells of the stomach. In pancreas, PDX1 may be observed in a subset of exocrine and duct cells. Increased expression of PDX1 has been reported in tumors of the pancreas, colon and prostate, indicating that PDX1 may serve as a biomarker in patients with these malignancies.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0131RUO 1 ml ..... #AC-0131RUOC	pancreas	nuclear

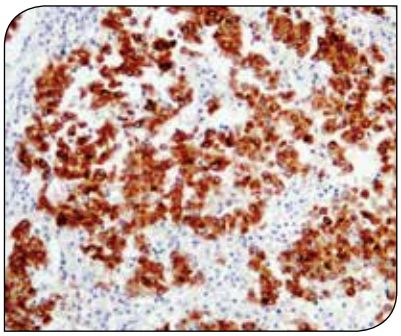


Seminoma stained with anti-PLAP

PLAP (EP194)

Alkaline phosphatases (ALP) are dimeric enzymes by glycosylphosphatidylinositol anchors to the cell membrane. There are at least four distinct but related isozymes: placenta ALP (PLAP), germ cell ALP (PLAP-like or GCAP), intestinal ALP (IAP) and non-specific tissue ALP (TNAP). These isozymes may serve to guide migratory cells, to transport specific molecules such as fat and immunoglobulins across membranes or to detoxify lipopolysaccharide and prevent bacterial invasion across the gut mucosal barrier. This antibody specifically recognizes PLAP and GCAP. PLAP is expressed in the human placenta beginning late in the first trimester of pregnancy. GCAP is expressed in normal endocervix and fallopian tube. Ectopic expression of GCAP is associated with germ cell tumors: intratubular germ cell neoplasia, unclassified (IGCNU), seminoma, embryonal carcinoma and choriocarcinoma. PLAP has been used as a marker for germ cell tumor. Clinically, it is useful for the identification of primary intracranial germinoma.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0192A 1 ml ..... #AC-0192	placenta, germ cell tumor	cytoplasm/membrane

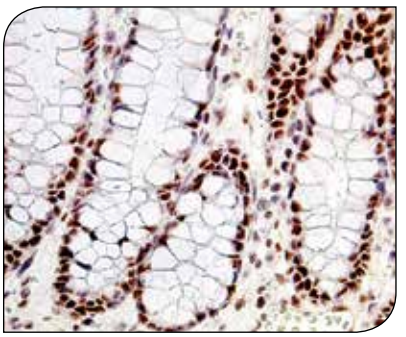


Melanoma stained with anti-PMEL 17

PMEL17 (EP240)

PMEL17 / GP100 is a melanocyte-specific type I transmembrane glycoprotein. It is enriched in melanosomes, which are the melanin-producing organelles in melanocytes, and plays an essential role in the structural organization of premelanosomes. PMEL17 / GP100 is involved in generating internal matrix fibers that define the transition from stage I to stage II melanosomes. PMEL17 expression is melanocytic-cell-lineage-restricted and with significant transcript levels in all stages of melanoma progression, including early and amelanotic melanoma lesions. The PMEL17 antibody specifically labels melanoma cells.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0216A 1 ml ..... #AC-0216	melanoma	cytoplasm

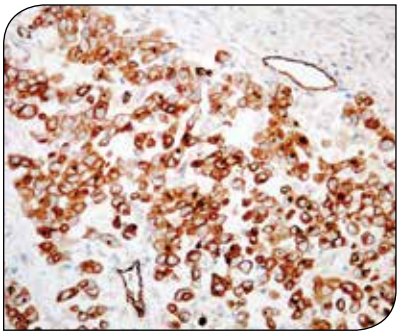


Colon stained with anti-PMS2

PMS2 (EP51)

PMS2, a mismatch repair endonuclease, is a member of a family of genes involved in DNA mismatch repair. Carriers of the mismatch repair gene mutations have a high lifetime risk of developing Hereditary Non-Polyposis Colon Cancer (HNPCC) and several other cancers including endometrial cancer due to microsatellite instability (MSI) caused by accumulation of DNA replication errors in proliferating cells. Along with MLH1, MSH2 and MSH6, PMS2 antibody is helpful in diagnosis of MSI. An IHC study conducted by Mayo Clinic on 535 cases with MSI-high, 90% of the tumors showed loss of MLH1, MSH2 and/or MSH6 expression, while 70% of the remaining cases showed isolated loss of PMS2 expression. The loss of PMS2 was associated with young age of diagnosis and right-sided location but not with a striking family history of cancer. Endometrial carcinomas are the most common non-colorectal cancers associated with Lynch syndrome. The most common IHC abnormality in endometrial carcinomas with MSI was concurrent loss of MLH1/PMS2. Adding of PMS2 and MSH6 to MLH1 and MSH2 antibodies increased sensitivity for diagnosis of MSI. Tumors with low-level MSI show unfavorable pathological characteristics compared to tumors with no MSI and tumors with high-level MSI.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0049A 1 ml ..... #AC-0049	colon	nuclear

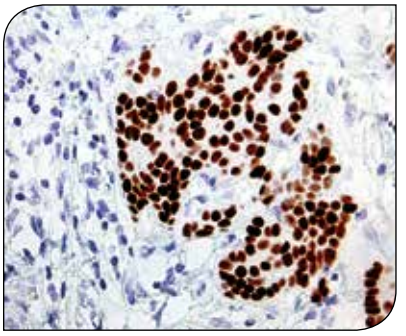


Gastric carcinoma stained with anti-PODXL

PODXL (EP248)

Podocalyxin-like 1 (PODXL) is an anti-adhesive transmembrane protein belonging to the CD34 family of sialomucins. Podocalyxin-like 1 inhibits cell–cell interaction through charge-repulsive effects, and functions as an anti-adhesive molecule that maintains an open filtration pathway between neighboring foot processes in the podocyte. PODXL is primarily expressed in vascular endothelial cells. A high level of expression has been found in kidney podocytes. Overexpression of PODXL associated with poor prognosis has been found in several types of malignancies including cancers of the breast, prostate, and colon and malignant astrocytoma.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0221RUO 1 ml ..... #AC-0221RUOC	kidney, breast carcinoma	cytoplasm/membrane

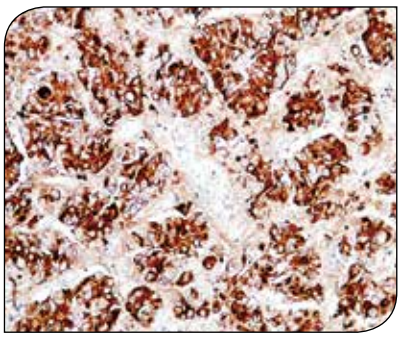


Breast cancer stained with anti-Progesterone Receptor

Progesterone Receptor (EP2)

The human progesterone receptor (PR), is a ligand-activated transcription factor and is a member of the steroid receptor family. PR exists in humans as two isoforms; PR-A (94 kDa) which lacks the first 164 amino acids of PR-B and PR-B (114 kDa). While the two forms of PR have similar DNA- and ligand-binding affinities they have opposite transcriptional activities. PR-B functions as an activator of progesterone-responsive genes, while PR-A functions as a strong transdominant repressor of PR-B. This anti-PR recognize both PR-A and PR-B. It labels epithelial cells of breast, ovary and endometrium.

Product Availability:	
0.1 ml.....#AC-0028A 1 ml ..... #AC-0028	**USA:** ASR **Japan:** RUO
0.1 ml..... #AC-0028EUA 1 ml ..... #AC-0028EU	**Europe:** IVD

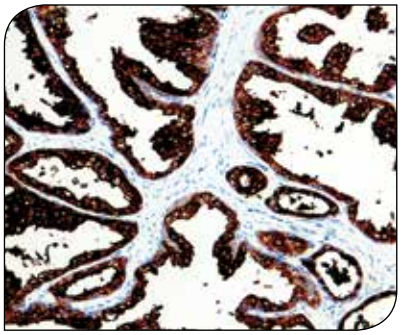


Pituitary gland stained with anti-Prolactin

Prolactin (EP193)

Prolactin is a peptide hormone secreted by the anterior pituitary that is necessary for the proliferation and differentiation of the mammary glands. Prolactin also acts in a cytokine-like manner and as an important regulator of the immune system. Prolactin has important cell cycle related functions as a growth, differentiating and anti-apoptotic factor. Prolactin is secreted by lactotrophs in the anterior pituitary. Prolactin producing cells make up approximately 20 percent of the pituitary. Elevated counts of these cells have been observed in pregnant women, newborns and in multiparous women. An antibody to prolactin is useful for the identification of pituitary tumors.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0159A 1 ml ..... #AC-0159	anterior pituitary, prolactinoma	cytoplasm

