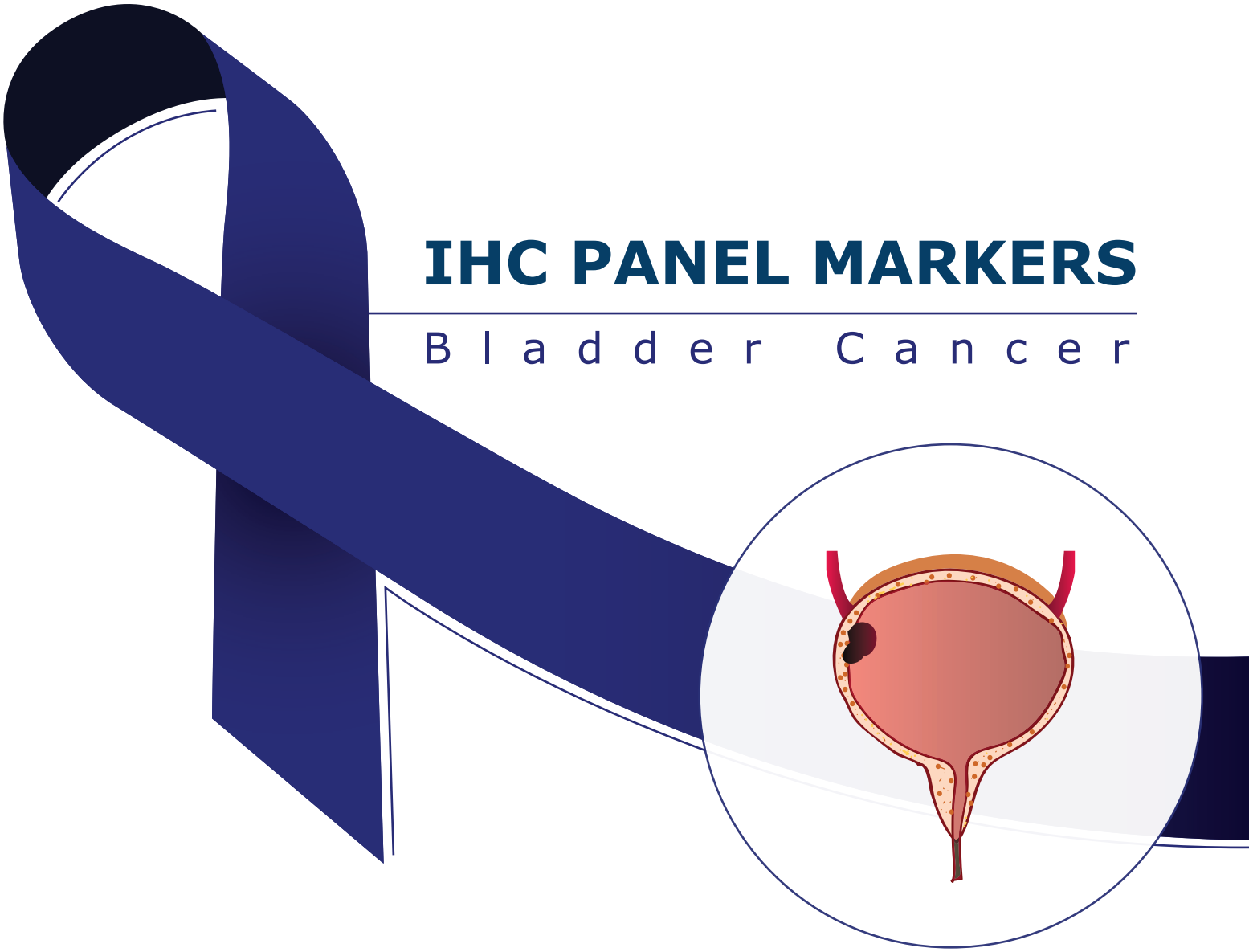
IHC PANEL MARKERS

Bladder Cancer



BioGenex offers wide-ranging antibodies for several IHC panel for initial differentiation, tumor origin, treatment methods, and prognosis. All BioGenex antibodies are validated on human tissues to ensure sensitivity and specificity. BioGenex comprehensive IHC panels include a range of mouse monoclonal, rabbit monoclonal, and polyclonal antibodies to choose from.

