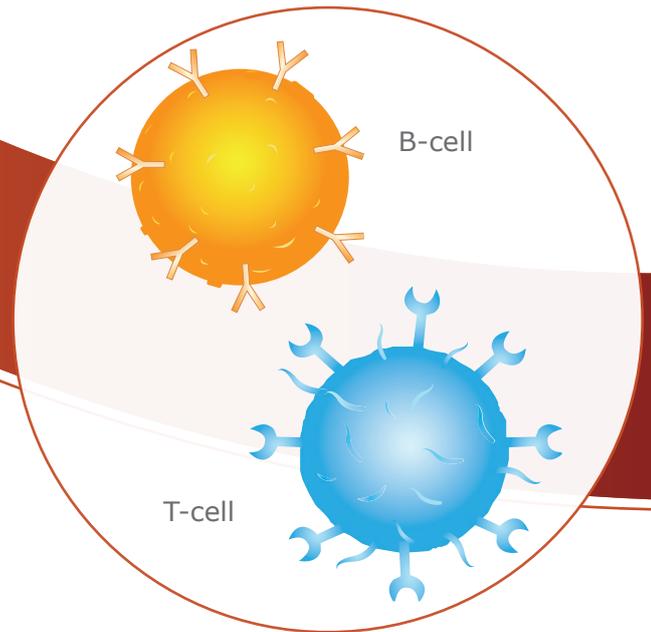


IHC PANEL MARKERS

B&T Cell Associated Lymphoma



BioGenex offers a vast spectrum of high-quality antibodies for both diagnostic and reference laboratories, with an emphasis on cancer and infectious diseases. BioGenex strives to support your efforts in clinical diagnostics and drug discovery development as we continue to expand our antibody product line offering.

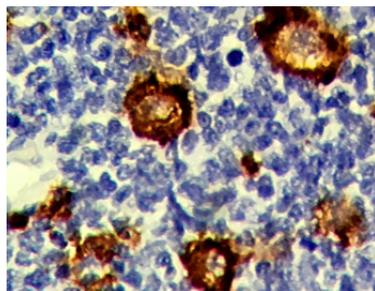
The following antibodies have been optimized for immunohistochemistry procedures on formalin-fixed, paraffin-embedded tissue sections.

Antibodies for B&T Cell Associated Lymphoma

MICROGLIA/A1F1, CD123/IL3RA, TIM3, CD137, HLA-DP, DR, DQ, DX Antigen, Granzyme B, LMP-1(EBV), Bax Protein, LEF 1, CD45, TDT, Kappa, Lambda, IgM, BLA.36, IgG, B Cell, IgD, Cyclin-D1, CD3, ZAP-70, PAX5, BCL2, PU.1, BOB-1, CD8, MUM1, CD138, CD5, CD10, BCL6, ALK, CD38, CD4, Ki-67, CD43, CD1a, CD71, CD7, CD19, CD22, CD11c, CD56, CD68, CD23, CD15, CD30, CD79a, CD21, CD66, CD20, Lysozyme(AR024), CD2(AM438), Fascin(AM488), CD2(AMD29), IgD(AMD32), HLA-DP/-DR(AMD48), MDM2, Desmoglein 1



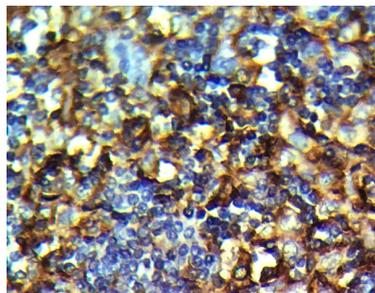
A1F1(LBA1)(MICROGLIA MARKER)



Allograft inflammatory factor 1 (AIF1), also known as IBA1, daintain and Protein G1, is an actin-binding protein. Actin-binding protein that enhances membrane ruffling and RAC activation enhances the actin-bundling activity of LCP1, binds calcium and plays a role in RAC signaling and in phagocytosis. It may play a role in macrophage activation and function. AIF1 also promotes the proliferation of vascular smooth muscle cells and of T-lymphocytes. In an unstimulated state, AIF1 colocalizes with actin, and upon stimulation, translocates to lamellipodia. It is also a marker of human microglia and is expressed by macrophages in injured skeletal muscle. The gene encoding AIF1 resides in the tumor necrosis factor (TNF) cluster of genes, located in the region represented by the human major histocompatibility complex (MHC).

Antibody	Clone	Localization	Catalog Family
A1F1(LBA1)(MICROGLIA MARKER)	AIF1/2493	Cytoplasm	AMA70, AXA70, MUA70

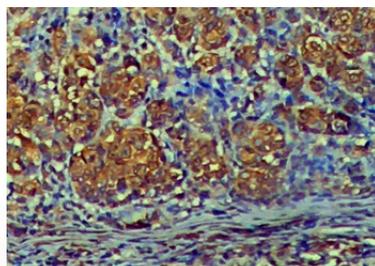
CD123/IL3RA(ACUTE MYELOID LEUKEMIA MARKER)



Interleukin 3 receptor alpha (IL3RA), also known as CD123 (Cluster of Differentiation 123) is a 70-kD glycoprotein member of the hematopoietin receptor superfamily. This protein associates with a beta subunit common to the receptors for IL-5 and granulocyte-macrophage colony-stimulating factor (GM-CSF) to form a high-affinity receptor for IL-3. The interleukin-3 receptor alpha chain (CD123) has been identified as a potential immunotherapeutic target because it is overexpressed in AML compared with normal hematopoietic stem cells. This gene and the gene encoding the colony stimulating factor 2 receptor alpha chains (CSF2RA) form a cytokine receptor gene cluster in a X-Y pseudo-autosomal region on chromosomes X or Y

Antibody	Clone	Localization	Catalog Family
CD123/IL3RA(ACUTE MYELOID LEUKEMIA MARKER)	IL3RA/1531	Membrane & Cytoplasm	AMA72, AXA72, MUA72

TIM3



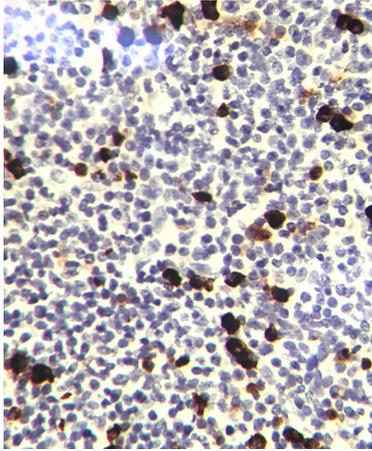
T-cell immunoglobulin and mucin domain 3 (TIM3) is a member of immunoglobulin (Ig) and mucin domain (TIM) family, comprised of type-I cell surface glycoproteins. TIM3 expressed on interferon (IFN)-gamma (γ) secreting helper T (Th) cells, regulatory T cells (Tregs), CD8 + T cells, Dendritic cells (DCs), monocytes, and other leukocyte subsets, including natural killer (NK) cells. TIM3 plays a key role in inhibiting both adaptive and innate immune responses, potentially exerting either positive or negative effects, thus acting as an immune modulator. In chronic inflammation, autoimmune disorders, and some cancers, While on activated T cells, CEACAM1 and Tim3 are co-expressed and form a heterodimer to suppress T cell function and down regulate its anti-tumor immunity.