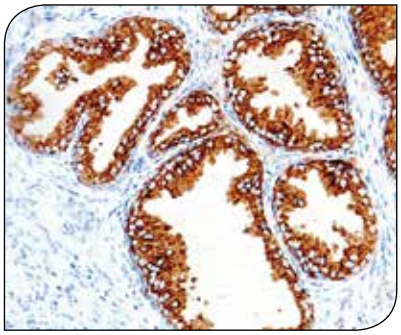


Prostate tumor stained with anti-Prostate Specific Antigen

Prostate-Specific Antigen (PSA) (EP109)

Prostate-specific antigen (PSA) is a serine protease member of the human glandular kallikrein family. It is synthesized in the prostate ductal and acinar epithelium and diffused into serum. It is found in normal, hyperplastic, and malignant prostate tissue. Low expression of PSA has been reported in other normal or tumor tissues such as urethral, periurethral, and perianal glands, salivary duct carcinoma, and rare mammary carcinomas. Although low PSA expression has been found in other tissues, PSA is still a specific and sensitive marker for immunohistochemical analysis of tumors with prostate epithelial cell differentiation. It is valuable in the identification of metastatic tumors of prostatic origin.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0070A 1 ml ..... #AC-0070	prostate, prostate carcinoma	cytoplasm

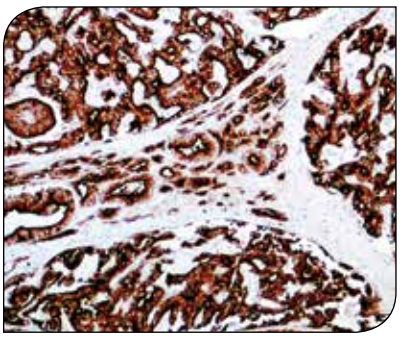


Prostate stained with anti-Prostatic Acid Phosphatase

Prostatic Acid Phosphatase (EP53)

Prostatic Acid Phosphatase (PAP), a member of the histidine acid phosphatase family, is an enzyme that is a major component of prostatic fluid and secreted by the epithelial cells of the prostate gland. PAP labels normal prostate epithelial cells, hyperplastic and cancer cells of prostate. It is helpful in the identification of tumors with prostate origin.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0051A 1 ml ..... #AC-0051	prostate, prostate carcinoma	cytoplasm

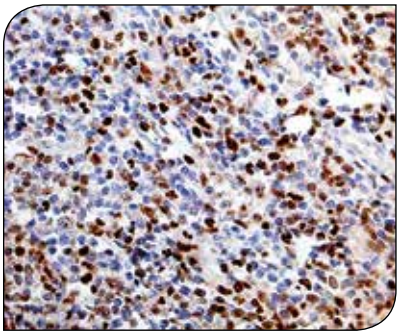


Prostate carcinoma stained with PSMA

PSMA (EP192)

Prostate-specific membrane antigen (PSMA), also known as folate hydrolase 1(FOLH1), is a type II transmembrane glycoprotein belonging to the M28 peptidase family. PSMA has two enzymatic activities, one as a prostate-specific integral membrane folate hydrolase and the other as a carboxypeptidase. An antibody to PSMA labels normal prostate epithelial cells and prostate tumor cells. Although the expression of PSMA in neovasculature of a variety of solid tumors has been reported, PSMA expression is highly restricted to the prostate. It is a useful marker for prostate tumors. In prostate cancer, overexpression of PSMA is correlated with high tumor grade, non-diploid tumors, and advanced tumor stage. It can be used as an effective predictor for tumor progression in prostate cancer.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0160A 1 ml ..... #AC-0160	prostate, prostate carcinoma	cytoplasm/membrane

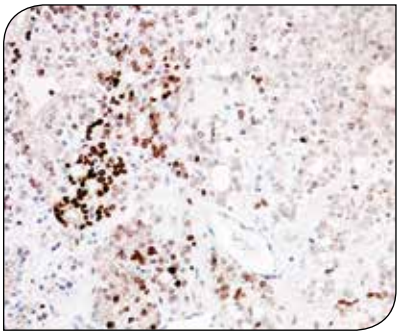


Tonsil stained with anti-PU.1

PU.1 (EP18)

PU.1 is a member of the Ets family of transcription factors and is required for the development of multiple hematopoietic lineages. It plays a pivotal role in normal myeloid differentiation, and regulates the expression of immunoglobulin and other genes that are important for B-cell development. PU.1 stains B lymphocytes in germinal center and mantle B cells, but not plasma cells. It labels many types of B-cell lymphomas including mantle cell lymphoma, but is not expressed in classical Hodgkin lymphoma (cHL). The lack of transcription factor PU.1 protein expression in cHL, a lymphoproliferative disease of predominantly B-cell origin, likely contributes to the lack of immunoglobulin expression and incomplete B-cell phenotype characteristic of the Reed-Sternberg cells in cHL.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0021A 1 ml ..... #AC-0021	tonsil, lymphoma	nuclear

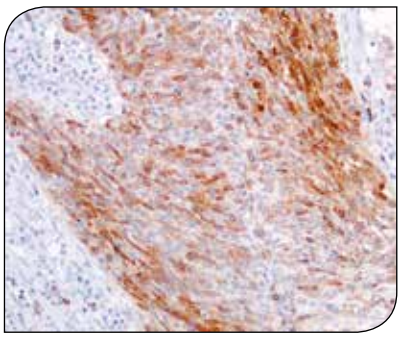


Prostate carcinoma stained with anti-RAD51

RAD51 (EP189)

RAD51 family members are known to be involved in the homologous recombination and repair of DNA. This protein can interact with the ssDNA-binding proteins RPA and RAD52, and it is thought to play roles in homologous pairing and strand transfer of DNA. RAD51 is also found to interact with BRCA1 and BRCA2, which may be important for the cellular response to DNA damage. High levels of RAD51 expression is associated with tumor progression in a variety of human malignancies including cancers of the breast, prostate and lung. Assessment of RAD51 expression may be of value in the determination of cancer treatment response.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0193RUO 1 ml ..... #AC-0193RUOC	breast carcinoma	cytoplasm/nuclear

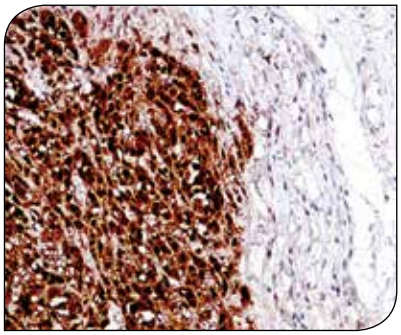


Lung squamous carcinoma stained with anti-RRM1

RRM1 (EP242)

Ribonucleoside-diphosphate reductase large subunit (RRM1) is one of two non-identical subunits that constitute ribonucleoside-diphosphate reductase, an enzyme essential for the production of deoxyribonucleotides prior to DNA synthesis in S phase of dividing cells. Studies have shown that RRM1 controls cell proliferation through deoxynucleotide production and metastatic propensity through PTEN induction. RRM1 expression is significantly correlated with the expression of ERCC1 and PTEN in non-small-cell lung cancer (NSCLC). Tumors with high expression of RRM1 showed slow progression.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0217RUO 1 ml ..... #AC-0217RUOC	tonsil	cytoplasm

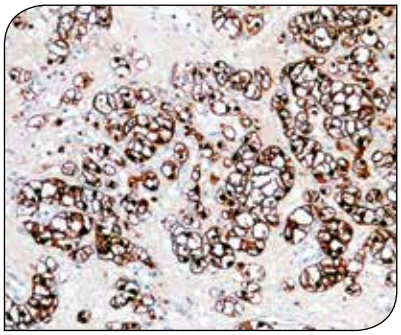


Melanoma stained with anti-S100 Beta

S100 Beta (EP32)

S100 Beta is a homodimeric member of the S100 superfamily. S100 is a family of Ca2+-binding proteins, comprised of 19 members that are differentially expressed in a large number of cell types. The protein has been implicated in cellular processes such as cell differentiation and growth. S100 Beta is abundant in glial cells of the central and peripheral nervous system, in melanocytes, chondrocytes, and adipocytes. It also labels Langerhans cells, histiocytes, epithelial cells, myoepithelial cells and integrating reticular cells of lymphoid tissue, and tumors originated from these cells. S100 Beta is a useful marker for diagnosis of melanoma and tumors of nervous system.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0031A 1 ml ..... #AC-0031	skin, melanoma	cytoplasm

