IHC PANEL MARKERS

Breast Tumor Panel

BioGenex poineer in providing wide-range of 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 Breast Cancer Panel

Cathepsin K, Mammaglobin, GATA 3, ,PTEN , CTNNB-1, Neu, Estrogen Receptor Beta, HIF-1 alpha, Cdk4, P57, Brg-1 / SMARCA4, EMA, p120, Estrogen , eceptor alpha, ATRX, Estrogen Receptor, Progesterone Receptor, Her2, p53, IDH1, BRCA1, Tumor-Associated Glycoprotein (TAG-90, BCA), Ki-67, Cytokeratin 5&6, p63, Cytokeratin 14, EMA, GCDFP-15, Cytokeratin 20, Cytokeratin 7, Bcl-2, E-Cadherin, Beta-Catenin, EGFR, SMA, Calponin, Caldesmon, Collagen IV, BCA-225, TAG72, Cyclin E1, Cyclin D1, p120, Topoisomerase II alpha, TTF-1, CDX-2, Cytokeratin 8, Laminin Receptor, TARDBP, YAP, TRPS-1(AND65), SLUG(AMD59).

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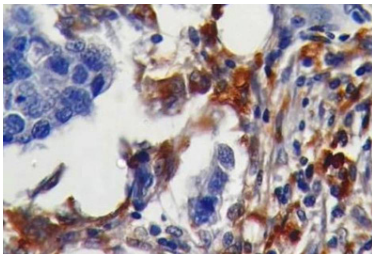
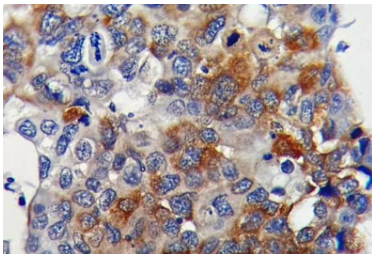
Cathepsin K



Cathepsin K also designated as CTSK, CTSO, CTSO2, is a lysosomal cysteine protease belongs to the papain cysteine protease family. It is an important protease involved in bone remodeling and resorption by degrading type I collagen, osteopontin, and other bone matrix proteins. Cathepsin K expression is observed in bone, cartilage and skeletal muscle. Its expression is also seen in a significant fraction of human breast cancers, where it could contribute to tumor invasiveness.

Antibody	Clone	Localization	Catalog Family
Cathepsin K	CTSK/2791	Cytoplasm	AMC13-5M, AMC13-10M, MUC13-UC, MUC13-5UC, AXC13-YCD, AXC13-50D

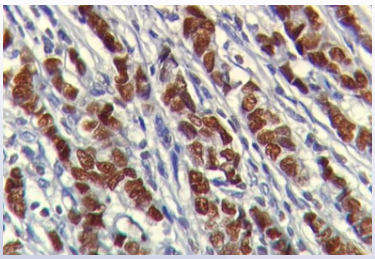
Mammaglobin



Mammaglobin is a 10kDa breast-associated glycoprotein distantly related to secretoglobin family that includes human uteroglobin and lipophilin. It labels cytoplasm of normal breast epithelial cells as well as primary and metastatic breast carcinomas. Mammaglobin expression is absent in prostate, kidney, colon, rectum, small intestine, stomach, pancreas, lung and thyroid tissue. Anti-Mammaglobin is a sensitive and fairly specific marker for breast carcinoma and is used in a panel with GCDFP-15 and estrogen receptor (ER) in evaluating tumors of unknown primary origin.

Antibody	Clone	Localization	Catalog Family
Mammaglobin	MGB/4811R	Cytoplasm	ANC10-5M, ANC10-10M, NUC10-UC, NUC10-5UC, AYC10-YCD, AYC10-50D

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	GATA3/6664	Nucleus	AMB89-5M, AMB89-10M, MUB89-UC, MUB89-5UC, AXB89-YCD, AXB89-50D

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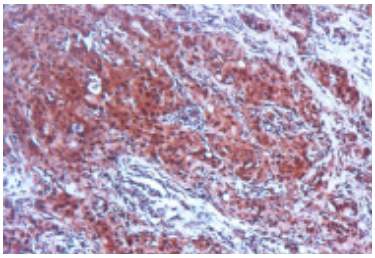
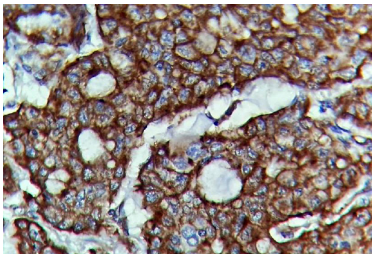
PTEN