Antibody	Clone	Localization	Catalog Family
TIM3	TIM3/3113	Membrane	AMA82, AXA82, MUA82



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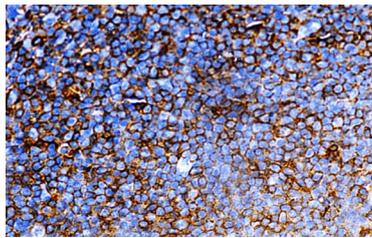
CD137



CD137, also known as TNFRSF9 or 4-1BB, is a member of the tumor necrosis factor receptor superfamily, represents a promising target for enhancing antitumor immune responses. It is an inducible costimulatory molecule expressed mainly on activated T cells. The functions of CD137 in T lymphocytes include regulating activation, proliferation and apoptosis. The ligand for CD137, known as 4-1BBL, is expressed on activated macrophages, mature B cells, hematopoietic stem cells, and myeloid progenitor cells. CD137 helps regulate the activation of many immune cells, including CD4 (+) T cells, CD8 (+) T cells, dendritic cells, and natural killer cells. CD137 signaling leads to maintaining the survival of activated T cells and CD8+ memory T cells, and clonal expansion of T cells, but also to suppressing myelopoiesis and Dendritic cell development. Triggered CD137 induces a cytokine release profile regulating peripheral monocytes survival. Recent studies indicate that the antitumor efficacy of therapeutic tumor-targeting antibodies can be augmented by the addition of agonistic antibodies targeting CD137.

Antibody	Clone	Localization	Catalog Family
CD137	BBK-2	Membrane	AMB03, AXB03, MUB03

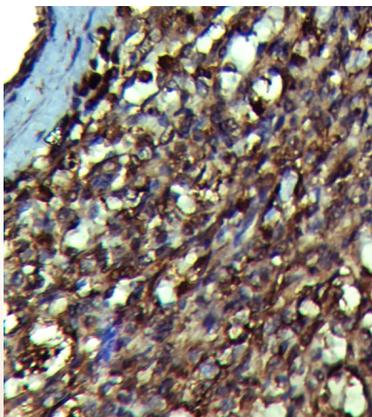
HLA-DR/DP/DQ/DX



HLA-DR/DP/DQ/DX antibody (also designated HLA class II HLADR / HLADP / HLADQ / HLADX antibody) is a major histocompatibility complex (MHC) class II heterodimer cell surface receptor antibody. The major histocompatibility complex (MHC) is a large genomic region that has an important role in the immune response to infections. The MHC class II molecules bind intracellularly processed peptides and present them to T-helper cells. These are expressed primarily on antigen presenting cells such as B lymphocytes, monocytes, macrophages, and thymic epithelial cells and are also present on activated T lymphocytes.

Antibody	Clone	Localization	Catalog Family
HLA-DR/DP/DQ/DX	CR3/43	Membrane and Cytoplasm	AMB53, AXB53, MUB53
HLA-DR/DP (AMD48)	Bra-14	Membrane	AMD48, MUD48, AXD48

Granzyme B

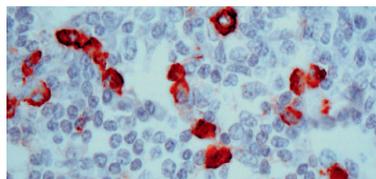


Granzyme B is a member of the granzyme family of the serine proteases found specifically in the cytotoxic granules of cytotoxic T lymphocytes (CTL) and natural killer (NK) cells. They are synthesized, processed and released by exocytosis in lysosome-like granules containing perforin. Granzyme B has the strongest apoptotic activity of all the granzymes as a result of its caspase-like ability to cleave substrates at aspartic acid residues thereby activating procaspases directly and cleaving downstream caspase substrates. Recent studies have demonstrated that the expression of granzyme B by immunohistochemistry in several entities of extranodal peripheral T cell lymphoma (PTCL) and NK cell lymphomas, including nasal and nasal-type NK/T cell lymphomas, hepatosplenic and non-hepatosplenic PTCL, enteropathy-type (ETCL) and non-ETCL intestinal PTCL, subcutaneous panniculitis-like PTCL (SPTCL), cutaneous CD8+ epidermotropic lymphomas as well as in nodal and cutaneous CD30+ anaplastic large cell lymphomas (ALCL).

Antibody	Clone	Localization	Catalog Family
Granzyme B	2C5	Membrane and Cytoplasm	AMB35, AXB35, MUB35



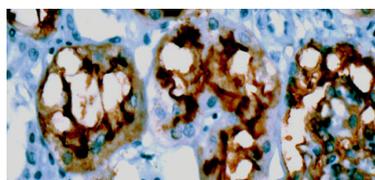
Lambda Light Chain



The light chains of immunoglobulin molecules may be either Kappa or Lambda. Antibodies to kappa and lambda light chains are used for the evaluation of leukemias, plasmacytomas, and certain non-Hodgkin's lymphomas, the majority of which are derived from B-cell lineage. The most important uses of this technique would be in distinguishing atypical reactive follicular lymphoid hyperplasia from follicular lymphoma, undifferentiated carcinoma from large cell lymphoma, pseudolymphoma from lymphoma, and reactive plasmacytosis from well differentiated plasmacytoma.

Antibody	Clone	Localization	Catalog Family
Lambda Light Chain	Polyclonal	Cytoplasm	AR049, AW049, PU049
Lambda Light Chain	EP172	Cytoplasm	AN715, AY715, NU715

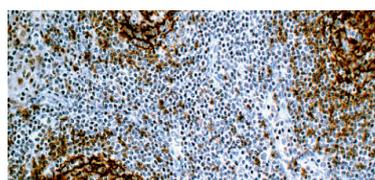
CD10



CD10, a 100KD glycoprotein, also known as Common Acute Lymphocytic Leukemia Antigen (CALLA), is a cell surface enzyme with neutral metalloendopeptidase activity which inactivates a variety of biologically active peptides. CD10 is expressed on the cells of lymphoblastic, Burkitt's and follicular germinal center lymphomas, and chronic myelogenous leukemia (CML). It is also expressed on the surface of normal early lymphoid progenitor cells, immature B cells within bone marrow and germinal center B cells within lymphoid tissue. CD10 is also present on breast myoepithelial cells, with especially high expression on the brush border of kidney and gut epithelial cells.

Antibody	Clone	Localization	Catalog Family
CD10	56C6	Membrane	AM451, AX451, MU451

CD23



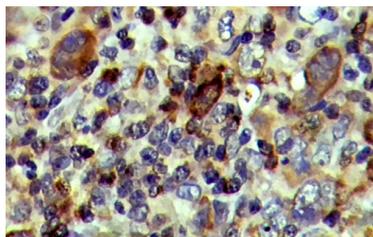
CD23 is a 45 kD type II integral membrane glycoprotein that belongs to the C-type lectin family of adhesion molecules. The CD23 molecule is identical to the low affinity IgE receptor found on B-cells. CD23 has been proposed to be an important regulator of IgE synthesis. Anti-CD23 antibody treatment of rats inhibited antigen-specific IgE immune response by 90%. CD23 is a common B cell/monocyte surface antigen. CD23 is expressed on IgM+/IgD+ B cells, as well as on a variety of other cells, including monocytes, eosinophils, dendritic cells, platelets, and macrophages. Expression of CD23 has been detected in neoplastic cells such as chronic lymphocytic leukemia, some cases of lymphoma and is strongly expressed on EBV transformed B lymphoblasts.

Antibody	Clone	Localization	Catalog Family
CD23	Polyclonal	Membrane	AR460, AW460, PU460



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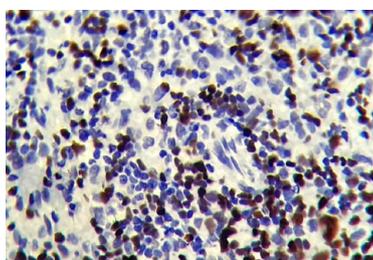
Bax Protein(Apoptosis Marker)



Overexpression of Bax accelerates apoptotic death induced by cytokine deprivation in an IL-3 dependent cell line and Bax also counters the death repressor activity of Bcl-2. It recognizes a protein of 21kDa, identified as the Bax protein. This shows no cross-reaction with Bcl-2 or Bcl-X protein. Bax has extensive amino acid homology with Bcl-2 and it homodimerizes and forms heterodimers with Bcl-2. Overexpression of Bax accelerates apoptotic death induced by cytokine deprivation in an IL-3 dependent cell line, and Bax also counters the death repressor activity of Bcl-2.