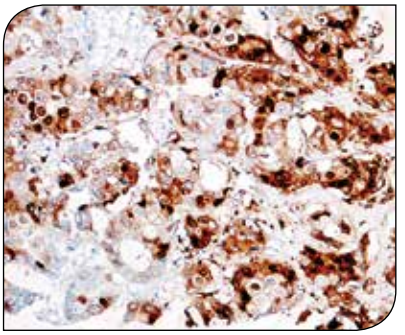


Kidney clear cell tumor stained with anti-S100A1

S100A1 (EP184)

S100A1 is a member of the S100 family of proteins containing 2 EF-hand calcium-binding motifs. S100 proteins are involved in the regulation of a number of cellular processes such as cell cycle progression and differentiation. S100A1 may function in stimulation of Ca2+-induced Ca2+ release, inhibition of microtubule assembly and inhibition of protein kinase C-mediated phosphorylation. In normal tissues, S100A1 is expressed in cardiac muscle, skeletal muscle and neuronal cells. Reduced expression of S100A1 has been implicated in cardiomyopathies. Recent studies have shown that S100A1 protein is present in renal oncocytomas and clear cell and papillary renal cell carcinomas but not in chromophobe renal cell carcinomas. It is thus useful in distinguishing between these tumors. S100A1 was also found in 94% of nephrogenic adenoma but negative in prostate carcinoma. It is a specific and sensitive marker for nephrogenic adenoma.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0194RUO 1 ml ..... #AC-0194RUOC	heart muscle, papillary renal cell carcinoma	cytoplasm/nuclear

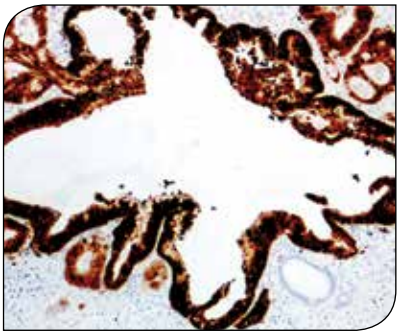


Breast carcinoma stained with anti-S100A9

S100A9 (EP185)

S100A9, also known as MRP14, is a member of the S100 family of proteins containing two EF-hand calcium-binding motifs. It forms a heterodimer, Calprotectin, with S100A8 in a calcium-dependent manner. S100A9 may function in the inhibition of casein kinase and altered expression of this protein is associated with the disease cystic fibrosis. S100A9 is expressed in granulocytes, monocytes in peripheral blood and in infiltrating macrophages in inflammatory sites but not in normal tissue macrophages. Elevated plasma levels of S100A9 have been observed in inflammatory disorders such as chronic bronchitis, cystic fibrosis and rheumatoid arthritis. S100A9 is also detected in tumor cells in carcinomas of the liver, lung, breast and thyroid. The expression of S100A9 is correlated with tumor differentiation.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0195RUO 1 ml ..... #AC-0195RUOC	spleen, inflammatory tissue	cytoplasm/nuclear

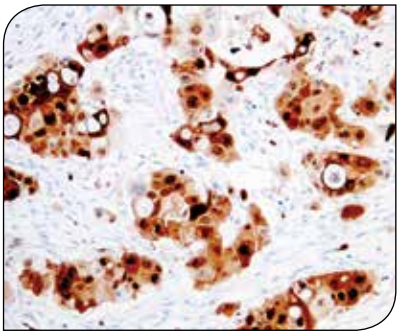


Pancreatic carcinoma stained with anti-S100P

S100P (EP186)

S100P is a member of the S100 family of proteins. S100P is expressed in various normal tissues including placenta, bladder, spleen, gastric and intestinal mucosa. Overexpression of S100P has been detected in several cancers such as colon, prostate, pancreatic and lung carcinomas. It has been functionally implicated in carcinogenic processes. S100P is an early developmental marker of pancreatic carcinogenesis and can be used as a marker for pancreatic ductal adenocarcinoma. It may also serve as a predictor of distant metastasis and poor survival in non-small cell lung carcinomas.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0161RUO 1 ml ..... #AC-0161RUOC	placenta, pancreatic ductal adenocarcinoma	cytoplasm/nuclear

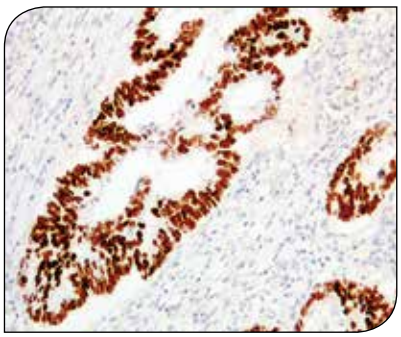


Pancreatic cancer stained with anti-S100P

S100P (EP234)

S100P is a member of the S100 family of proteins containing 2 EF-hand calcium-binding motifs. S100 proteins are localized in the cytoplasm and/or nuclei of a wide range of cells, and they are involved in the regulation of a number of cellular processes such as cell cycle progression and differentiation. S100P is expressed in various normal tissues including placenta, bladder, spleen and gastric and intestinal mucosa. Overexpression of S100P has been detected in several cancers such as colon, prostate, pancreatic and lung carcinomas. It has been functionally implicated in carcinogenic processes. S100P is an early developmental marker of pancreatic carcinogenesis and can be used as a marker for pancreatic ductal adenocarcinoma. It may also serve as a predictor of distant metastasis and poor survival in non-small cell lung carcinomas.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0208A 1 ml ..... #AC-0208	placenta, pancreatic ductal adenocarcinoma	cytoplasm/nuclear

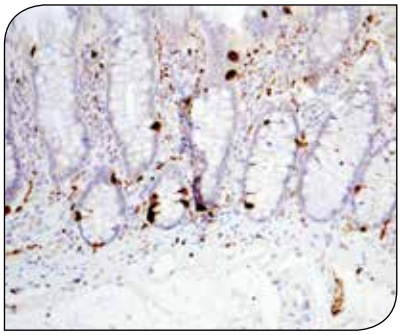


Colon carcinoma stained with anti-SATB2

SATB2 (EP281)

DNA-binding protein SATB2, also known as Special AT-rich sequence-binding protein 2, is a nuclear matrix-associated transcription factor. SATB2 acts as a docking site for chromatin remodeling enzymes and recruits co-activators and co-repressors to control nuclear gene expression. SATB2 also regulates skeletal development, osteoblast differentiation, and modulates immunoglobulin expression. In normal tissues, strong nuclear SATB2 expression is observed in essentially all glandular cells lining the lower gastrointestinal tract, including the appendix, colon, and rectum. SATB2 is also expressed in a subset of neuronal cells from the cerebral cortex and hippocampus. In tumor tissues, SATB2 is detected in cancer cells of colorectal origin and may function as a clinically useful diagnostic marker for colorectal cancer (CRC). In a multi-cohort study with 1882 primary and metastatic CRCs, SATB2 shows high sensitivity (85%) for CRC, which is further enhanced to 93% when stained in conjunction with Cytokeratin 20. A recent study showed SATB2 expression in 89% of medullary carcinomas of the large intestine. SATB2 has been suggested as a valuable prognostic marker: high SATB2 expression was determined as an independent marker of good prognosis and sensitivity to chemotherapy and radiation in CRC while loss of SATB2 expression was correlated with poor prognosis in laryngeal carcinoma patients.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0268A 1 ml ..... #AC-0268	colon, colorectal cancer	nuclear

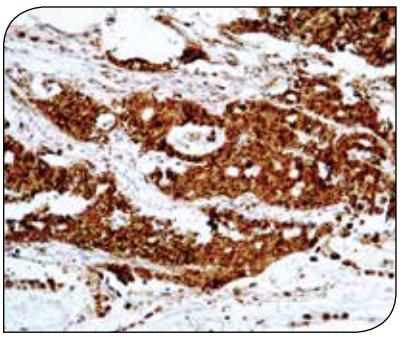


Colon stained with anti-SCGN

SCGN (EP237)