Phosphatase and tensin homologue deleted on chromosome TEN (at 10q23) (PTEN) is a tumor suppressor and a member in the PI3K/PTEN/Akt pathway. PTEN gene encodes a 403 amino acid cytosolic lipid phosphatase that negatively regulates AKT activity by dephosphorylating phosphatidylinositol 3,4,5-trisphosphate (PIP3). The defects of PTEN have been implicated in human cancers from breast, prostate, thyroid, skin, endometrium, head and neck, and brain. Up to 50-60 percent of advanced prostate cancers show abnormal PTEN gene expression or loss of protein expression.

Antibody	Clone	Localization	Catalog Family
PTEN	6H2.1	Cytoplasm and Membrane	AMB26, AXB26, MUB26

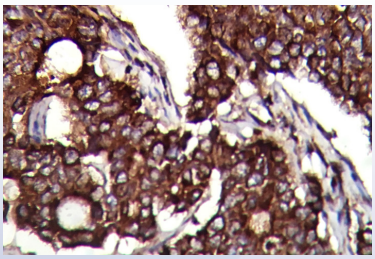
CTNNB-1 (Beta Catenin)



Beta-catenin, an adherens junction (AJ) protein, is a component of cell-cell adhesion structures which are necessary for the creation and maintenance of epithelial cell layers by regulating cell growth and adhesion between cells. β-catenin has an important role in cell adhesion, bridging between cadherins and actin cytoskeleton. It is widely expressed in many tissues and also been found in complexes with the tumor suppressor protein APC. In pathology, beta-catenin has an efficient role in pilomatrixoma (PTR), medulloblastoma (MDB), colorectal cancer (CRC), ovarian cancer, and tumor development.

Antibody	Clone	Localization	Catalog Family
CTNNB-1 (Beta Catenin)	CTNNB1/1507	Cytoplasm and Membrane	AMB01, AXB01, MUB01

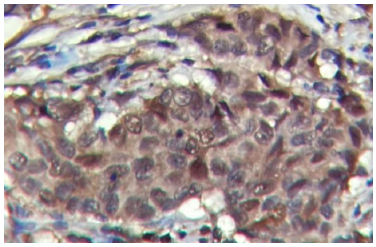
Neu



The NEU protein is member of the human epidermal growth factor receptor (EGFR) family. Members of this family include EGFR (HER1), Neu (ErbB-2, HER2), ErbB-3 (HER3), and ErbB-4 (HER4), which form either homodimers or heterodimers upon ligand binding. NEU protein is a trans-membrane receptor tyrosine kinase that is frequently over expressed in a number of carcinomas. ErbB2 hetero or homo-dimerizes with ErbB1, 3, and 4, and can activate different pathways including the PI3K, PLCγ, and MAPK pathways, depending on the ErbB receptor involved. Overexpression of the HER2/Neu protein is seen in various cancers such as ductal breast cancer, pulmonary and gastric adenocarcinomas and may play a role in the development and metastasis of gliomas, ovarian, breast, lung, and gastric cancer.

Antibody	Clone	Localization	Catalog Family
Neu	0.N.211	Cytoplasm	AMB52, AXB52, MUB52

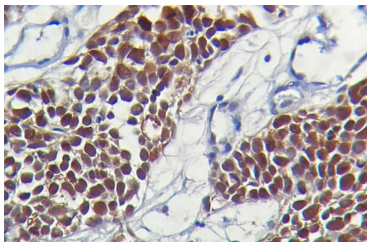
HIF-1 alpha



Hypoxia-inducible factor 1-alpha is known as HIF-1-alpha a protein that in humans is encoded by the HIF1A gene. HIF-1 shows to activate hypoxia-responsive genes that are involved in multiple aspects of tumorigenesis and cancer progression which also includes proliferation, metabolism, angiogenesis, invasion, metastasis and therapy resistance. It also plays an important role in cellular and systemic responses to hypoxia. Hypoxia has been clinically demonstrated to predict an adverse treatment outcome in radio therapeutic management of cancer of the head and neck, uterine cervix and soft tissue sarcomas. HIF-1 alpha antibody may be used in analyzing the cancer cell response to therapy.