BioGenex offers a vast spectrum of high-quality antibodies for both diagnostic and reference laboratories. BioGenex strives to support efforts in clinical diagnostics and drug discovery development as we continue to expand our antibody product line offering in both ready-to-use and concentrated formats for both manual and automation systems.

Antibodies for Bladder cancer
Uroplakin III a, Gata-3, CK5, CK7, CK20, CK13, CK18, CEA, Ki-67, p53, Bcl-2, p21, Survivin, CD34, VEGF, CD31, EGFR, c-erbB-2, c-erbB-3, CD95

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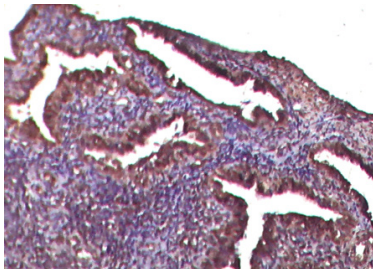
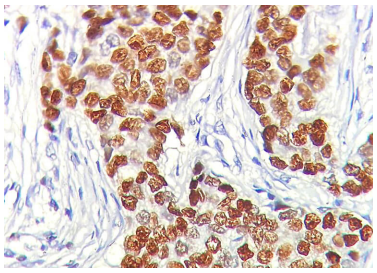
Uroplakin III a



Uroplakins IIIa (UPIIIa) belongs to a family of transmembrane proteins Uroplakins that are specific differentiation products of urothelial cells. It is a component of the asymmetric unit membrane (AUM) and is a highly specialized bio-membrane made by terminally differentiated urothelial cells. It plays a major role in AUM-cytoskeleton interaction in terminally differentiated urothelial cells. UPIIIa contributes to the formation of urothelial glycocalyx, which may play an important role in preventing bacterial adherence through FimH bacterial protein binding leading to bladder infection. It is present in the urothelial surface membrane of human renal pelvis, ureter, bladder and urethra. UPIIIa is specific for tumors of urothelial origin and, used in combination with other markers in the diagnosis of primary and metastatic tumors. Loss of Uroplakin IIIa expression in bladder cancers has been associated with higher grade, muscle-invasive cancer and lymphovascular invasion. Uroplakin III may be used in a panel of antibodies including GATA3, p63 and S100P.

Antibody	Clone	Localization	Catalog Family
Uroplakin III a	C-6	Cytoplasm	AMB38-5M, AMB38-10M, MUB38-UC, MUB38-5UC, AXB38-YCD, AXB38-50D

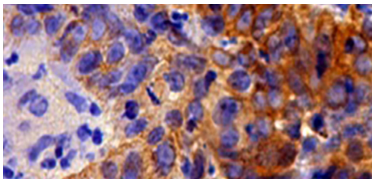
Gata-3



GATA-3 (GATA binding protein 3) belongs to the family of transcription factor, which bind directly to the nucleotide sequence core element to control diverse tissue-specific programs of gene expression and morphogenesis. Its expression is seen in hematopoietic and non-hematopoietic tissues/cells such as mammary glands and T cells. GATA-3 functions as a major regulator of T helper 2 cell (Th2) differentiation in immune cells and differentiation of luminal epithelial cells in mammary glands. GATA-3 has also been a novel marker for bladder cancer and also expression is seen in 67% of 308 urothelial carcinomas but no prostate or renal carcinomas.

Antibody	Clone	Localization	Catalog Family
Gata-3	HG3-31	Nucleus	AMB43-5M, AMB43-10M, MUB43-UC, MUB43-5UC, AXB43-YCD, AXB43-50D

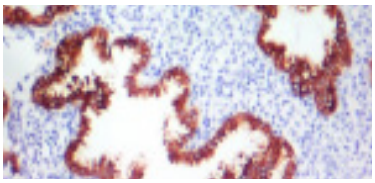
Cytokeratin 5



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 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 sensitive and specific basal cell marker of the basal-like phenotype of breast carcinoma and to differentiate normal 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.