Secretagogin (SCGN) is a novel calcium-binding protein which consists of six EF-hand domains. This protein was first identified as a pancreatic β-cell specific calcium-binding protein. SCGN has been detected in neuroendocrine cells of the pancreas and GI tract. In the central nervous system, SCGN was detected in a neuron-specific expression pattern with high expression in basket and stellate cells of the cerebellar cortex, in secretory neurons of the anterior region of the pituitary gland and in singular neurons of the frontal and parietal neocortex. Remarkable staining intensity was observed in hypothalamic and in hippocampal neurons. Co-localization of SCGN with other neuroendocrine markers (chromogranin A, neuron-specific enolase and synaptophysin) has been observed in neuroendocrine cells of normal mucosa. SCGN can be used to detect small cell lung cancers. Compared to chromogranin A, SCGN is more sensitive in the identification of a subset of neuroendocrine tumors, such as gastric neuroendocrine cancers and typical carcinoid tumors of rectum and ovary. SCGN is a useful marker for neuroendocrine differentiation.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0224A 1 ml ..... #AC-0224	pancreas, small cell carcinoma	cytoplasm

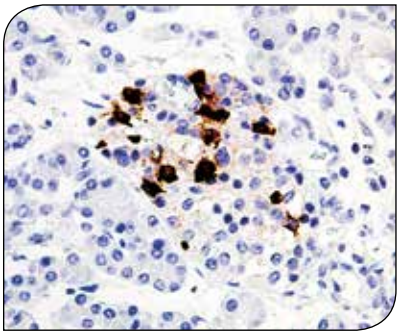


Colon carcinoma stained with anti-SDHB

SDHB (EP288)

Succinate dehydrogenase (SDH) is Complex II in the mitochondria, vital for mitochondrial electron transport, as well as Krebs cycle function. SDH catalyzes the oxidation of succinate to fumarate and transfers electrons to ubiquinone through the coordination of its four subunits (SDHA, SDHB, SDHC, and SDHD). The SDH complex functions as a tumor suppressor. Loss of any subunit proteins lead to destabilization of the complex and tumor formation. SDH subunit B (SDHB) is ubiquitously expressed in normal tissues. Germline mutations in SDHB, SDHC, or SDHD genes predispose development of phaeochromocytoma, paraganglioma and gastrointestinal stromal tumor (GIST). SDHB immunohistochemistry is helpful in the identification of phaeochromocytomas, paragangliomas or GIST with SDHB mutation.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0256RUO 1 ml ..... #AC-0256RUOC	colon, colon carcinoma	cytoplasm

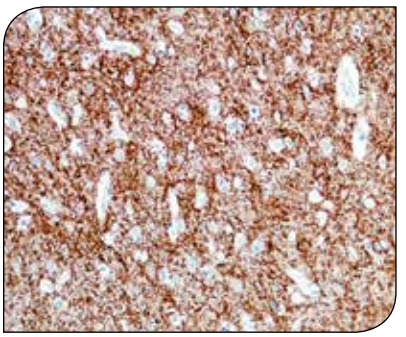


Pancreas stained with anti-Somatostatin

Somatostatin (EP130)

Somatostatin is a peptide hormone that regulates the endocrine system and affects neurotransmission and cell proliferation via interaction with G-protein-coupled somatostatin receptors and inhibition of the release of numerous secondary hormones. This hormone has two active forms produced by alternative cleavage of a single preproprotein: somatostatin-14, composed of 14 amino acids and somatostatin-28, a prohormone composed of 28 residues. Somatostatin is secreted by D cells of the islets of Langerhans in pancreas, endocrine cells of the gastrointestinal tract, bronchopulmonary system, thymus, and C cells of the thyroid. Somatostatin positive cells may also be present in medullary thyroid carcinomas, C-cell hyperplasia, thymic tumors and pulmonary small cell carcinomas. An antibody to Somatostatin can be used to identify pancreatic islet cell hyperplasia as well as islet cell tumors, such as somatostatinomas.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0127RUO 1 ml ..... #AC-0127RUOC	pancreas, somatostatinomas	cytoplasm

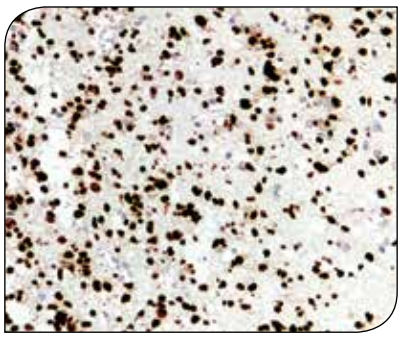


Brain stained with anti-SSTR2

Somatostatin Receptor Type 2 (EP149)

Somatostatin Receptor Type 2 (SSTR2) is one of five 7-transmembrane G-protein-coupled receptors for somatostatins 14 and 28. An antibody to SSTR2 labels neural and endocrine cells in normal tissues. SSTR2 is detected in tumors of neural and endocrine origin, including meningiomas, neuroblastomas, pituitary adenomas, small cell lung carcinomas and carcinoid tumors. The expression of SSTR2 in breast carcinoma and lymphoma may also be observed. The rabbit monoclonal antibody is known for its superior sensitivity and specificity. Fischer et al. compared this monoclonal with polyclonal SSTR2 antibodies, and they found that this SSRT2 (EP149) may overcome a number of limitations inherent to polyclonal antibodies and is valuable in IHC detection of SSTR2 in human tumors.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0162RUO 1 ml ..... #AC-0162RUOC	brain, neuroendocrine tumor	cytoplasm/membrane

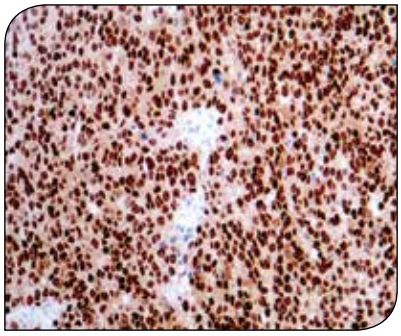


Oligodendroglioma stained with anti-SOX2

SOX2 (EP103)

SOX2 is a member of the SRY-related HMG-box (SOX) family of transcription factors involved in the regulation of embryonic development and in the determination of cell fate. It is required for stem cell maintenance in the central nervous system, and it also regulates gene expression in the stomach. SOX2 is necessary for regulating multiple transcription factors that affect Oct 3/4 expression. An essential function of SOX2 is to stabilize embryonic stem cells in a pluripotent state by maintaining the requisite level of Oct 3/4 expression.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0101RUO 1 ml ..... #AC-0101RUOC	fetal brain, glioma	nuclear

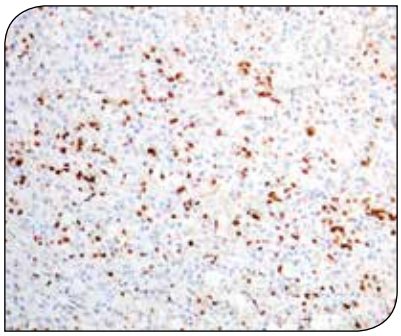


Melanoma stained with anti-SOX10

SOX10 (EP268)

SOX10 is a member of the SRY-related HMG-box (SOX) family of transcription factors involved in the regulation of embryonic development and in the determination of cell fate. During development, SOX10 first appears in the forming neural crest and continues to be expressed in Schwann cells. It is important for differentiation, maturation and maintenance of Schwann cells and melanocytes. In normal tissues, SOX10 is expressed in Schwann cells and glial cells in the nervous system. It is also detected in melanocytes and epithelial cells of salivary gland and mammary gland. In tumor tissues, SOX10 labels melanoma and tumors of neural crest origin. A recent study reported the expression of SOX10 in basal-like, unclassified triple-negative breast carcinoma. Thus, breast carcinoma must be considered in the differential diagnosis of melanoma for a SOX10-positive metastatic malignant neoplasm.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0237A 1 ml ..... #AC-0237	brain, melanoma	nuclear

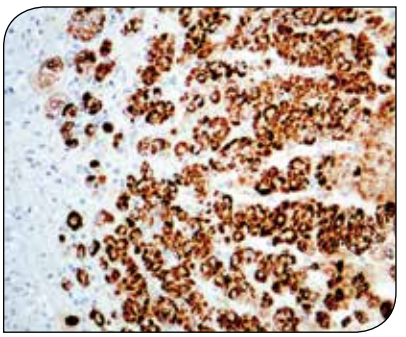


Spleen stained with anti-Spectrin

Spectrin (EP251)

Spectrin alpha chain, erythrocytic 1 (SPTA1) is a member of the family of alpha-spectrin proteins. It is primarily composed of 22 spectrin repeats which are involved in dimer formation. Spectrin antibodies react with erythroid cells at all stages of maturation in the bone marrow. Spectrin is a useful target in identification of erythroid leukemias. It may be a superior marker to Glycophorin A for the identification of erythroid precursors in paraffin-embedded sections.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0238A 1 ml ..... #AC-0238	erythroid cells in normal tissue, erythroid leukemia	cytoplasm/membrane

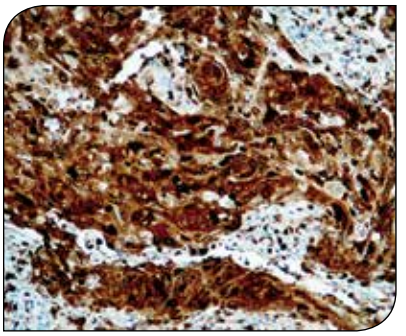


Adrenal gland stained with anti-STAR

STAR (EP226)

Steroidogenic acute regulatory protein (STAR), is a rapidly synthesized labile mitochondrial phosphoprotein whose expression, activation and extinction is regulated by protein kinase A (PKA) and protein kinase C (PKC), as well as a host of other signaling pathways. STAR is primarily present in steroid-producing cells, including Leydig cells in the testis, theca cells and luteal cells in the ovary and adrenal cells in the adrenal cortex. Low level of STAR expression in other tissues that produce steroid hormones for local use have been reported. STAR is a sensitive and specific marker for Leydig cell tumor. It is useful for differential diagnosis of sex-cord stromal tumor (SCST).