Antibody	Clone	Localization	Catalog Family
HIF-1 alpha	EP118	Nucleus/Cytoplasm	ANB27, AYB27, NUB27

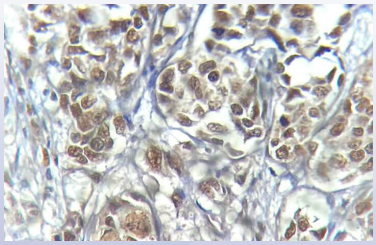
Cdk4



CDK4 (cyclin-dependent kinase 4) is a 34 kDa member of the serine/threonine protein kinase family. CDK4 is phosphorylated, forms a complex with cyclin D1, 2 or 3, and phosphorylates pRb/retinoblastoma protein leading to inactivatination of pRb and cells initiate DNA synthesis. Mutations in CDK4 gene are found to be associated with tumorigenesis of a variety of cancers. CDK4 expression is seen in a variety of normal cells and tissues as well as in cancer cells. CDK4 is overexpressed in human tumors like malignant melanoma, glioma, sarcoma and carcinomas of the breast, urothelial, colon, lung, ovary and oral cavity.

Antibody	Clone	Localization	Catalog Family
Cdk4	DCS-35	cytoplasm/nucleus	AMB80, AXB80, MUB80

Brg-1 / SMARCA4



Brg1 (Brahma-related gene 1) also known as SMARCA4 (Swi/SNF-related matrix-associated actin-dependent regulator of chromatin, subfamily A, member 4), SNF2L4 and SNF2 beta, is a 205 kDa nuclear-localized chromatin remodeling ATPase that may both facilitate and inhibit gene transcription. It plays a crucial role in the regulation of gene transcription during early mammalian embryogenesis. In addition, Brg1 is also involved in cell growth arrest, senescence and tumor suppression.

Antibody	Clone	Localization	Catalog Family
Brg-1 / SMARCA4	G-7	Nucleus	AMB49, AXB49, MUB49

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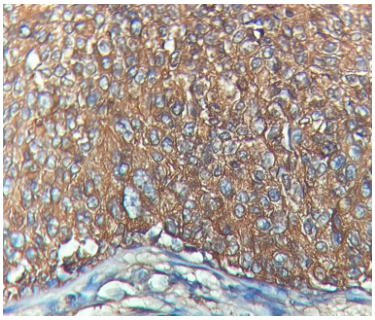
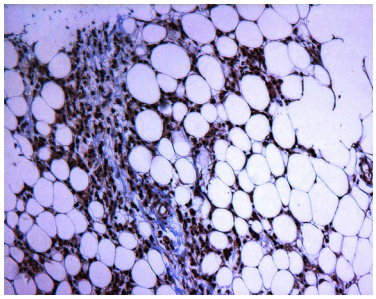
EMA



Epithelial membrane antigen antibody (EMA) also known as episialin, is a member of heterogeneous family of highly glycosylated transmembrane proteins known as human milk fat globule (HMFG) membrane proteins. It is expressed in normal and neoplastic epithelial cells of various tissues and lesser degree of staining is seen in carcinomas of the endometrium, kidney, thyroid, stomach, Breast Carcinoma, lung, colon, ovary, prostate and cervix. EMA is also positive in meningiomas, which is useful when distinguishing it from other intracranial neoplasms e.g. Schwannomas. It labels Reed-Sternberg cells in nodular lymphocyte predominant Hodgkin's lymphoma and anaplastic large cell lymphomas. The absence of its expression can also be of value since negative EMA is characteristic of some tumors including Adrenal Carcinoma, Seminomas, Paraganglioma and Hepatoma.

Antibody	Clone	Localization	Catalog Family
EMA	GP1.4	Cytoplasm and Membrane	AMB78, AXB78, MUB78

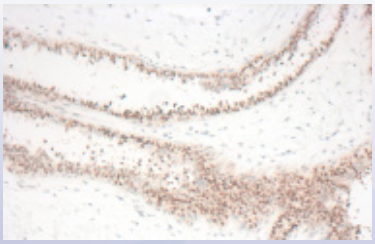
Estrogen Receptor Beta



Human Estrogen Receptor beta 1 (ERb1) is an isoform of estrogen receptor beta (ERb), and belongs to the superfamily of nuclear receptor transcription factors. The gene product has a DNA binding domain and a ligand binding domain, and is localized in nucleus and cytoplasm. ERb is highly homologous to human estrogen receptor alpha (ERa) and displays 96% and 58% homology in the DNA and ligand binding domains, respectively. ERb is expressed in various normal and neoplastic cells. Its expression in neoplasm was fi rst identifi ed in breast cancer, and ERb-positive breast cancers have shown to have better survival with adjuvant tamoxifen treatment, independent of ERa expression.