Antibody	Clone	Localization	Catalog Family
Cytokeratin 5	EP42	Cytoplasm	AN892, AY892
Cytokeratin 5	EP24	Cytoplasm	AN847, AY847, NU847

Cytokeratin 7



Anti-Cytokeratin 7 (CK7) antibody recognizes an intermediate filament protein (IFP) of 55 kDa. This monoclonal antibody (mAb) is highly specific to cytokeratin 7 and shows no cross-reaction with other IFPs. Cytokeratin 7 is a basic cytokeratin and belongs to type II cytokeratin. Type II cytokeratin is specifically expressed in the simple epithelia lining the cavities of the internal organs and in the gland ducts and blood vessels and is found in most glandular and transitional epithelia; but not in the stratified squamous epithelia. Cytokeratin 7 is expressed in the epithelial cells of the ovary, lung, and breast but not of the colon, prostate, or gastrointestinal tract. Anti-Cytokeratin 7 mAb is highly useful in distinguishing ovarian carcinomas (CK 7+) from colon carcinomas (CK 7-).

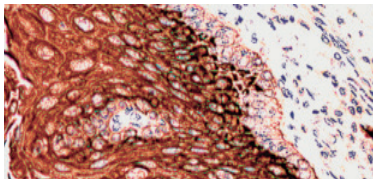
Antibody	Clone	Localization	Catalog Family
Cytokeratin 7	KRT7/760	Cell membrane	AM944, AX944, MU944

Cytokeratin 20

This monoclonal antibody recognizes an intermediate filament protein of 46 kDa, identified as cytokeratin 20 (KRT20, CK20). CK20 is abundantly expressed in goblet cells and enterocytes of the gastrointestinal tract. It plays a significant role in maintaining keratin filament organization in intestinal epithelia. It is a useful marker of pancreatic and colorectal cancer and has been detected in adenocarcinomas of the colon, stomach, and biliary tract. Diseases associated with CK20 include Merkel cell carcinoma and glandular cystitis. Breast carcinomas are generally non-reactive.

Antibody	Clone	Localization	Catalog Family
Cytokeratin 20	KRT20/1992	Cell membrane	AM946, AX946, NU849

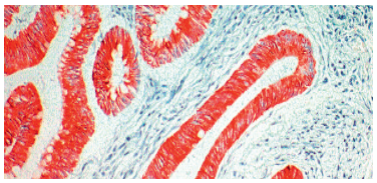
Cytokeratin 13



Cytokeratins 13 are markers for stratified squamous epithelia in internal organs including esophagus and tongue. This antibody is a reliable marker for squamous metaplasia found in respiratory tissue and prostate gland. Squamous metaplasia in the respiratory tract and in some other human organs may be associated with a precancerous condition. This 51 kD Cytokeratin 13, which is expressed in internal non-keratinized stratified squamous epithelia, and its frequently coexpressed partner, the basic 59 kD Cytokeratin 4, may be regarded as markers for esophageal-type differentiation. This antibody stains most cytoplasm in the stratified squamous epithelium (except skin epidermis).

Antibody	Clone	Localization	Catalog Family
Cytokeratin 13	AE8	Cytoplasm	AM132, AX132

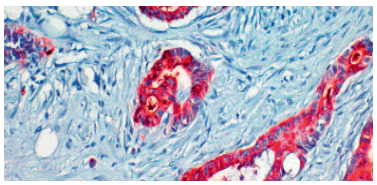
Cytokeratin 18



Cytokeratins 8 (52 kD) and 18 (45 kD) comprise a cytokeratin pair as markers for simple epithelia. The monoclonal antibodies specific for cytokeratin 18 stain all carcinomas derived from simple epithelia but do not stain well-differentiated squamous cell carcinoma. It is useful to use monoclonal antibodies to Cytokeratins 8 and 18 in combination with other anti-cytokeratin monoclonal antibodies when studying cytokeratin expression patterns. This antibody stains Cytokeratin 18 in the cytoplasm of epithelial cells.