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0239A 1 ml ..... #AC-0239	testis, Leydig cell tumor	cytoplasm

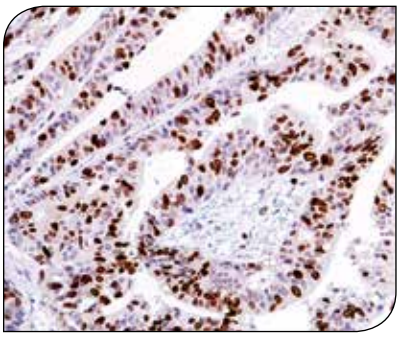


Cervical squamous cell carcinoma stained with anti-Stathmin

Stathmin (EP247)

Stathmin, also known as oncoprotein 18 (Op18), is a ubiquitously expressed 19 kDa cytosolic phosphoprotein responsible for integrating various cellular regulatory signals. Stathmin has been implicated in both G1-S and G2-M checkpoint control of cell cycle progression and plays a major role in cell proliferation, differentiation, development and morphogenesis. Overexpression of Stathmin has been associated with tumor progression in endometrial carcinomas, ovarian carcinoma and oral squamous cell carcinoma. A recent study by Howitt et al. on 193 cervical lesions demonstrated that Stathmin was positive in 5/56 (9%) CIN1, 5/11 (45%) CIN2, 14/15 (93%) CIN3 cases of cervical intraepithelial neoplasias; and all of adenocarcinoma in situ (19/19), invasive squamous cell carcinoma (32/32) and adenocarcinoma (34/34) cases. It is valuable to distinguish CIN3 from the majority of low-grade precursors and negative/reactive cervical biopsies.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0257A 1 ml ..... #AC-0257	tonsil, cervical carcinoma	cytoplasm



Gastric carcinoma stained with anti-Survivin

Survivin (EP119)

Survivin is a unique member of the inhibitor of apoptosis (IAP) protein family that interferes with post-mitochondrial events including activation of caspases. Survivin regulates the cell cycle and is expressed in most tumors, but it is barely detectable in terminally differentiated normal cells and tissues. Survivin is expressed in the G2/M phase of the cell cycle. At the beginning of mitosis, survivin associates with microtubules of the mitotic spindle in a specific and saturable reaction that is regulated by microtubule dynamics. Disruption of survivin-microtubule interactions results in loss of survivin's anti-apoptotic function and increased caspase-3 activity, a mechanism involved in cell death during mitosis. Nuclear-cytoplasmic shuttling of survivin is controlled by nuclear export signal (NES), which is necessary for the anti-apoptotic function of survivin. Inhibition of the NES makes cells more susceptible to chemotherapy- or radiotherapy-induced apoptosis. The association of survivin expression with tumor progression, but not overall patient survival, has been observed in a variety of malignancies including renal cell carcinoma, ovarian carcinoma, hepatocellular carcinoma, prostate carcinoma and breast carcinoma. However, the link between a poor prognosis and nuclear expression of Survivin in tumors is controversial. A literature review of 19 publications that measured nuclear survivin in different cancer types showed the following: 9 studies concluded that nuclear survivin was associated with an unfavorable prognosis, whereas 5 showed a favorable prognosis. The authors concluded that the nuclear pool of survivin is involved in promoting cell proliferation in most (if not all) cases, whereas the cytoplasmic pool of survivin may participate in controlling cell survival but not cell proliferation.

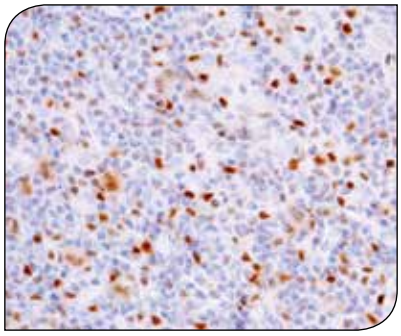
Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0113RUO 1 ml ..... #AC-0113RUOC	colon, colon carcinoma	cytoplasm/nuclear

Brain stained with anti-Synaptophysin

Synaptophysin (EP158)

Synaptophysin is a major integral transmembrane glycoprotein of synaptic vesicles with four transmembrane domains. This protein is present in almost all neurons and neuroendocrine cells throughout the body. An antibody to Synaptophysin is useful for the identification of tumors with neural and neuroendocrine differentiation.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0163A 1 ml ..... #AC-0163	pancreas, neuroendocrine tumor	cytoplasm

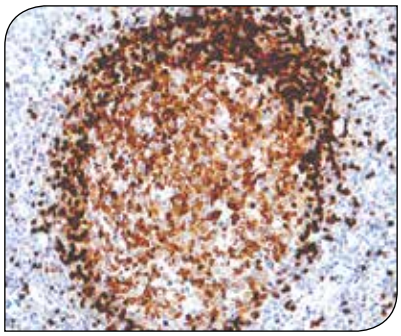


Hodgkin's lymphoma stained with anti-TBX21 (T-bet)

TBX21 (T-bet) (EP263)

T-box transcription factor TBX21, also known as T-bet, is a member of the T-box family of transcription factors. It has been confirmed that TBX21 is the key lineage-defining transcription factor that directs the development Th1 cells and is directly responsible for the transactivation of the interferon-γ (IFN-γ) gene. TBX21 is expressed in CD4+ T lymphocytes in normal tissues. In lymphoid malignancies, TBX21 has been found in a subset of T-cell lymphomas with Th1 T-cell differentiation, a subset of B-cell or T-cells, non-Hodgkin's lymphomas, majority of Hodgkin's lymphomas and precursor B-cell lymphoblastic leukemia/lymphoblastic lymphomas. However, TBX21 is not expressed in diffuse large B-cell lymphoma and most cases of anaplastic large cell lymphoma. TBX21 is a useful new marker for Hodgkin's lymphoma. TBX21 is also helpful in identification of hairy cell leukemia (HCL).

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0240A 1 ml ..... #AC-0240	spleen, Hodgkin's lymphoma	nuclear

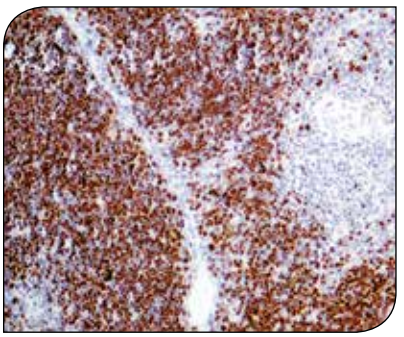


Tonsil stained with anti-TCL1

TCL1 (EP105)

T-cell leukemia/lymphoma protein 1A (TCL1) is a member of the TCL1 family and enhances the phosphorylation and activation of AKT1, AKT2 and AKT3. TCL1 promotes the nuclear translocation of AKT1 and enhances cell proliferation, stabilizes mitochondrial membrane potential and promotes cell survival. The expression of TCL1 is restricted to lymphoid cells. It is expressed early in lymphocyte differentiation. Strong expression of TCL1 is found in a subset of mantle zone B lymphocytes and is expressed to a lesser extent by follicle center cells. In B-cell neoplasia, TCL1 immunoreactivity is found in the majority of B-cell lymphomas including lymphoblastic lymphoma, chronic lymphocytic leukemia, mantle cell lymphoma, follicular lymphoma, Burkitt lymphoma, diffuse large B-cell lymphoma (60%), and primary cutaneous B-cell lymphoma (55%). The expression of the TCL1 gene characterizes low-grade B-cell lymphomas.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0110A 1 ml ..... #AC-0110	tonsil, B-cell lymphoma	cytoplasm/nuclear

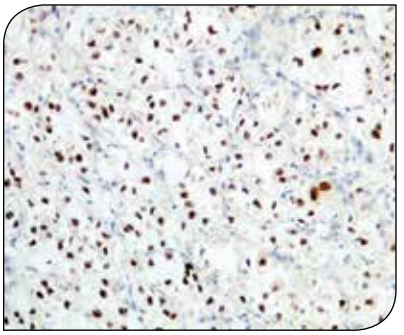


Thymus stained with anti-TdT

TdT (EP266)

Terminal deoxynucleotidyl transferase (TdT) is a unique DNA polymerase that changes the addition of deoxynucleoside 5'-triphosphate to the 3'-end of a DNA initiator without template direction. TdT contributes to the generation of junctional diversity in antigen receptors of immature lymphocytes. TdT is expressed in lymphoid precursors of B- and T-cell lineage in thymus and bone marrow. Foci of TdT positive cells may be observed in peripheral lymphoid tissues. TdT is also present in malignant tumors of lymphoblastic lineage and thymoma. It is a sensitive and specific marker for lymphoblastic lymphoma/leukemia.