Antibody	Clone	Localization	Catalog Family
Bax Protein(Apoptosis Marker)	2D2	Cytoplasm	AMA96, AXA96, MUA96

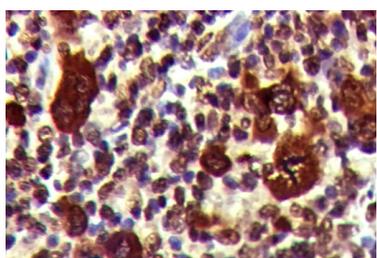
LEF 1



LEF1 (Lymphoid Enhancer-binding Factor 1) is a functionally diverse member of the high mobility group (HMG) DNA binding protein family of transcription factors TCF/LEF. It participates as a regulator in Wnt signaling pathways and is an important factor in lymphopoiesis. It binds to a functionally important site in the T-cell receptor-alpha enhancer, thereby conferring maximal enhancer activity. LEF1 is expressed normally in T and pro-B cells but not expressed in mature B cells. Anti-LEF1 antibody may be used as an aid for differentiation of chronic lymphocytic leukemia/small lymphocytic lymphoma from other small B cell lymphomas.

Antibody	Clone	Localization	Catalog Family
LEF 1	EP310	Nucleus	ANB32, NUB32, AYB32

LMP-1(EBV)

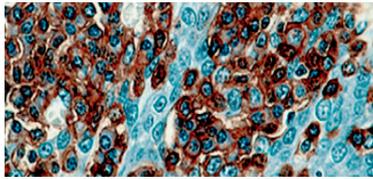


EBV antibody is a mixture of four different monoclonal antibodies. All three antibodies in this combination recognize distinct epitopes in the hydrophilic carboxyl region of the latent membrane protein (LMP) protein encoded by the Epstein Barr Virus antibody (EBV). This antibody stains strongly with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

Antibody	Clone	Localization	Catalog Family
LMP-1(EBV)	CS1-4	Nucleus	AMA66, AXA66, MUA66



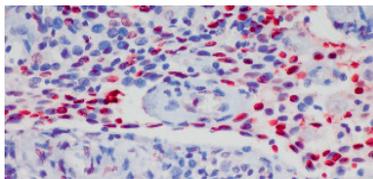
CD45



CD45 (LCA) is a transmembrane protein-tyrosine-phosphatase. The LCA family includes a group of proteins present on all mature B and T lymphocytes, thymocytes, macrophages, spleen, lymph node, chronic lymphatic leukemia cells, bone marrow, thymus and granulocytes. It is absent in brain, kidney, liver, heart, erythrocytes, platelets and normal serum. The leukocyte common antigen is an abundant lymphocyte surface antigen that has been reported to be involved in signaling through the T cell antigen receptor. This antibody may be useful in the evaluation of malignant lymphoma and nonlymphoid tumors. Neoplastic B and T cells in leukemia and in non-Hodgkin's lymphoma stain positive and hence can be distinguished from sarcomas and carcinomas.

Antibody	Clone	Localization	Catalog Family
CD45	PD7/26/16 & 2B11	Membrane& Cytoplasm	AM111, AX111, MU111
CD45	LJ 27.9	Membrane& Cytoplasm	AM338, AX338, MU338
CD45	MEM55+ LJ 27.9	Membrane& Cytoplasm	AM371, AX371, MU371

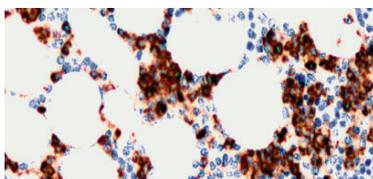
TdT



This antibody identifies a 58 kD peptide normally found in cortical thymocytes and immature bone marrow lymphocytes. TdT expression has been reported to occur in a majority of cases of acute lymphocytic leukemia (ALL) cases. TdT staining is found in all subtypes of ALL with the exception of pre-B-cell ALL. TdT positivity has also been observed in approximately one third of all cases of chronic myeloid leukemia. TdT positive staining is found in ALL, acute myeloid leukemia and chronic myeloid leukemia. This antibody stains predominantly nuclear TdT in normal and neoplastic cells.

Antibody	Clone	Localization	Catalog Family
TdT	EP266	Nucleus	AN881, AY881, NU881

CD15



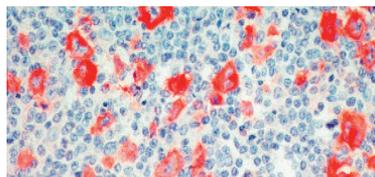
CD15 (BRA4F1) reacts with human CD15 antigen present on myeloid cells, mainly granulocytes, macrophages, and stem cells, but not on B cells, T cells, monocytes, erythrocytes or platelets. It also reacts with Hodgkin's and Reed-Sternberg cells in individuals with Hodgkin's disease. This antibody stains CD15 antigen in positive cells.

Antibody	Clone	Localization	Catalog Family
CD15	BRA4F1	Membrane & Cytoplasm	AM302, AX302, MU302



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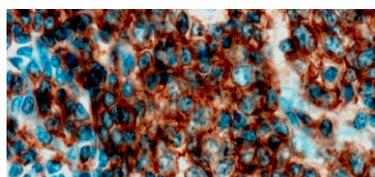
CD30



CD30 (Ki-1 antigen), a 120 kD single chain glycoprotein, is expressed in only a small population of normal lymphoid tissue. By contrast, it is expressed in approximately 50% of all malignant lymphomas including all cases of Hodgkin's disease and a vast majority of Ki-1 positive anaplastic large cell lymphomas. Ki-1 antigen can be detected in sera from lymphoma patients, but not in sera from normal individuals with systemic infection. This antibody stains CD30 (Ki-1) antigen in the membrane of positive cells.

Antibody	Clone	Localization	Catalog Family
CD30	Ber-H2	Membrane & Cytoplasm	AM327, AX327, MU327
CD30	HRS-4	Membrane & Cytoplasm	AM351, AX351, MU357

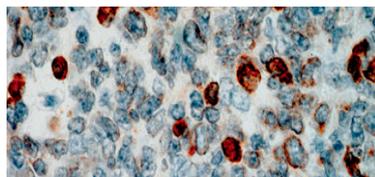
CD19



CD19 is expressed on follicular dendritic cells and B cells. In fact, it is present on B cells from earliest recognizable B-lineage cells during development to B-cell blasts but is lost on maturation to plasma cells. It primarily acts as a B cell co-receptor in conjunction with CD21 and CD81. CD19 has been observed in lymphomas and leukemias but often weak/negative in follicular lymphoma or diffuse large B-cell lymphoma. CD19 may provide useful diagnostic information for the study of B-lymphoproliferative disorders.

Antibody	Clone	Localization	Catalog Family
CD19	EP169	Membrane	AN729, AY729, NU729

CD79a

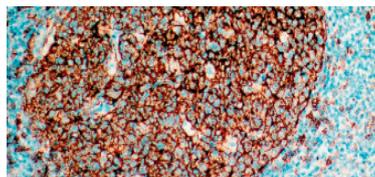


CD79a, also known as Ig-alpha, mb-1 membrane glycoprotein, is a type I membrane glycoprotein with a total of 226 amino acids and a molecular weight of 47 kD. CD79a forms a heterodimer with CD79b through disulfide-bonds and further forms a complex in a noncovalent fashion with membrane immunoglobulins. Both CD79a and CD79b are expressed almost exclusively on B cells and B-cell neoplasms. In addition, CD79a and CD79b antibodies are useful markers in the evaluation of precursor B-acute lymphoblastic leukemia (pre-B-ALL) because many of these tumors are negative for other B-cell markers, such as CD20 and CD45RA. It stains positive on B cells and plasma cells.