Antibody	Clone	Localization	Catalog Family
Cytokeratin 18	DC-10	Cytoplasm	AM143, AX143, MU143

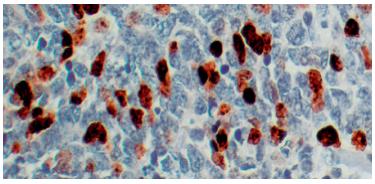
Carcinoembryonic Antigen (CEA)



CEA consists of a heterogeneous family of related oncofetal 200 kD glycoproteins that are secreted into the glycocalyx surface of gastrointestinal cells. Usually, CEA is demonstrated as a linear labelling of the apical poles of cells lining the glandular lumen and, occasionally, as weak staining near the apex of colonic epithelial cells. Pancreatic carcinomas, testicular tumor, gallbladder neoplasms and granular cell myoblastomas stain positive, whereas malignant tumors of the brain, prostate, skin, lymphoreticular tissues, hepatocellular carcinomas, esophageal squamous cell carcinomas, and mesothelioma fail to stain for CEA. This antibody stains carcinoembryonic antigen in the cytoplasm of positive cells.

Antibody	Clone	Localization	Catalog Family
Carcinoembryonic Antigen	B01-94-11M-P	Cytoplasm	AM009, AX009, MU009
Carcinoembryonic Antigen	CEA88	Cytoplasm	AM365, AX365, MU365
Carcinoembryonic Antigen	Polyclonal	Cytoplasm	AR009, AW009

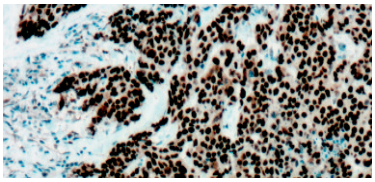
Ki-67



Ki-67 reacts with a human nuclear antigen that is expressed in proliferating cells but not in resting cells. Ki-67 antigen is a potent tool for rapidly evaluating the growth fraction of any given human cell subset. It is particularly useful in studying malignant tumors and other pathogenic states as a measure of the proportion of proliferating cells. Immunostaining of Ki-67 antigen in normal tissue shows nuclear reactivity in cells of germinal centers of cortical follicles, cortical thymocytes, neck cells of the gastrointestinal mucosa, and undifferentiated spermatogonia.

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

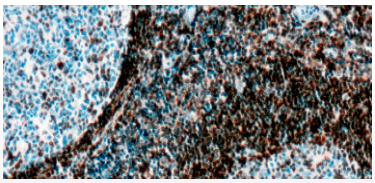
p53



Tumor protein p53, a nuclear protein, plays an essential role in the regulation of cell cycles, specifically in the transition from G0 to G1. It is found in very low levels in normal cells, and it functions as a tumor suppressor within a variety of tumors by either stimulating apoptosis or growth arrest in deference to cell type and physiological factors. 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 ovary cancer.

Antibody	Clone	Localization	Catalog Family
p53 Protein	EP9	Nucleus	AN728, AY728, NU728
p53 Protein	BP53-12-1	Nucleus	AM195, AX195, MU195
p53 Protein	DO7	Nucleus	AM239, AX239, MU239
p53 Protein	1801	Nucleus	AM240, AX240, MU240

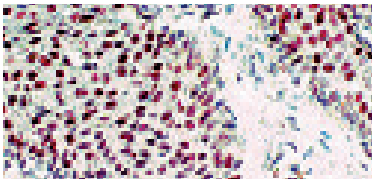
Bcl-2



Bcl-2 (B-cell lymphoma 2), encoded in humans by the Bcl-2 gene, is the founding member of the Bcl-2 family of regulatory proteins that regulate cell death, by either inducing it (pro-apoptotic) it or inhibiting it (anti-apoptotic). Bcl-2 is specifically considered as an important anti-apoptotic protein and is thus classified as an oncogene. Overexpression 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 the 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	Cytoplasm	AN723, AY723, NU723
Bcl-2 alpha	SP66	Membrane	AY758, AY758, NU758
BcI-2	bcl-2/100	Cytoplasm	AM287, AX287
Bcl-6	LN22	Nuclear	AM708, AX708, MU708

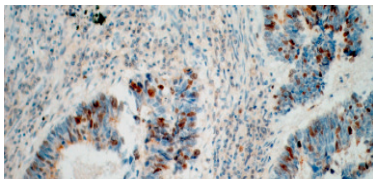
p21



The p21/WAF1 protein is a p53 regulated gene product that has been shown to mediate cell cycle arrest. The growth arrest is due to several properties of this protein, namely cyclin dependent kinase inhibition, and maintenance of cell cycle arrest at G2 by blocking the interaction of Cdc25C with PCNA and inhibition of stress activated protein kinases. In breast cancer the p21/WAF1 expression is generally seen to be negative. This antibody stains the nucleus in cells that are arrested in G1 phase.