Product Availability:	Control:	Visualization:
0.1 ml . . . . . #AC-0226A 1 ml . . . . . #AC-0226	thymus, thymoma	nuclear

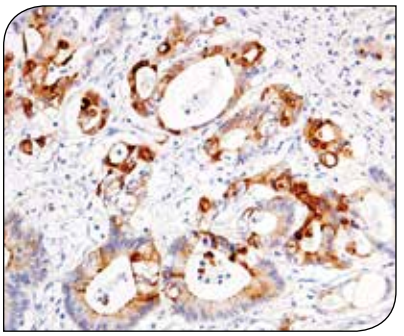


Renal cell carcinoma stained with anti-TFE3

TFE3 (EP285)

TFE3, known as Transcription Factor E3, is a member of the helix-loop-helix family of transcription factors. TFE3 interacts with several transcriptional regulators to affect cell growth, proliferation and osteoclast and macrophage differentiation. In the immune system, TFE3 plays important roles in modulating immunoglobulin heavy-chain expression and regulating B-cell activation. Additionally, TFE3 participates in insulin signaling and may play a role in enhancing insulin sensitivity. The TFE3 gene is located on chromosome Xp11.2. Translocations within this region generate TFE3 gene fusion products and clinically manifest as Xp11.2 translocation renal cell carcinoma (Xp11 TRCC), alveolar soft part sarcoma, perivascular epithelioid cell tumor, and epithelioid hemangioendotheliomas. Since translocation can lead to overexpression of nuclear TFE3 and is a marker of metastasis and poor survival, immunohistochemical detection of TFE3 can be valuable as a prognostic factor, an indicator of lymph node metastasis, and a screening marker for Xp11.2 translocation before genetic analysis.

Product Availability:	Control:	Visualization:
0.1 ml . . . . . #AC-0269RUO 1 ml . . . . . #AC-0269RUOC	Xp11.2 translocation RCC, alveolar soft part sarcoma	cytoplasm/nuclear

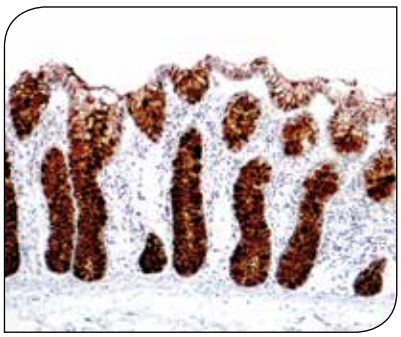


Colon cancer stained with anti-TFF1

TFF1 (EP47)

Trefoil factor 1 (TFF1), a member of the trefoil factor family, also known as protein pS2 or breast cancer estrogen-inducible protein, is a stabilizer of the mucus gel overlying the gastrointestinal mucosa that provides a physical barrier against various noxious agents. It belongs to a family of abundant GI3 peptides with a distinct 3-loop structure formed by a highly conserved motif of cysteine disulfide bonds, which confer them with luminal stability. TFF peptides, closely associated with mucins, are mainly synthesized and secreted by mucin-secreting epithelial cells lining the gastrointestinal tract. The TFF1 antibody labels gastric mucosal cells, goblet cells of the small and large intestine and rectum, small submucosal glands in the esophagus, mucous acini of the sublingual gland, submucosal glands of the trachea, epithelial cells lining the exocrine pancreatic ducts and breast epithelial cells.

Product Availability:	Control:	Visualization:
0.1 ml . . . . . #AC-0045RUO 1 ml . . . . . #AC-0045RUOC	colon, colon carcinoma	cytoplasm

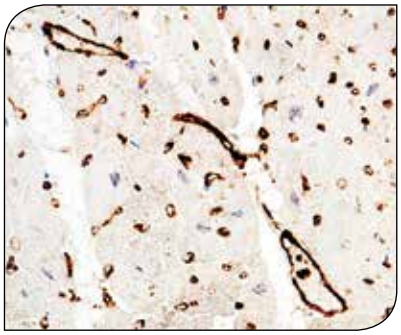


Colon stained with anti-TFF3

TFF3 (EP107)

Trefoil factor 3 (TFF3) is a member of the trefoil family. Trefoil factors (TFFs) constitute a family of mucin-associated peptides containing one or more structurally characteristic trefoil domains. They are mainly synthesized and secreted by mucin secreting epithelial cells lining the gastrointestinal tract and have a close association with mucins. Their functions are not defined, but they may protect the mucosa from insults, stabilize the mucus layer and affect healing of the epithelium. TFF3 is expressed in goblet cells of the intestines and colon, eptihelial cells of the breast, prostate, thyroid, salivary gland and urinary tract.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0103RUO 1 ml ..... #AC-0103RUOC	colon, colon carcinoma	cytoplasm

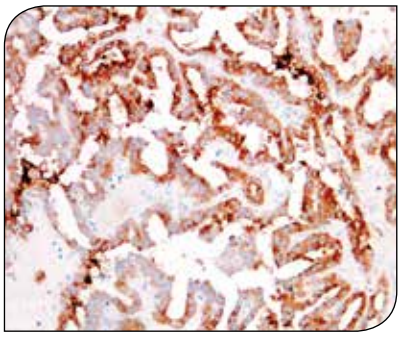


Heart stained with anti-Thrombomodulin

Thrombomodulin (EP175)

Thrombomodulin (TM), also known as CD141, is an endothelial-specific type I membrane receptor that binds thrombin, resulting in the activation of protein C. This causes the degradation of clotting factors Va and VIIIa and reduces the amount of thrombin generated. Defect in Thrombomodulin is a cause of thromboembolic disease, also known as inherited thrombophilia. Thrombomodulin was initially identified in endothelial cells. Its expression was also found in extra-vascular sites, such as in syncytiotrophoblasts in the placenta, epithelial tissues in the gingiva, in skin and in the synovial lining cells. In tumors, Thrombomodulin is expressed in vascular tumors and squamous cell carcinoma in a variety of tissues, including oral mucosa, esophagus and skin. Thrombomodulin is a marker for angiosarcoma. Additionally, anti-Thrombomodulin is useful in differentiating mesothelioma (positive) from lung adenocarcinoma (negative).