Antibody	Clone	Localization	Catalog Family
CD79a	11E3	Membrane	AM414, AX414, NU414
CD79a	EP82	Membrane	AN719, AY719, NU719
CD79a	SP18	Membrane	AN767, AY767, NU767



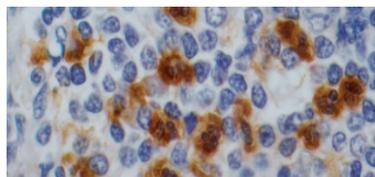
CD21



The B2 antigen, also known as CD21 and CR2, is a 140 kD glycosylated Type 1 integral membrane protein. The CD21 molecule is expressed on mature B lymphocytes, follicular dendritic reticulum cells (FDC), pharyngeal epithelial cells, and possibly on a subset of normal thymocytes. This antigen is also expressed by B lymphocytes in patients with B cell lymphomas, most B cell chronic lymphocytic leukemia (CLL), and a small portion of non-T cell acute lymphoblastic leukemias (ALL). This antibody stains B2 (CD21) antigen in membranes of mature B lymphocytes, follicular dendritic reticulum cells (FDC), pharyngeal epithelial cells, and absent on T-lymphocytes, monocytes, and granulocytes.

Antibody	Clone	Localization	Catalog Family
CD21	B2	Membrane	AM266, AX266, MU266
CD21	SP186	Membrane	AN745, AY745, NU745
CD21	EP64	Membrane	AN825, AY825, NU825

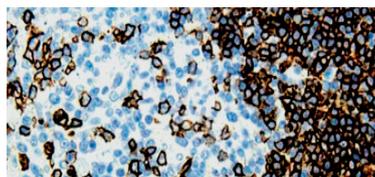
CD66



Clone BY114, also known as NCA90 (Non-cross reacting antigen 90), is a unique monoclonal antibody that recognizes CD66CE which is a 90 kD antigen found principally on neutrophils. In contrast to many antibodies which recognize granulocyte-associated antigens present on other leukocytes, this antibody recognizes only granulocytes. The anti-CD66 monoclonal antibody, therefore, is very useful for differentiation of normal and neoplastic cells of granulocyte origin. Monoclonal antibody BY114 can be used to stain neutrophils in tonsil, spleen, liver, kidney, pancreas, and lung. This antibody stains phosphatidylinositol (PI) linked protein on granulocyte and squamous epithelium.

Antibody	Clone	Localization	Catalog Family
CD66	BY114	Membrane	AM325, AX325, MU325

CD20



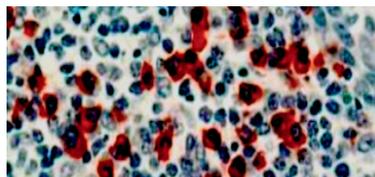
CD20 is a transmembrane, non-glycosylated protein expressed on B-cell precursors and mature B cells, but is lost following differentiation into plasma cells. This antibody does not cross-react with non-hematopoietic neoplasms. CD20 (B-cell Pan) reacts with a membrane antigen present in B-cells. This antibody strongly recognizes Reed-Sternberg cells predominant in Hodgkin's disease. Since no staining of histiocytes or plasma cells has been observed and CD20 has not been detected in T-cell malignancies, it is a very strong marker of B-cell lymphomas. B-cell panmarker recognizes a formalin resistant intracytoplasmic antigen.

Antibody	Clone	Localization	Catalog Family
CD20	L-26	Membrane	AM238, AX238, MU238
CD20	CD20/C23	Membrane	AM537, AX537, MU537
CD20	MS4A1/3409	Membrane	AMA53, AXA53, MUA53



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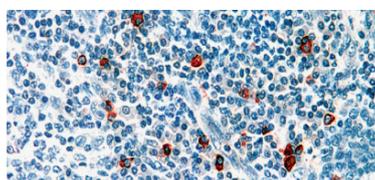
Kappa Light Chain



The light chains of immunoglobulin molecules have two antigenic types: kappa and lambda. A given immunoglobulin molecule contains two light chains, either both kappa or both lambda. As a result the clonal nature of any immunoglobulin-producing cell population can be determined by its light chain structure. The most important use of this technique would be in distinguishing atypical reactive follicular lymphoid hyperplasia from follicular lymphoma, undifferentiated carcinoma from large cell lymphoma, pseudolymphoma from lymphoma, and reactive plasmacytosis from well differentiated plasmacytoma.

Antibody	Clone	Localization	Catalog Family
Kappa Light Chain	L1C1	Cytoplasm	AM048, AX408, MU408
Kappa Light Chain	K88	Cytoplasm	AM369, AX369, MU369

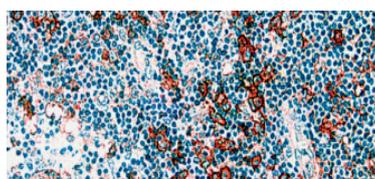
IgM



This monoclonal antibody reacts with human IgM heavy (mu) chain Fc region of 900kD pentameric IgM. It does not react with IgA, IgG or with light chains. This antibody stains plasma cells containing IgM, but does not usually stain immune complexes and surface IgM. It is useful for the evaluation of leukemias, plasmacytomas, and certain non-Hodgkin's lymphomas, the majority of which derive from B-cell lineage. The common underlying feature of these malignancies is the restricted expression of heavy and light chains to a single heavy and light chain type.

Antibody	Clone	Localization	Catalog Family
IgM	IgM88	Membrane & Cytoplasm	AM366, AX36, MU366
IgM	Polyclonal	Membrane & Cytoplasm	AR427, AW427, PU427

BLA.36

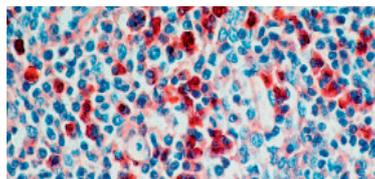


BLA.36 is a developmentally regulated 36 kD antigen expressed on the plasma membrane of B lymphocytes, Reed-Sternberg, and mononuclear Hodgkin's cells. The anti-BLA.36 antibody recognizes all four subtypes of Hodgkin's disease. It also gives strong staining of B cell lymphomas including follicular center cell lymphomas (large and small cell types), mantle zone lymphomas, and immunoblastic lymphomas. No reactivity of anti-BLA.36 is found in normal epithelial cells, including adrenal gland, breast, colon, lung, salivary gland, skin, stomach and their malignant counterparts. Anti-BLA.36 can be used to distinguish Reed-Sternberg cells and some B-cell lymphomas from other malignant cells.

Antibody	Clone	Localization	Catalog Family
BLA.36	A27-42	Membrane	AM231, AX231, MU231



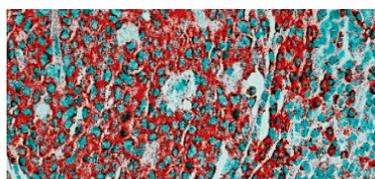
IgG



The human B-lymphocyte is characterized by the presence of readily detectable surface immunoglobulins. Up to 10 percent of peripheral blood lymphocytes and 68-70 percent of the lymphocytes in lymph nodes are of the B-cell type. The patterns of reactivity to IgG, IgA, IgM, C3, kappa, and lambda light chains can be used for the characterization of certain kinds of kidney and skin diseases. This antibody stains human IgG in the cytoplasm and membrane of B-cells and is negative for light chains and other heavy chains.

Antibody	Clone	Localization	Catalog Family
IgG	Polyclonal	Membrane & Cytoplasm	AR050, AW050, PU050
IgG	IgG88	Membrane & Cytoplasm	AM367, AX367, MU367

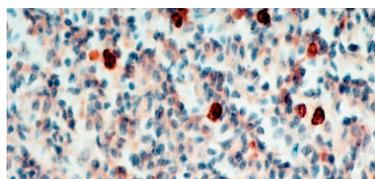
B Cell



MB2 reacts with a cytoplasmic antigen present in all B cells with the exception of mature plasma cells. It also reacts with endothelial cells and various types of epithelial cells. MB2 shows no reaction with T lymphocytes or thymocytes. A faint staining may occur when using frozen sections containing T cells. MB2 is not suitable for immunolabeling of living or unfixed cells.