Antibody	Clone	Localization	Catalog Family
p21	4D10	Nucleus	AM434, AX434, MU434

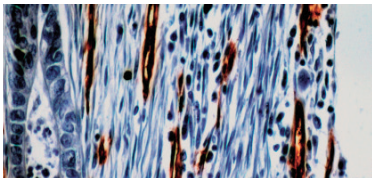
Survivin



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, ovary carcinoma, hepatocellular carcinoma, prostate carcinoma, and breast carcinoma. However, the link between 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 surviving 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.

Antibody	Clone	Localization	Catalog Family
Survivin	EP119	Nucleus/Cytoplasm	AN826, AY826-,NU826

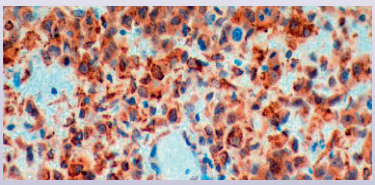
CD34 (Endothelial Cell)



CD34 functions as a cell-cell adhesion factor and cell-surface glycoprotein. It may also mediate the attachment of stem cells to bone marrow extracellular matrixes or directly to stromal cells. Cells expressing CD34 are normally found in the umbilical cord and bone marrow as hematopoietic cells and in vascular endothelium. In addition to stem cell recognition, CD34 is expressed by vascular endothelium; it appears that proliferating endothelial cells express this molecule in greater amounts than resting cells. In comparison to factor VIII R Antigen, CD34 is an important marker for quantifying and purifying hematopoietic progenitor/stem cells. It is useful in the identification of tumors with endothelial or lymphoid differentiation. In addition, CD34 aids in the detection of gastrointestinal stromal tumors

Antibody	Clone	Localization	Catalog Family
CD34 (Endothelial Cell)	QBEnd/10	Membrane	AM236, AX236, MU236
CD34 (Endothelial Cell)	EP88	Membrane	AN779, AY779, NU779

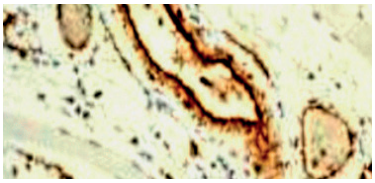
VEGF



Vascular endothelial factors (VEGFs) are a family of closely related growth factors having a conserved pattern of eight cysteine residues and sharing common VEGF receptors. VEGF receptors stimulate the proliferation of endothelial cells, induce angiogenesis, and increase vascular permeability in both large and small vessels. The mitogenic activity of VEGF appears to be mediated by specific VEGF receptors.

Antibody	Clone	Localization	Catalog Family
VEGF	Polyclonal	Cytoplasm	AR483, AW483, PU483

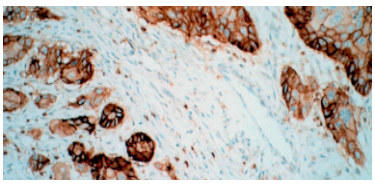
CD31 (Endothelial Cell)



Anti-CD31 monoclonal antibody JC/70A reacts with a membrane glycoprotein with an apparent size of 100 kD in endothelial cells and 130 kD in platelets. It strongly stains endothelium in normal tissue as well as benign and malignant tumor tissue. The antibody labels mega-karyocytes, platelets, and occasionally plasma cells, and weakly stains mantle zone B cells, peripheral T cells and neutrophils. This antibody stains CD31 antigen in the membrane and sometimes cytoplasm of endothelial and other positive cells in normal and abnormal tissues.