Antibody	Clone	Localization	Catalog Family
Estrogen Receptor Beta	ERb455	Cytoplasm	AMB30, AXB30, MUB30

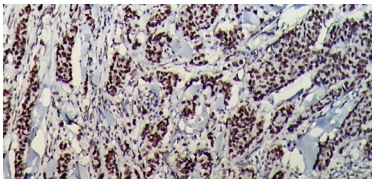
Estrogen Receptor alpha



This MAb is specific to ER alpha and shows minimal crossreaction with other members of the family. ER is an important regulator of growth and differentiation in the mammary gland. Presence of ER in breast tumors indicates an increased likelihood of response to anti-estrogen (e.g. tamoxifen) therapy. It strongly stains nuclei of epithelial cells in breast carcinomas.

Antibody	Clone	Localization	Catalog Family
Estrogen Receptor alpha	ESR1/1935	Membrane	AM924, AX924, MU924

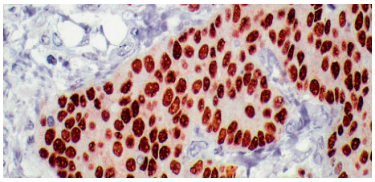
ATRX



α-thalassemia/mental retardation X-linked (ATRX) is a transcriptional regulator and helicase that belongs to the SNF2 family of chromatin remodeling proteins. Together with its binding partner death-associated protein 6 (Daxx), ATRX acts as histone chaperone to deposit histone variant H3.3 at repetitive DNA sequences such as telomeric, pericentric, and ribosomal gene repeats. It involved in transcriptional regulation and chromatin remodeling. The mutations of this gene are associated with an X-linked mental retardation (XLMR) syndrome most often accompanied by alpha-thalassemia (ATRX) syndrome. These mutations have been shown to cause diverse changes in the pattern of DNA methylation, which may provide a link between chromatin remodeling.

Antibody	Clone	Localization	Catalog Family
ATRX	D-7	Nucleus	AMB05, AXB05, MUB05

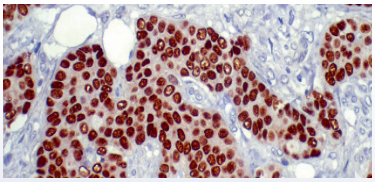
Estrogen Receptor



Estrogen receptor (ER) content of breast cancer tissue is an important parameter in the prediction of prognosis and response to endocrine therapy. Highly specific monoclonal antibodies to ER have allowed the determination of receptor status of breast tumors to be carried out. This antibody stains the nucleus of receptor positive cells.

Antibody	Clone	Localization	Catalog Family
Estrogen Receptor (InSite® ER)	ER88	Nucleus	AM368, AX368, MU368
Estrogen Receptor-beta (ER-β)	Polyclonal	Nucleus	AR385, AW385, PU385
Estrogen Receptor-alpha	EP1	Nucleus	AN710, AY710, NU710

Progesterone Receptor



The use of monoclonal antibodies to determine Progesterone Receptor status increases the predictive value of immunohistochemical analysis with respect to the response of human tumors to hormonal modulation. Historically, estrogen receptorpositive/ progesterone receptor-positive breast carcinoma patients have demonstrated a better response to endocrine therapy than estrogen receptor-positive/progesterone receptor-negative patients. This antibody stains positive in nucleus of the receptor positive cells.

Antibody	Clone	Localization	Catalog Family
Progesterone Receptor	1A6	Nucleus	AM172, AX172, MU172
Progesterone Receptor	PR88	Nucleus	AM328, AX328, MU328
Progesterone Receptor	EP2	Nucleus	AN711, AY711, NU711

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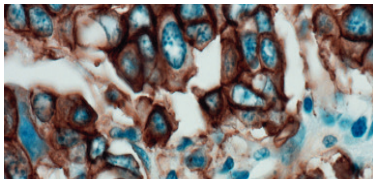
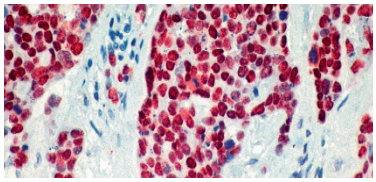
Her2



HER2 (human epidermal growth factor receptor 2), also known as Neu, ErbB-2, CD340 (cluster of differentiation 340) or p185, is a protein that in humans is encoded by the ERBB2 gene. HER2 is a member of the epidermal growth factor receptor (EGFR/ErbB) family. Breast cancers with HER2 gene amplification or HER2 protein overexpression are called HER2-positive, which represent about 25% breast cancer.