Antibody	Clone	Localization	Catalog Family
B Cell	MB2	Cytoplasm	AM158, AX158, MU158

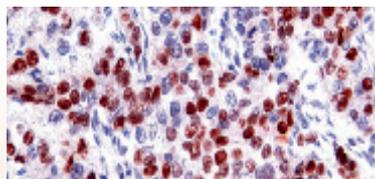
IgD



IgD is expressed on mature B cells and may be used to classify B cell neoplasms. Mantle zone B-cells in primary follicles and those outlining the germinal centers of secondary follicles are seen to be positive for IgD expression. Thus, this antibody could be used to detect changes in nodal architecture. It also may be used to detect the expanded follicular structures of progressive transformation of germinal center (PTGC), which are composed largely of IgD+ mantle zone B-cells. It is used along with IgM as a marker to identify marginal zone lymphomas.

Antibody	Clone	Localization	Catalog Family
IgD	Polyclonal	Membrane & Cytoplasm	AR440, AW440, PU440
IgD	IgD26	Cytoplasm	AMD32, MUD32, AXD32

Cyclin D1



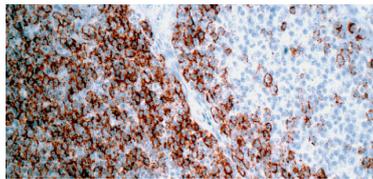
Cyclins are a family of key regulatory proteins of the cell cycle. Cyclin D1 controls the transition from G1-phase to S-phase of the cell cycle. In addition to breast carcinoma, overexpression is also seen in mantle cell lymphoma, laryngeal epithelial lesions, bladder urothelial tumors, and gastric carcinoma.

Antibody	Clone	Localization	Catalog Family
Cyclin D1	Polyclonal	Nucleus	AR447, AW447, PU447
Cyclin D1	EP12	Nuclear	AN815, AY815, NU815



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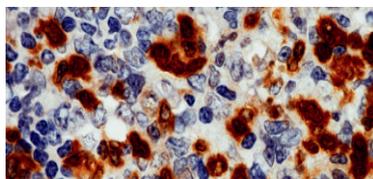
CD3



CD3 is a lineage-specific "pan T-cell" surface antigen composed of five different polypeptide chains with molecular masses ranging from 16 to 28 kD. CD3 is normally present on mature thymocytes, resting and activated peripheral T lymphocytes (both inducer and suppressor/cytotoxic), and on some natural killer cells. It is absent in peripheral B lymphocytes, monocytes, granulocytes, and platelets. CD3 is a common marker for identification of T cell and T cell derived malignancies.

Antibody	Clone	Localization	Catalog Family
CD3	UCHT1	Membrane	AM258, AX258, MU258
CD3	PS1	Membrane	AM322, AX322, MU322
CD3	EP41	Membrane	AN846, AY846, NU846

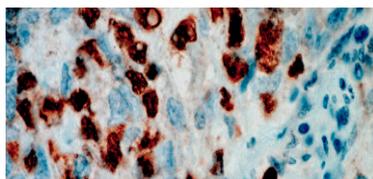
ZAP 70



ZAP-70 is an abbreviation for Zeta-chain-associated protein kinase 70 (70 is the molecular weight in kD). The protein is a member in the proteintyrosine kinase family. ZAP-70 protein is expressed in leukemic cells of approximately 25% of Chronic Lymphocytic Leukemia (CLL) cases. ZAP-70 expression is an excellent surrogate marker for the distinction between the Ig-mutated (ZAP-70 negative) and Ig-unmutated (ZAP-70 positive) CLL subtypes and can identify patient groups with divergent clinical courses. The ZAP-70 positive Ig-unmutated CLL cases have a poorer prognosis.

Antibody	Clone	Localization	Catalog Family
ZAP-70	ZAP70-C3	Cytoplasm & Membrane	AM544, AX544, MU544
ZAP-70	EP52	Cytoplasm & Membrane	AN852, AX852, NU852

PAX-5

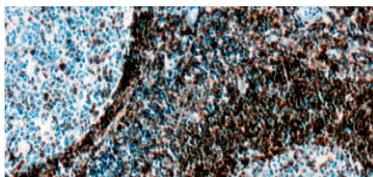


The PAX-5 gene is a member of the paired box (PAX) family of transcription factors. The central feature of this gene family is a novel, highly conserved DNA-binding motif, known as the paired box. The PAX proteins are important regulators in early development, and alterations in the expression of their genes are thought to contribute to neoplastic transformation. The PAX-5 gene encodes the B-cell lineage specific activator protein (BSAP) that is expressed at early, but not late stages of B-cell differentiation. Its expression has also been detected in developing CNS and testis, therefore, PAX-5 gene product may not only play an important role in B-cell differentiation, but also in neural development and spermatogenesis. PAX-5 is a pan B cell marker.

Antibody	Clone	Localization	Catalog Family
PAX-5	ZP007	Nucleus	AM457, AX457, MU457
PAX5	TIM3/3113	Membrane	AMA82, AXA82, MUA82



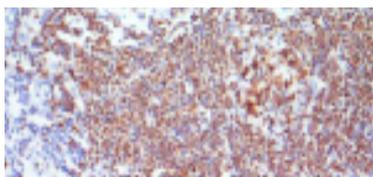
BCL-2



Bcl-2 (B-cell lymphoma 2), encoded in humans by the Bcl-2 gene, is the founding member of the Bcl-2 family of regulator proteins that regulate cell death, by either inducing it (pro-apoptotic) or inhibiting it (anti-apoptotic). Bcl-2 is specifically considered as an important anti-apoptotic protein and is thus classified as an oncogene. 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 and ovarian cancer.

Antibody	Clone	Localization	Catalog Family
BCL-2	EP36	Membrane & Cytoplasm	AN723, AY723, NU723
BCL-2	bcl-2/100	Membrane & Cytoplasm	AM287, AX287, MU827
BCL-2 Alpha	SP66	Membrane & Cytoplasm	AN758,AY758, NU758

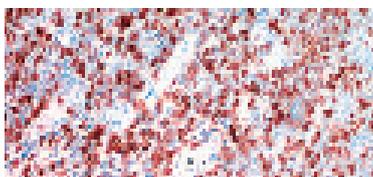
BOB-1



The BOB-1 / OBF-1 / OCA-B protein is a B cell-specific co-activator of the Oct1 and Oct2 transcription factors. BOB-1 facilitates transactivation of immunoglobulins and other B-cell specific genes through the binding and activation of the transcription factors Oct-1 and Oct-2. Expression of BOB-1/OBF-1 is restricted largely to mature B-cells. In pathological conditions such as classical Hodgkin's disease, loss of BOB-1 expression is thought, in part, to contribute to the defect in immunoglobulin gene expression by Hodgkin and Reed Sternberg cells. Expression of BOB.1/OBF.1 has been reported in follicular center cell lymphoma, diffuse large B-cell lymphoma and some cases of acute myeloid leukemia. B-CLL, marginal zone lymphoma and mantle cell lymphoma may show weak to moderate immunoreactivity.