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0175RUO 1 ml ..... #AC-0175RUOC	vascular tissue, angiosarcoma	cytoplasm/membrane

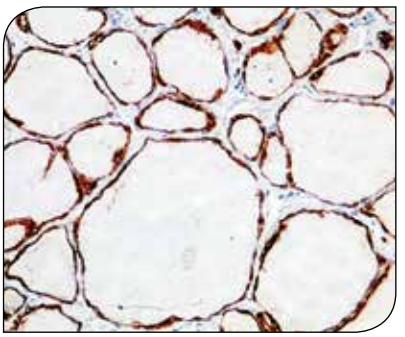


Thyroid cancer stained with anti-Thyroglobin

Thyroglobulin (EP250)

Thyroglobulin (TG) is a dimeric glycoprotein specific to the thyroid gland which belongs to the type-B carboxylesterase/lipase family. It is the precursor of the iodinated thyroid hormones triiodothyronine (T3) and thyroxine (T4). Variations in TG are associated with susceptibility to autoimmune thyroid disease type 3. Defective or impaired TG synthesis usually results in congenital goitrous hypothyroidism, virtual absence of TG in thyroid tissue, and the presence of an elevated concentration of iodoalbumin. The final result of these abnormalities is a decreased rate of T3 and T4 synthesis. Thyroglobulin is found in normal thyroid and differentiated thyroid carcinoma cells, but not undifferentiated thyroid. Thyroglobulin is a useful marker for identification of tumors with thyroid origin.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0220A 1 ml ..... #AC-0220	thyroid, thyroid carcinoma	cytoplasm

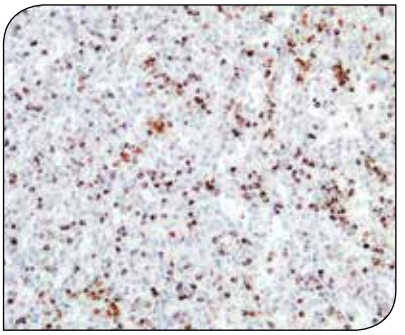


Thyroid stained with anti-Thyroid Peroxidase

Thyroid Peroxidase (EP159)

Thyroid Peroxidase (TPO) is a membrane-bound protein, catalyzing iodide oxidation, iodination of tyrosine residues and generation of triiodothyronine and thyroxine. It is first synthesized within the endoplasmic reticulum (ER), where it can be readily detected. After folding to the native state within the ER, intracellular transport of TPO to the cell surface occurs via the Golgi complex, a compartment typically associated with N-glycan processing of many cell surface glycoproteins. TPO labels normal thyroid epithelial cells and thyroid tumor cells. The expression level in thyroid carcinomas is lower than that of normal and benign thyroid tumors.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0164RUO 1 ml ..... #AC-0164RUOC	thyroid, thyroid carcinoma	cytoplasm/membrane

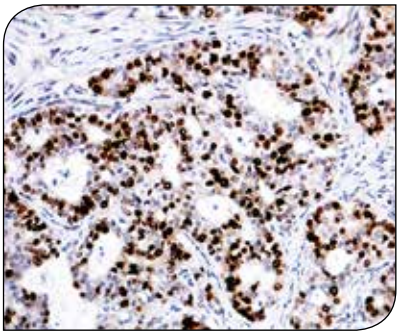


Spleen stained with anti-TIA1

TIA1 (EP243)

T-cell-restricted intracellular antigen-1 (TIA1), also known as nucleolysin TIA1 isoform p40, is a member of a RNA-binding protein family. It possesses nucleolytic activity against cytotoxic lymphocyte (CTL) target cells. It has been suggested that this protein may be involved in the induction of apoptosis, as it preferentially recognizes poly(A) homopolymers and induces DNA fragmentation in CTL targets. TIA1 antibody labels cytotoxic T cells and natural killer cells (NK cells). It is also expressed in T-cell lymphoma, large granular lymphocyte (LGL) leukemia and hairy cell leukemia. TIA1 expression in T-cell malignancies may help in differentiating LGL leukemia (high expression) from T-cell lymphocytosis and other T-cell diseases (low expression). TIA1 may also be used to label tumor-infiltrating lymphocytes in the study of immune response to malignancies.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0218A 1 ml ..... #AC-0218	spleen	cytoplasmic granule

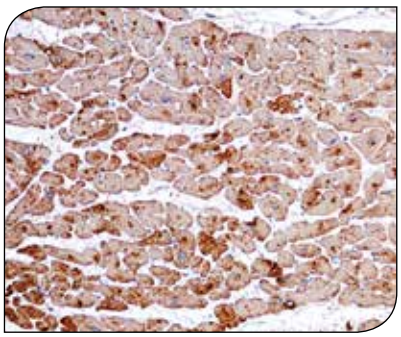


Gastric carcinoma stained with anti-Topoisomerase II alpha

Topoisomerase II alpha (EP93)

DNA topoisomerase II alpha (Topo IIα) is a 170 kDa ubiquitous nuclear enzyme belonging to the topo family, which regulates the topological states of DNA. Topo II is required in chromatin condensation and segregation during mitosis. Topo IIα is cell cycle regulated and its level peaks between G2 to M phase. It has been linked to cell proliferation and it may be the main isoform of Topo II involved mitotic processes. Topo IIα passes one strand of DNA through a reversible break in a second DNA strand, which catalyzes the topological isomerization of DNA during the cell cycle. Topo IIα overexpression has been linked to a number of human malignancies and is the target for many chemotherapeutic agents. The majority of anti-cancer drugs targeting Topo IIα initiate apoptosis by stabilizing the covalent complex formed between DNA and Topo IIα.

Product Availability:	
0.1 ml.....#AC-0089A 1 ml ..... #AC-0089	**USA:** ASR **Japan:** RUO
0.1 ml..... #AC-0089EUA 1 ml ..... #AC-0089EU	**Europe:** IVD

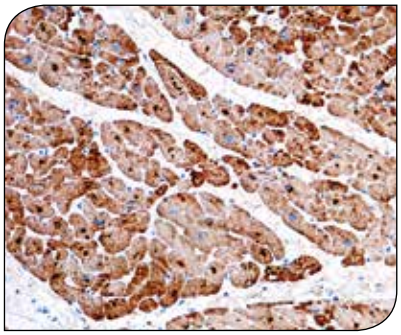


Cardiac muscle stained with anti-Troponin I, Cardiac Muscle

Troponin I, Cardiac Muscle (EP73)

Troponin is a complex of three regulatory proteins (Troponin I, Troponin T and Troponin C) that is integral to muscle contraction in skeletal and cardiac muscle, but not smooth muscle. There are three tissue-specific subtypes for Troponin I: slow-twitch skeletal muscle isoform troponin I (TNNI1), fast-twitch skeletal muscle isoform troponin I (TNNI2) and cardiac troponin I (TNNI3).

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0093RUO 1 ml ..... #AC-0093RUOC	cardiac muscle	cytoplasm

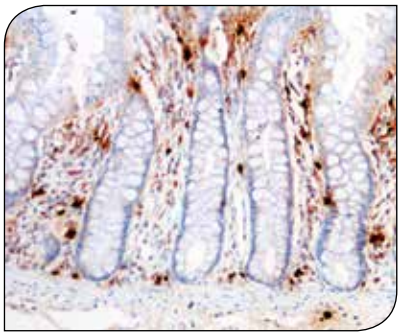


Cardiac muscle stained with anti-Troponin T, Cardiac Muscle (TNNT2)

Troponin T, Cardiac Muscle (TNNT2) (EP108)

Troponin is a complex of three regulatory proteins (Troponin I, Troponin T and Troponin C) that is integral to muscle contraction in skeletal and cardiac muscle, but not smooth muscle. Troponin T type 2 (TNNT2) is a cardiac Troponin T isoform expressed in the human heart, which is essential for calcium-regulated myofibrillar ATPase activity. Troponin T (TnT) anchors the complex to thin filaments in vertebrate striated muscle, and it functions as a regulatory system for muscle contraction in response to changes to intracellular calcium ion concentrations.

Product Availability:	Control:	Visualization:
0.1 ml..... #AC-0104RUO 1 ml ..... #AC-0104RUOC	cardiac muscle	cytoplasm

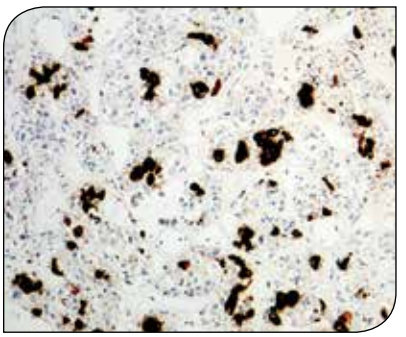


Colon stained with anti-Tryptase

Tryptase (EP259)

Human mast cell tryptase, comprises a family of trypsin-like neutral serine proteinases that are predominantly expressed in mast cells. Tryptase has effects on peptides, proteins, cells, and tissues. Many of these effects can ultimately contribute to asthma symptoms. Mast cell tryptase is found in mast-cell granules and has also been reported to be expressed by peripheral blood basophils at low level. Tryptase has been used as a marker of mast cell activation.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0214A 1 ml ..... #AC-0214	colon	cytoplasm



Pituitary gland stained with anti-TSH

TSH (EP254)

TSH is a member of the glycoprotein hormone family, constituting a subset of the cystine-knot growth factor superfamily. TSH is produced by the pituitary thyrotrophs and released into circulation in a pulsatile manner. It stimulates thyroid functions using a specific membrane TSH receptor (TSHR) that belongs to the superfamily of G protein-coupled receptors (GPCRs). TSH beta is the beta subunit of thyroid stimulating hormone. This TSH antibody labels normal and neoplastic thyrotropic cells. It may be useful in classification of pituitary tumors.