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

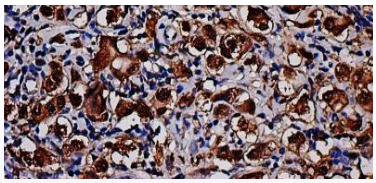
p53



p53 is a tumor suppressor gene product identified in a wide variety of tumors. p53 protein is present in low concentration in normal cells, but elevated levels of mutant p53 have been found in many common cancers. Accumulation of mutant p53 detected by immunohistochemical staining has been reported in breast, lung, colon, stomach, bladder, and testis carcinomas, soft-tissue sarcomas, and melanomas. This antibody stains positive in nucleus of a variety of tumor cells.

Antibody	Clone	Localization	Catalog Family
p53	EP9	Nucleus	AM728, AX728, MU728
p53	BP53-12-1	Nucleus	AM195, AX195, MU195
p53	DO7	Nucleus	AM239, AX239, MU239
p53	1801	Nucleus	AM240, AX240, MU240

IDH1



This antibody identifies a 45kDa protein, which is recognized as isocitrate dehydrogenase (IDH1). It resides to the isocitrate and isopropylmalate dehydrogenases family. Isocitrate dehydrogenase 1 converts a compound called isocitrate to another compound called 2-ketoglutarate in both cytoplasm and peroxisomes. This reaction also release a molecule called NADPH, which is required for other cellular processes. The NADPH produced from isocitrate dehydrogenase 1 is required in the breakdown of fats for energy, and it also safeguard cells from harmful molecules called reactive oxygen species. Recently, an inactivating mutation of IDH1 has been involved in glioblastoma. IDH1 emerges to function as a tumor suppressor that, when inactivated, contributes to tumorigenesis in part through activation of the HIF-1 pathway

Antibody	Clone	Localization	Catalog Family
IDH1	IDH1/1152	cytoplasm/nucleus	AMA22-5M, AMA22-50D, AMA22-10M AXA22-50D, AXA22-YCD, MUA22-5UC, MUA22-UC

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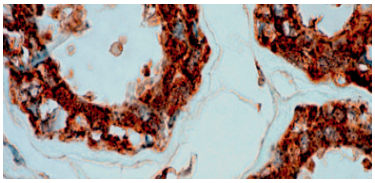
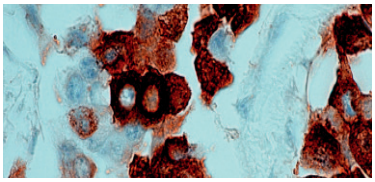
BRCA1



The BRCA1 gene was discovered as a region on chromosome 17q21 that has a high frequency of mutation in families predisposed to breast cancer. Specific mutations and variability in expression have been identified and characterized, including the founder mutation 185delAG in Askenazi Jewish families. BRCA1 functions as a tumor suppressor by mechanisms not yet understood. It has recently been suggested that BRCA1 might induce apoptosis similar to the gatekeeper function of the p53 tumor suppressor. This antibody reacts with an epitope mapping near the carboxyl terminus of the normal (non-mutant) BRCA1 gene product.

Antibody	Clone	Localization	Catalog Family
BRCA1 Protein	Polyclonal	Nucleus and Cytoplasm	AR345, AW345, PU-345

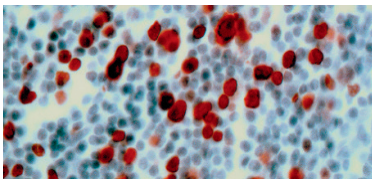
Tumor-Associated Glycoprotein (TAG-90, BCA)



Clone B6.2 recognizes a 90 kD glycoprotein in mammary carcinomas, metastatic lymph nodes, lung carcinomas, and adenocarcinomas. This antibody reacts intensely with tumor cells, yet is unreactive with cells in normal tissue. This antibody reacts equally with breast cancer, breast fibroadenoma, lobular carcinoma of the breast, duct carcinoma of the breast, and lung carcinoma. It also reacts with gastric and papillary adenocarcinomas, and adenocarcinoma of the colon, ovary, pancreas, lung and prostate. This antibody stains positive in the cytoplasm of tumor cells.