Antibody	Clone	Localization	Catalog Family
BOB-1	SP92	Nucleus & Cytoplasm	AN957, AY957, NU957

CD8



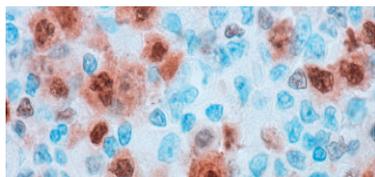
The CD8 antigen, also known as T8 or Leu2 or Lyt2 or T cell coreceptor, is a dimer with a molecular mass of 32 kD. The T8 antigen is expressed by the suppressor/cytotoxic subset of T lymphocytes which comprise most of the cortical thymocytes and approximately 30% of peripheral blood T cells. Studies have demonstrated that increased levels of T8+ cells are associated with viral infections such as hepatitis B, Epstein-Barr, and cytomegalovirus. This antibody may be used in the study of cell-mediated cytotoxicity and that of immunoregulation and T-lymphocyte-mediated suppression. This antibody stains CD8 (T8) antigen suppressor/cytotoxic T lymphocytes and majority of thymocytes.

Antibody	Clone	Localization	Catalog Family
CD8	T8	Membrane	AM261, AX261, MU261
CD8	1A5	Membrane	AM422, AX422, MU422
CD8	SP16	Membrane	AN740, AY740, NU740



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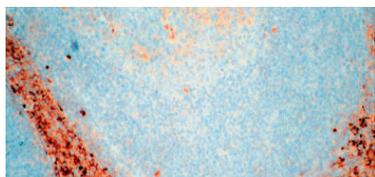
MUM1



MUM1/IRF4 protein is a member of the interferon regulatory factor (IRF) family of transcriptional factors initially described as downstream regulators of interferon signaling. The quantity of this factor varies within the hematopoietic system in a lineage and stage-specific way. It is considered to be a key regulator of several steps in lymphoid, myeloid, and dendritic cell differentiation and maturation. MUM1/IRF4 expression is observed in many lymphoid and myeloid malignancies, and may be a promising target for the treatment of some of these neoplasms. MUM1 is a valuable marker for understanding and characterizing histogenesis of B-cell lymphomas. It is an excellent marker for Reed-Sternberg cells of classic Hodgkin's disease.

Antibody	Clone	Localization	Catalog Family
MUM1	SP114	Nuclear	AN750, AY750, NU750

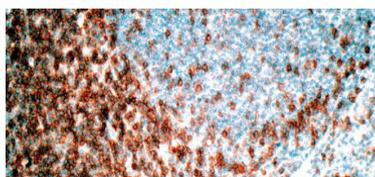
CD138



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. CD 138 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 stoma cells in both normal and tumor tissues.

Antibody	Clone	Localization	Catalog Family
CD138	EP201	Membrane	AN837, AY837, NU837

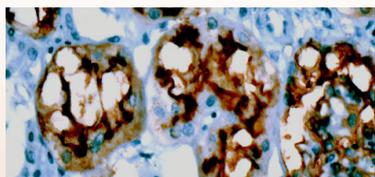
CD5



The CD5 antigen, is a T cell marker, also known as T1, is a 67 kD single chain glycoprotein expressed on normal and malignant T cells and on chronic lymphocytic leukemia cells. It is found in high density on medullary thymocytes and in low density on cortical thymocytes.

Antibody	Clone	Localization	Catalog Family
CD5	4C7	Membrane	AM430, AX430, MU430
CD5	EP77	Membrane	AN824, AY824, NU824

CD10

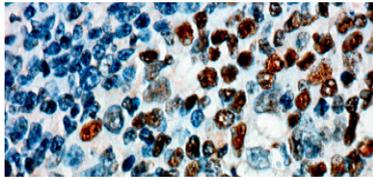


CD10, a 100KD glycoprotein, also known as Common Acute Lymphocytic Leukemia Antigen (CALLA), is a cell surface enzyme with neutral metalloendopeptidase activity which inactivates a variety of biologically active peptides. CD10 is expressed on the cells of lymphoblastic, Burkitt's and follicular germinal center lymphomas, and chronic myelogenous leukemia (CML). It is also expressed on the surface of normal early lymphoid progenitor cells, immature B cells within bone marrow and germinal center B cells within lymphoid tissue. CD10 is also present on breast myoepithelial cells, with especially high expression on the brush border of kidney and gut epithelial cells.

Antibody	Clone	Localization	Catalog Family
CD10	56C6	Membrane	AM451, AX451, MU451



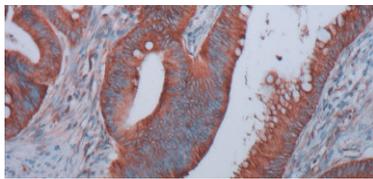
BCL-6



Anti-Bcl-6 is a transcriptional regulator gene which codes for a 706 amino acid nuclear zinc finger protein. This antibody reacts with Bcl-6 gene product in follicular lymphomas, diffuse large B-cell lymphomas, Burkitt's lymphomas and in nodular lymphocyte predominant Hodgkin's disease. The antibody gives a strong nuclear labeling of Bcl-6 protein in follicular lymphomas, diffuse large B-cell lymphomas, Burkitt's lymphomas and nodular, lymphocyte predominant Hodgkin's disease. Bcl-6 is not expressed in B-CLL, hairy cell leukemia, mantle and marginal-zone derived lymphomas.

Antibody	Clone	Localization	Catalog Family
Bcl-6	LN22	Nucleus	AM708, AX708, MU708

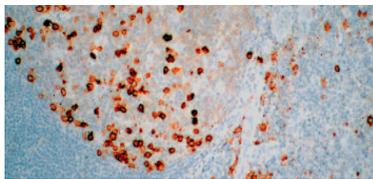
ALK



This antibody recognizes a human p80 protein, identified as a hybrid of the anaplastic lymphoma kinase (ALK) gene and the nucleophosmin (NPM) gene resulting from the t(2;5)(p23;q35) translocation found in a third of large cell lymphomas. This antibody can be used to detect p80 in these lymphomas and may also be used to detect a recently described subtype of large B cell lymphoma, which expresses the fulllength ALK protein.

Antibody	Clone	Localization	Catalog Family
ALK	SP144	Cytoplasm & Nucleus	AN874, AY874, NU874

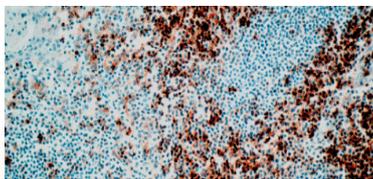
CD38



CD38 is a transmembrane protein, that is highly expressed on thymocytes. It is also present on activated T-cells and terminally differentiated B-cells (plasma cells). It works on immature T and B cells, monocytes, and natural killer cells. CD38 participates in cell adhesion, signal transduction and calcium signaling. It is expressed at high levels in the plasma cell tumor, prostate cancer, stomach cancer, and neuroblastoma. CD38 is used as one of the plasma cell markers and its ligand is CD31 molecules.

Antibody	Clone	Localization	Catalog Family
CD38	SP149	Membrane & cytoplasm	AN769, AY769, NU769

CD4



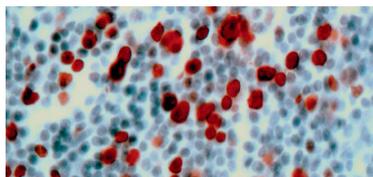
CD4 is a 55-60 kD cell-surface glycoprotein, which participates in the molecular complexes involved in both T cell development and its antigen recognizing activity, by binding to the nonpolymorphic region of class II MHC. CD4 is considered as a stage marker of T cell development in the thymus, for it is expressed on the cell surface in a stage specific manner, during T cell development. This antibody reacts on a low level with human monocytes and macrophages but does not react with B-cells, granulocytes and thrombocytes. This antibody stains CD4 antigen on the membrane of positive T lymphocytes.

Antibody	Clone	Localization	Catalog Family
CD4	4B12	Membrane	AM421, AX421, MU421
CD4	EP204	Membrane	AN722, AY722, NU722



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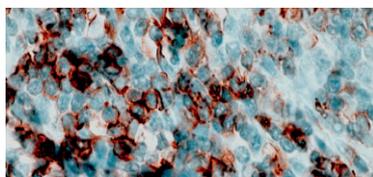
Ki-67



Ki-67 is one of the most widely studied proliferating cell antigens. The expression of Ki-67 antigen is limited to cells in phase G1, S and G2 with the highest levels present in the M phase. Ki-67 is more likely to be expressed in aneuploid tumors compared to diploid tumors, and it is associated with a high mitotic count and high histology grade. This monoclonal antibody enables detection of Ki-67 in proliferating cell populations in routine paraffin sections. The antibody stains positive in the nucleus of proliferation cells.