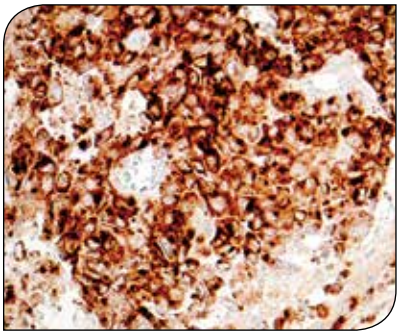
Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0222A 1 ml ..... #AC-0222	pituitary, pituitary adenoma	cytoplasm

Thyroid carcinoma stained with anti-TTF-1

TTF-1 (EP229)

Thyroid transcription factor 1 (TTF-1) is a 38kDa homeodomain-containing nuclear transcription factor belonging to the NKX2 gene family. TTF-1 expression was found in early stages of gestation and could play an important role in cell differentiation and morphogenesis of the thyroid and lung. TTF-1 is expressed in epithelial cells of the lung and thyroid in normal tissues. TTF-1 is also used as a marker for distinguishing lung and thyroid carcinomas. Additional studies showed TTF-1 is expressed in endometrial carcinoma and small cell carcinomas of the prostate and bladder. A panel of antibodies would be valuable in identifying tumors of lung or thyroid origin.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0258A 1 ml ..... #AC-0258	lung, lung adenocarcinoma	nuclear

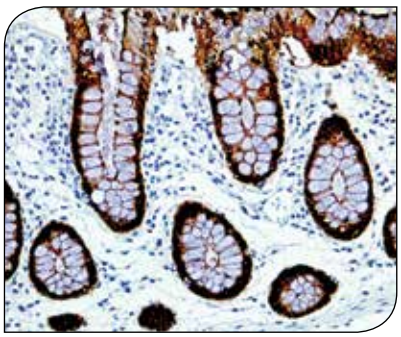


Melanoma stained with anti-Tyrosinase

Tyrosinase (EP270)

Tyrosinase is a key enzyme involved in the initial stages of melanin biosynthesis. Tyrosinase catalyzes the hydroxylation of tyrosine to 3,4-dihydroxyphenylalanine (DOPA). Oxidation reactions of DOPA to L-Dopaquinone and 5,6-dihydroxyindole (DHI) to indole-quinone occur spontaneously at physiological pH. Tyrosinase is expressed in melanin-producing cells such as melanocytes, which are primarily localized in the skin, hair bulbs and eyes. Low levels of tyrosinase mRNA was also detected in the human substantia nigra, but immunohistochemically unreactive. Since melanomas arise from melanocytes, there is evidence that tyrosinase is expressed in malignant melanomas. Studies have shown that tyrosinase is a sensitive and reliable marker to assess melanocytic lesions in paraffin-embedded tissue.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0259A 1 ml ..... #AC-0259	skin, melanoma	cytoplasm

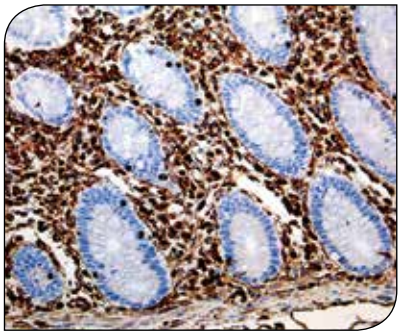


Colon stained with anti-Villin

Villin (EP163)

Villin is a tissue-specific actin-binding protein associated with the cytoskeleton of the brush border, which functions in the bundling, nucleation, capping and severing of actin filaments. In normal tissues, Villin is expressed in differentiated epithelial cells with a brush border such as intestinal villi, proximal renal tubules, oviducts, and seminiferous ducts. Due to the restricted distribution of this protein, the anti-Villin antibody has been used to identify gastrointestinal adenocarcinomas. In combination with CK 7 and CK 20, Villin is helpful in differentiating metastatic colon adenocarcinoma from lung adenocarcinoma with rootlets. Additionally, Villin has been reported to be expressed in 85% of gastrointestinal carcinoid tumors and 40% of lung carcinoid tumors, suggesting that Villin may be helpful in differentiating carcinoid tumors from other endocrine tumors.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0165A 1 ml ..... #AC-0165	small intestine, colorectal carcinoma	cytoplasm/membrane

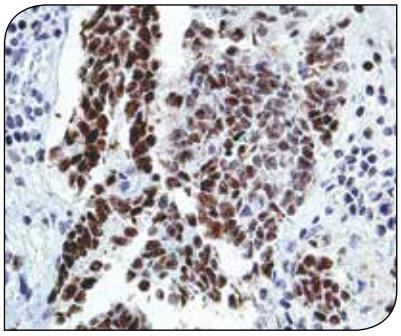


Colon stained with anti-Vimentin

Vimentin (EP21)

Vimentin is the most common member of intermediate filament (IF) family and one of the main components in cytoskeleton structure. It is expressed during cell development and differentiation in variety of mescencymal cells and cell types derived from the mesoderm. Vimentin is essential in the role of cell integrity and cytoskeletal stability. The reorganization of vimentin, similar to all IF proteins, occurs during different stages of the cell cycle and cell signaling by a site-specific phosphorylation (serine and threonine residues). In particular, p21-activated kinase (PAK) phosphorylates at Ser25, Ser38, Ser50, Ser65 and Ser72, which induces vimentin specific reorganization. During cytokinesis, vimentin is regulated by Rho-kinase (ROCK) and Aurora B through phosphorylation at Ser38 and Ser72. Also, coordinated by ROCK and Aurora B, Plk1 induced phosphorylation at Ser82 plays an important role in vimentin segregation. Vimentin labels mesenchymal cells. In combination with a panel of antibodies, it is used to identify tumor with mesenchymal origin and malignant melanoma. Additionally, vimentin is a useful control marker for proper tissue processing.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0024A 1 ml ..... #AC-0024	colon, sarcoma	cytoplasm

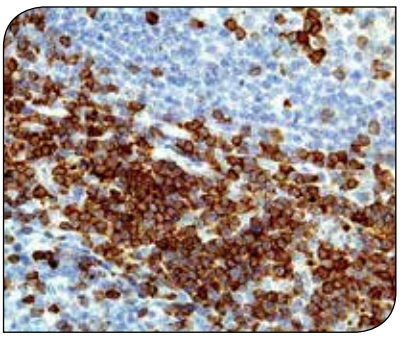


Wilms' Tumor stained with anti-Wilms' Tumor 1

Wilms' Tumor 1 (EP122)

Wilms' Tumor 1 (WT1) is a transcription factor that plays an important role in cellular development and cell survival. The WT1 gene encodes a tumor suppressor gene inactivated in Wilms' tumor, recently implicated in WNT signaling through the enhancement of cytoplasmic beta-catenin (CTNNB1) degradation. WT1 has been demonstrated in mesenchymal-derived cells and in Wilms' tumor. An antibody to WT1 is useful for the identification of malignant mesothelioma. A literature review of 88 published papers suggested that the sensitivity and specificity of WT1 for the identification of epithelioid mesothelioma was 77% and 96%, respectively. WT1 immunoreactivity has also been detected in several types of other malignancies, including peritoneal carcinoma, breast carcinoma, ovarian carcinoma and leukemia. In hepatocellular carcinoma, the expression of WT1 is correlated with a response to chemotherapy. Additionally, WT1 is a useful marker to differentiate desmoplastic small round cell tumors (DSRCT) from other small round cell tumors.

Product Availability:	Control:	Visualization:
0.1 ml.....#AC-0115A 1 ml ..... #AC-0115	kidney, mesothelioma	nuclear



Tonsil stained with anti-ZAP-70

ZAP-70 (EP52)

ZAP-70, a Syk-family protein tyrosine kinase, plays a critical role in mediating T-cell signal transduction in response to T-cell antigen receptor (TCR) activation. It is primarily expressed in T cells and natural killer (NK) cells. It also labels mast cells, basophils and pro/pre B cells, but not mature B cells. ZAP-70 antibody is useful in identification of the subtype of chronic lymphocytic leukemia (CLL). ZAP-70 is positive in CLL with mutation of the immunoglobulin heavy-chain variable region (IgVH) genes, but negative in CLL without IgVH mutation. ZAP-70 expression is associated with disease progression in CLL.

Product Availability:	Control:	Visualization:
0.1 ml . . . . . .#AC-0050A 1 ml . . . . . #AC-0050	tonsil, chronic lymphocytic leukemia	cytoplasm/nuclear

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