Antibody	Clone	Localization	Catalog Family
TAG-90, BCA	B6.2	Cytoplasm	AM005, AX005, MU005

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

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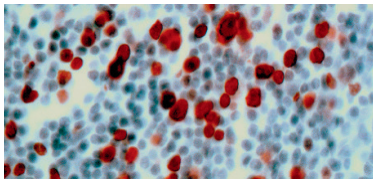
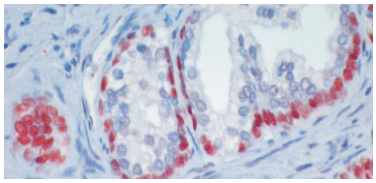
Cytokeratin 5&6



Cytokeratins are intermediate filament proteins expressed in cytoplasm of 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 type II keratin CK5 and type II CK6, which essentially form 8-nm filaments. CK5 is a useful immunohistochemical marker in different studies of mesothelioma, and the expression is key tool 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. CK6 is well known for its strong induction in stratified epithelia that feature an enhanced cell proliferation rate or abnormal differentiation in cancer.

Antibody	Clone	Localization	Catalog Family
Cytokeratin 5&6	EP24 & EP67	Cytoplasm	AN892, AY892

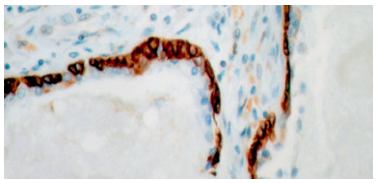
p63



This antibody will detect all isoforms of p63 since the epitope is within the DNA binding domain. The p63 protein is a member of the p53 family, which also includes p73. p63 protein is detected in proliferating cells of epithelium, cervix, urothelium and prostate.

Antibody	Clone	Localization	Catalog Family
p63	4A4	Nucleus	AM418, AX418, MU418

Cytokeratin 14

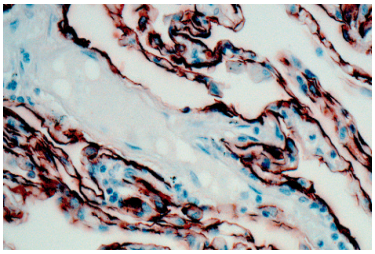


Cytokeratin 14 (molecular weight 50 kD), an acidic (Type I) cytokeratin protein, is one of the cytokeratin pairs (50/ 58 kD) that distinguishes stratified epithelial cell types from simple epithelial types. Cytokeratin 14 is homogeneously expressed in all cells of the keratinizing squamous epithelium and is confined to the basal and parabasal cells in the nonkeratinizing squamous epithelium of the normal adult urinary tract. The monoclonal antibody to Cytokeratin 14 may be helpful in distinguishing the cell types of the human mammary gland, thus it may also be used to study histogenesis of breast carcinoma. This antibody stains Cytokeratin 14 in cytoplasm of epithelial cells.

Antibody	Clone	Localization	Catalog Family
Cytokeratin 14	LL002	Cytoplasm	AM146, AX146, MU146
Cytokeratin 14	EP61	Cytoplasm	AN831, AY831, NU831

BioGenex

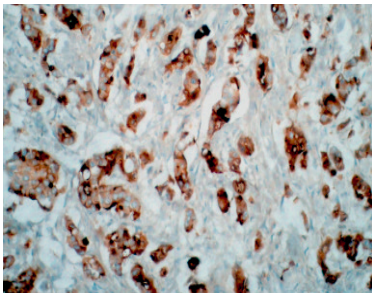
EMA



Epithelial Membrane Antigen (EMA), also known as milk fat globule membrane protein, is present on the luminal surface of mammary gland epithelium. Although EMA is primarily located in mammary gland epithelium, other normal epithelia (e.g., lung) will also react against EMA antibody. Cells obtained from solid metastases and pleural effusions accompanying a breast cancer will react with EMA antibody. It may also be useful for identification of meningioma. Human colon carcinoma, osteosarcoma, kidney carcinoma, hepatocellular carcinomas, adrenal carcinoma, embryonal carcinoma, liposarcoma, lung carcinoma, and mixed parotid tumor do not stain with EMA antibody.

Antibody	Clone	Localization	Catalog Family
Epithelial Membrane Antigen (EMA)	E29	Membrane & Cytoplasm	AM057, AX057, MU057
Epithelial Membrane Antigen (EMA)	Mc5	Membrane & Cytoplasm	AM182, AX182, MU182

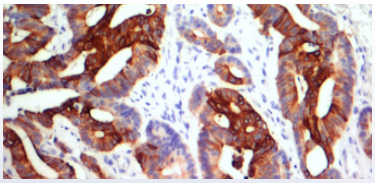
GCDFP-15



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. 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.