Antibody	Clone	Localization	Catalog Family
Ki-67	MIB-1	Nucleus	AM297, AX297, MU297
Ki-67	Ki88	Nucleus	AM370, AX370, MU370
Ki-67	K-2	Nucleus	AM410, AX410, MU410
Ki-67	EP5	Nucleus	AN727, AY727, NU727

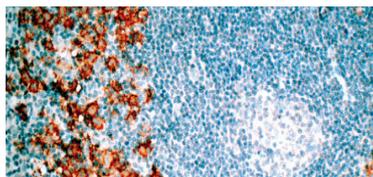
CD43



The CD43 antigen, also known as leukosialin or sialophorin is a 95-110 kD protein. CD43 is one of the major glycoproteins of thymocytes and T lymphocytes. In addition, the CD43 epitope is present on many cells such as granulocytes, monocytes, macrophages, NK cells, platelets, activated B cells, plasma cells, epidermal Langerhans cells and also on bone marrow hematopoietic stem cells. This antibody stains CD43, a membrane-bound antigen found on all T cells, macrophages, monocytes, and epidermal Langerhans cells.

Antibody	Clone	Localization	Catalog Family
CD43	DFT-1	Membrane	AM305, AX305, MU305
CD43	SP55	Membrane	AN748, AY748, NU748

CD1a

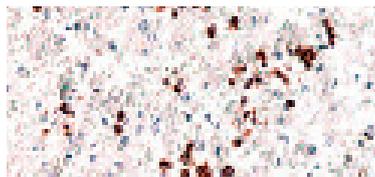


CD1 is expressed on cortical thymocytes, Langerhans cells, and dendritic cells. It is absent on mature peripheral blood T cells but intracytoplasmic expression is detected on activated T lymphocytes. At least five CD1 genes (CD1a, b, c, d, and e) are identified. CD1 proteins have been demonstrated to restrict T-cell response to non-peptide lipid and lycolipid antigens and play a role in non-classical antigen presentation. Ab-5 detects cortical thymocytes, Langerhans cells in epidermis, dendritic cells of dermis and Langerhans cells of mucosa of tonsil. It may also detect small focal groups of lymphocytes outside the germinal centers of tonsil indicating a cross-reaction with CD1b. This antibody is useful in the characterization of leukemias and lymphomas.

Antibody	Clone	Localization	Catalog Family
CD1a	O10	Membrane	AM490, AX490, MU490



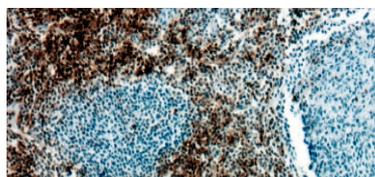
CD71



This antibody reacts with CD71 antigen (also known as T9 or Transferrin Receptor), a homodimeric type II membrane protein consisting of two identical subunits of approximately 95 kD covalently linked by two intermolecular disulfide bonds. This antigen has also been identified on the endothelium of brain capillaries, on carcinomas and sarcomas of various origins as well as on both high- and low-grade malignant lymphomas. This antibody stains the T9 antigen activated lymphocytes, myelocytes, and nucleated erythrocyte precursors in tissue sections.

Antibody	Clone	Localization	Catalog Family
CD71	T9	Membrane & Cytoplasm	AM269, AX269, MU269
CD71	H68.4	Membrane & Cytoplasm	AM354, AX354, MU354

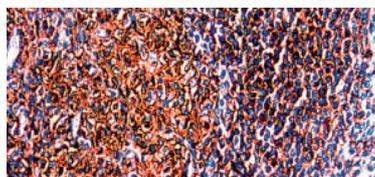
CD7



The CD7 molecule is membrane-bound glycoprotein of 40kD and is the earliest T Cell specific antigen to be expressed in lymphocytes. CD7 antigen is also the only early marker to persist throughout differentiation. The function and role of the CD7 molecule has not yet been fully identified although the activation of T cells with gamma/ delta receptors has been proposed based on mAb- activation. CD7 antigen is reported to be found on a majority of peripheral blood T cells, most natural killer cells and thymocytes.

Antibody	Clone	Localization	Catalog Family
CD7	LP15	Membrane	AM702, AX702, MU702
CD7	SP94	Membrane	AN761, AX761, NU761

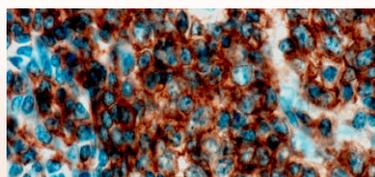
HLA-DR



HLA-DR is a transmembrane glycoprotein composed of an alpha chain (36 kD) and a beta chain (27 kD). LN3 is reactive with a nonpolymorphic antigen of the HLA-DR (Ia) region, expressed primarily by antigen presenting cells, B-cells of the germinal centers and mantle zones, and additionally by monocytes, macrophages and interdigitating histiocytes. LN3 will produce medium intensity staining on B lymphocytes of germinal centers and mantle zones, and high intensity staining of interdigitating histiocytes in T-cell zones. This antibody stains the HLA-DR antigen in membrane of positive cells.

Antibody	Clone	Localization	Catalog Family
HLA-DR	LN3	Membrane	AM154, AX154, MU154

CD19



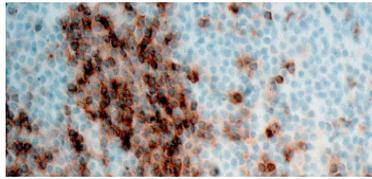
CD19 is expressed on follicular dendritic cells and B cells. In fact, it is present on B cells from earliest recognizable B-lineage cells during development to B-cell blasts but is lost on maturation to plasma cells. It primarily acts as a B cell co-receptor in conjunction with CD21 and CD81. CD19 has been observed in lymphomas and leukemias but often weak/negative in follicular lymphoma or diffuse large B-cell lymphoma. CD19 may provide useful diagnostic information for the study of B-lymphoproliferative disorders.

Antibody	Clone	Localization	Catalog Family
CD19	EP169	Membrane	AN729, AY729, NU729



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CD22



The CD22 antigen also known as BL-CAM is a single chain type I transmembrane molecule which contains seven Ig-like domains and molecular weight of 130 to 140kD. In B-cell malignancies, CD22 expression ranges from 60% to 80% depending on the histological type and on the assays used. CD22 antigen is weakly expressed in myeloid leukemias and non-T cell acute lymphoblastic leukemias and is strongly expressed in hairy cell leukemias. It is absent on peripheral blood T cells, T cell leukemias, granulocytes, and monocytes. This antibody stains both the membrane and cytoplasm of B lymphocytes.

Antibody	Clone	Localization	Catalog Family
CD22	FPC1	Membrane	AM439, AX439, MU439

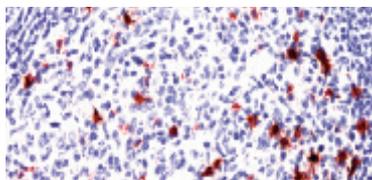
CD11c



CD11c (ITGAX) is a member of the leukocyte integrin family of adhesion proteins. 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 be used as a marker for hairy cell leukemia in paraffin embedded tissues.