Antibody	Clone	Localization	Catalog Family
CD31 (Endothelial Cell)	JC/70A	Membrane & Cytoplasm	AM232, AX232
CD31 (Endothelial Cell)	9G11	Membrane & Cytoplasm	AM241, AX241, MU241

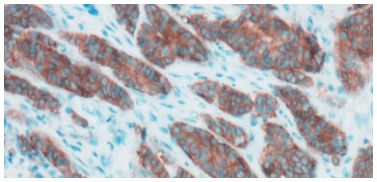
EGFR



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. The antibody detects both EGFR phosphorylated on Tyr1068 of the mature human isoform 1 (corresponding to Y1092 from the precursor form P00533-1/p170), and also unphosphorylated EGFR. It is associated with a number of cancers, including lung cancer, anal cancers[7] and glioblastoma multiforme. In breast cancer, EGFR is predominately expressed in basal cell-like carcinoma; it has been recommended for identification of basal-like breast carcinoma along with Cytokeratin 5/6.

Antibody	Clone	Localization	Catalog Family
EGFR	EP22	Membrane and Cytoplasm	AN781, AY781, NU781
EGFR	Polyclonal	Membrane and Cytoplasm	AR335, AW335, PU335

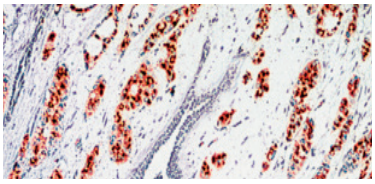
c-erbB-2



c-erbB-2 is a receptor tyrosine kinase of the c-erbB family. It is closely related in structure to the epidermal growth factor receptor. Amplification or over-expression of the erbB-2 gene occurs in approximately 15-30% of breast cancers. It is strongly associated with increased disease recurrence and poor prognosis. Over-expression is also known to occur in the ovarian, stomach, and aggressive forms of uterine cancer, such as uterine serous endometrial carcinoma. c-erbB-2 oncoprotein is detectable in a proportion of breast and other adenocarcinomas, as well as transitional cell carcinomas.

Antibody	Clone	Localization	Catalog Family
c-erbB-2	SP101	Membrane and cytoplasm	AN752, AY752, NU752
c-erbB-2	SP3	Membrane and cytoplasm	AN753, AY753, NU753
c-erbB-2	CB11	Membrane and cytoplasm	AM134, AX134, MU134
c-erbB-2	EP3	Membrane and cytoplasm	AN726, AY726, NU726

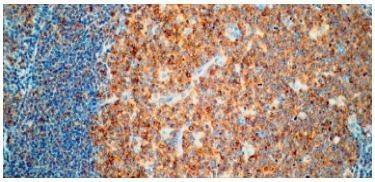
c-erbB-3



The c-erbB-3 gene product is a 180 kD transmembrane glycoprotein showing tyrosine kinase activity. It belongs to a family of growth receptors that show structural similarity to Epidermal Growth Factor Receptor (EGFR) and the c-erbB-2 proteins. The c-erbB-3 protein is widely expressed in digestive, urinary and respiratory tracts, the circulatory systems, female and male reproductive system but not in hematopoietic system. C-erbB-3 protein has also been seen to be overexpressed in some tumors including those of the breast, stomach, pancreas, colon, and ovary. This antibody stains c-erbB-3 protein in the membrane of positive cells.

Antibody	Clone	Localization	Catalog Family
c-erbB-3 (HER-3)	RTJ1/A2	Membrane	AM319, AX319, MU319

CD95



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. During embryonic and postembryonic development, many cells die by means of apoptosis. This plays a major role in determining morphological and functional maturity in a variety of systems, including the formation of the neural network and clonal deletion of autoreactive T cells. 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.

Antibody	Clone	Localization	Catalog Family
CD95	EP208	Cytoplasm and membrane	AN742, AY742, NU742

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 (Xmatrx®)
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 (Xmatrx®)
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	Neuroendocrine tumor
B&T cell Associated Lymphoma	Pancreas tumor
Cervical cancer	Liver cancer
Colorectal and stomach cancer	Kidney cancer
Lung cancer	Head & neck cancer
Melanoma	Germ cell tumor
Muscle cancer	Vascular tumor
Ovarian cancer	Pituitary gland
Prostate/Testicular cancer	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.

BioGenex
In the U.S., call +1 (800) 421-4149
Outside the U.S., call +91-40-27185500

www.biogenex.com

Customer Service
US: customerservice@biogenex.com
India: indiacs@biogenex.com
Global: internationalcs@biogenex.com