Antibody	Clone	Localization	Catalog Family
GCDFP-15	EP95	Cytoplasm	AN856, AY856, NU856

Cytokeratin 20

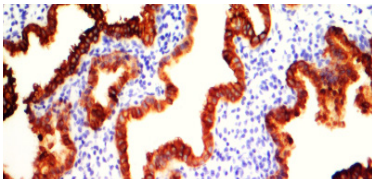


Cytokeratin 20 (46kD) is relatively less acidic than other type I keratins. This antibody reacts with certain types of carcinomas such as adeno carcinomas of the colon, transitional cell carcinomas of the bladder and Merkel cell tumors of the skin. It does not stain breast, lung and endometrial adenocarcinomas. The differential staining pattern of this antibody makes it very useful for tumor evaluation when used in conjunction with cytokeratin 7 staining.

Antibody	Clone	Localization	Catalog Family
Cytokeratin 20	IT-Ks20.8	Cytoplasm	AM315, AX315, MU315
Cytokeratin 20	EP23	Cytoplasm	AN849, AY849, NU849

IHC PANEL MARKERS - Breast Cancer Panel

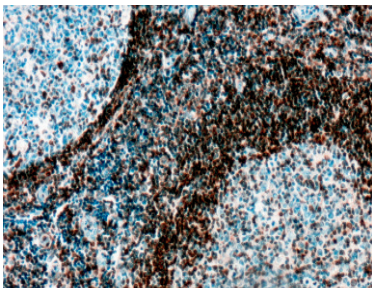
Cytokeratin 7



Cytokeratin 7 is a 54 kD marker of simple epithelium. Antibody to Cytokeratin 7 strongly stains all cell layers of the urinary bladder transitional epithelium. However, Cytokeratin 7 is absent from gastrointestinal epithelium, hepatocytes, proximal and distal tubules of the kidney, and myoepithelium, and also cannot be detected in the stratified epithelia of the skin, tongue, esophagus, or cervix. Cytokeratin 7 recognizes specific subtypes of adenocarcinomas and can be used to differentiate between Cytokeratin 7-positive tissues such as ovarian carcinomas and transitional cell carcinomas and Cytokeratin 7-negative tissues such as carcinomas of the gastrointestinal tract and prostate cancers.

Antibody	Clone	Localization	Catalog Family
Cytokeratin 7	OV-TL12/30	Cytoplasm	AM255, AX255, MU255

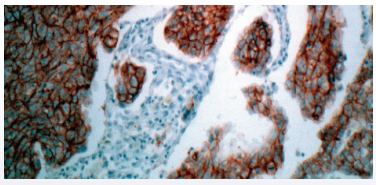
Bcl-2



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) it 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	Cytoplasm	AN723, AY723, NU723
Bcl-2 Oncoprotein	bcl-2/100	Cytoplasm	AM287, AX287, MU287

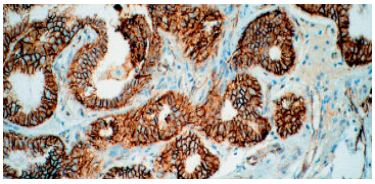
E-Cadherin



E-Cadherin (123-kD) is a cell surface glycoprotein responsible for Ca2+- dependent intercellular adhesion between epithelial cells. Alterations in the cell-cell adhesion mechanism mediated by E-Cadherin which is lightly associated with alpha catenin may have implications in the metastatic potential of prostate cancer. E-Cadherin may also play a role in adhesion of dendritic epidermal T cells to keratinocytes. Clone 36 may be used to investigate the process of tumor invasion.

Antibody	Clone	Localization	Catalog Family
E-Cadherin	36	Membrane and Cytoplasm	AM390, AX390, MU390
E-Cadherin	EP6	Membrane and Cytoplasm	AN725, AY725, NU725

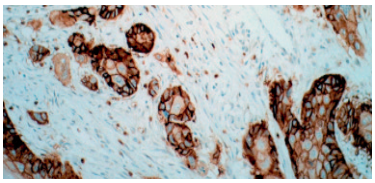
Beta-Catenin



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 of this gene are commonly found in a variety of cancers: in primary hepatocellular carcinoma, colorectal cancer, ovarial carcinoma, breast cancer, lung cancer and glioblastoma. 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.