Antibody	Clone	Localization	Catalog Family
CD11c	EP157	Membrane	AN822, AY822, NU822

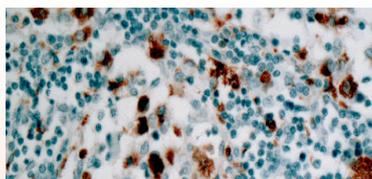
CD56



The NKH-1 antigen is present on a subpopulation of 10 to 15% of human peripheral blood lymphocytes (PBL) and is expressed on all cells which mediate non-MHC restricted cytotoxicity. Therefore, it is a pan natural killer (NK) cell antigen. This antibody reacts with one of the three distinct epitopes that have been identified: the NKH1b epitope. It can also be of value in the immunophenotyping of tumors derived from neuroectodermal tissue. This antibody stains CD56 (NKH-1) on peripheral blood large granular lymphocytes in frozen tissue sections.

Antibody	Clone	Localization	Catalog Family
CD56	NKH-1	Membrane	AM268, AX268, MU268

CD68

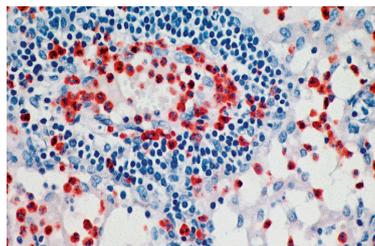


CD68 antigen, a 110-kD type 1 membrane glycoprotein, appears in endosomes or lysosomes (long variant) and to a lesser extent on the cell surface (short variant). It is highly expressed by blood monocytes and tissue macrophages. It is also reported to be expressed in immature myeloid cells, lymphoma, many tumor cell lines, and some epithelial tumors, although the labeling is usually less intense than in macrophages. Clone KP1 reacts strongly with a fixative-resistant epitope of CD68 protein that is expressed by virtually all macrophages of the human body. The CD68 antibody can be used as part of a panel in the evaluation of poorly differentiated neoplasms in cytological materials.

Antibody	Clone	Localization	Catalog Family
CD68	CD68/G2	Cytoplasm	AM549, AX549, MU549
CD68	KP1	Cytoplasm	AM416, AX416, MU416



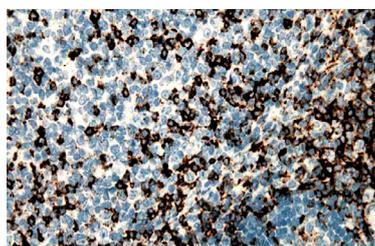
Lysozyme



Lysozyme (also called muramidase) is an enzyme which acts on bacterial cell walls by cleaving N-acetyl-glucosaminyl-Nacetylmuramic acid linkages. Lysozyme is present in human milk, tears, saliva, and serum. It is also found in myeloid cells, monocytes and histiocytes, making it useful for the demonstration of the myeloid or monocytic nature of acute leukemia. As a histiocytic marker, lysozyme has proven helpful in distinguishing between histiocytic cells and large lymphocytes and in the classification of lympho-proliferative disorders.

Antibody	Clone	Localization	Catalog Family
Lysozyme	Polyclonal	Cytoplasm	AR024, PU024, AW024

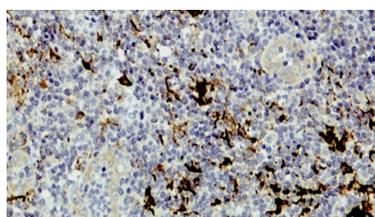
CD2



The CD2 antigen, also known as lymphocyte function antigen 2 (LFA2), is a single chain type I transmembrane molecule of about 50 kD and consists of 351 amino acids. It plays a critical role in activation of T cells. It binds to CD58 on antigen presenting cells and induces tyrosine phosphorylation of other molecules involved in T cell activation. It also plays a regulatory role in T-cell or NK-cell mediated cytolysis. CD2 antigen is expressed on the majority of T cells in peripheral lymphoid tissue, NK cells, cortical thymocytes and most malignant cells of T cell origin.

Antibody	Clone	Localization	Catalog Family
CD2	AB75	Membrane	AM438, MU438, AX438
CD2	LFA2/7106	Membrane	AMD29, MUD29, AXD29

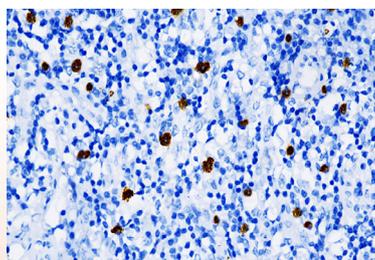
Fascin



Human fascin is a highly conserved actin-bundling protein. Fascin, encoded by the human homolog for sn (hsn) gene, has been localized to microspikes and stress fibers of cultured cells where it is thought to be involved in the formation of microfilament bundles. It is expressed predominantly in dendritic cells. Lymphoid cells, myeloid cells and plasma cells are negative. However, Reed Sternberg cells in Hodgkin's lymphoma are positive for fascin staining. Epstein-Barr virus may induce expression of fascin in B cells.

Antibody	Clone	Localization	Catalog Family
HLA-DR	FCN01	cytoplasm	AM488, MU488, AX488

Anti-Desmoglein 1



Desmoglein 1 is a 1049 amino acid calcium-binding type I transmembrane glycoprotein. It belongs to desmoglein subfamily of calcium-dependent cadherin cell adhesion molecule superfamily. They interact with desmoplakins, plakoglobin, plakophilins and forms the adhesive components of desmosomes with intermediate filaments. Desmoglein-1 is important in establishing cell-cell adhesion and function of epithelial cells in the epidermis. Desmoglein 1 is identified as the autoantigen of the autoimmune skin blistering disease pemphigus vulgaris.

Antibody	Clone	Localization	Catalog Family
Anti-Desmoglein 1	DSG1/1733	Membrane	AMC86, MUC86, AXC86



IHC PANEL MARKERS - B&T Cell Associated Lymphoma Panel



BioGenex Primary Antibody Format and Pack Size

BioGenex antibodies are optimized to provide a maximum signal with the minimum background for immunohistochemical staining. All our antibodies are optimized and recommended for use with all Super Sensitive™ Detection Systems to provide optimum staining.

BioGenex Ready-to-Use (RTU) antibodies are fully optimized for use with BioGenex Detection Systems without the need for further dilution or titration. BioGenex concentrated antibodies are provided with recommended dilutions for optimal use with BioGenex Detection Systems, allowing rapid titration and testing.

Prefix	Type	Species	Suffix	Volume and Format
AM/AN	Monoclonal	AM-Mouse/AN-Rabbit	-5M/5ME	6 mL - Ready-to-use (manual)
AM/AN	Monoclonal	AM-Mouse/AN-Rabbit	-10M/10ME	10 mL - Ready-to-use (i6000™)
AX/AY	Monoclonal	AX-Mouse/AY-Rabbit	-YCD/YCDE and -50D/50DE	16 mL and 5 mL Ready-to-use (Xmatrix®)
AR	Polyclonal	Rabbit	-5R/5RE	6 mL - Ready-to-use (manual)
AR	Polyclonal	Rabbit	-10R/10RE	10 mL - Ready-to-use (i6000™)
AW	Polyclonal	Rabbit	-YCD/YCDE and -50D/50DE	16 mL and 5 mL Ready-to-use (Xmatrix®)
MU/NU	Monoclonal	AM- Mouse/AN-Rabbit	-UC/UCE and -5UC/5UCE	1 mL and 0.5 mL Concentrate
PU	Polyclonal	Rabbit	-UC/UCE and -5UC/5UCE	1 mL and 0.5 mL Concentrate

Other Panel Markers from BioGenex

Breast cancer panel	Pancreas tumor
Cervical cancer	Liver cancer
Colorectal and stomach cancer	Kidney cancer
Lung cancer	Head & neck cancer
Melanoma	Bladder cancer
Muscle cancer	Germ cell tumor
Ovarian cancer	Vascular tumor
Prostate/Testicular cancer	Pituitary gland
Neuroendocrine tumor	Esophagus cancer

For specific information on the individual antibody, please refer to the datasheets available on www.biogenex.com or call BioGenex Technical Support at **1(800)421-4149** or write to support@biogenex.com.



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