Antibody	Clone	Localization	Catalog Family
Beta-Catenin	EP35	Nucleus and cytoplasm	AN778, AY778, NU778

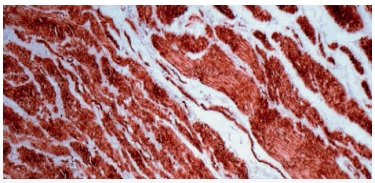
EGFR



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 nature 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 recommendated 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

SMA

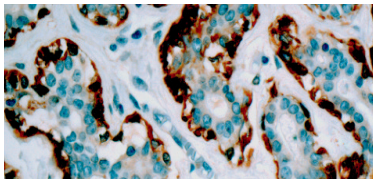


Actin is one of the two major cytoskeletal proteins. The antibody can be used to identify smooth muscle tumors. It stains leiomyomas and leiomyosarcomas but does not stain carcinomas, melanomas, lymphomas or non-smooth muscle sarcomas. It stains the muscularis and muscularis mucosa of the gastrointestinal tract, the uterine myometrium, medial layer of blood vessels, the mesenchymal components of the prostate, and myoepithelial cells of salivary glands and other organs. The antibody does not stain striated muscle such as skeletal and cardiac muscle, endothelium, connective tissue, epithelium or nerve. This antibody stains positive in cytoplasm of smooth muscle cells.

Antibody	Clone	Localization	Catalog Family
Actin, Smooth Muscle	1A4	Cytoplasm	AM128, AX128, MU128

IHC PANEL MARKERS - Breast Cancer Panel

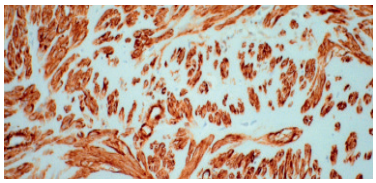
Calponin



Calponin is a 33 kD thin filament-associated protein that plays a role in regulation of smooth muscle contractility by anchoring myosin to actin. Monoclonal antibody to Calponin in combination with clones SMMS-1(anti-myosin heavy chain antibody) and h-CD (anti-Caldesmon antibody) could be used to distinguish benign and in-situ lesions from invasive carcinomas. This antibody stains Calponin in cytoplasm of vascular and visceral smooth muscle cells, myoepithelial cells in normal and benign human mammary gland, and certain stromal myofibroblasts.

Antibody	Clone	Localization	Catalog Family
Calponin	CALP	Cytoplasm	AM333, AX333, MU333
Calponin-1	EP63	Cytoplasm	AN821, AY821, NU821

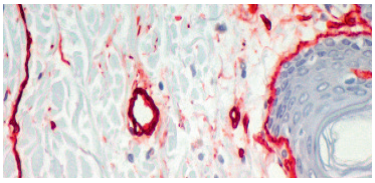
Caldesmon



Caldesmon is a regulatory protein found in smooth muscle and other tissues which interacts with actin, myosin, tropomyosin, and calmodulin. Also, it is useful in differentiation of smooth muscle from my ofibroblast tumors, uterus leiomyoma from endometrial stroma tumor. Caldesmon is a marker for identification of epitheloid mesothelioma.

Antibody	Clone	Localization	Catalog Family
Caldesmon	EP19	Cytoplasm	AN774, AY774, NU774

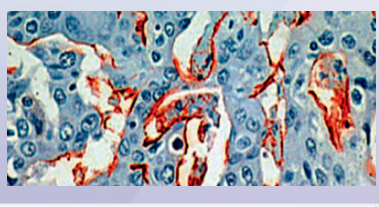
Collagen IV



This antibody reacts with Collagen IV and does not cross-react with other collagen types. It does not cross-react with human vitronectin, fibronectin or chondroitin sulfate A, B, or C. The positive or negative demonstration of basal lamina using immunostaining helps to distinguish some types of benign lesions from malignant tumors such as tubular carcinoma of the breast. Schwannomas and leiomyomas and their well differentiated malignant counterparts usually immunoreact in a characteristic fashion to the monoclonal antibody for type IV Collagen. The vascular nature of neoplasms such as hemangiopericytoma and epithelioid hemangio-endothelioma can be revealed by type IV collagen with more reliability than other nonspecific stains. This monoclonal antibody stains human Collagen IV in basal laminae.

Antibody	Clone	Localization	Catalog Family
Collagen IV	COL-94	Basal Laminae/Cytoplasm	AM379, AX379, MU379

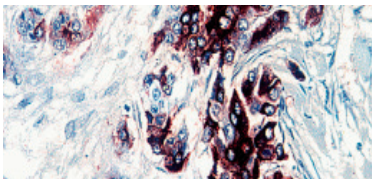
BCA-225



This antibody recognizes a 225-250 kD glycoprotein found in most human breast carcinomas and a few other tissues. CU18 does not stain lactating mammary gland.

Antibody	Clone	Localization	Catalog Family
Breast Cancer Antigen BCA-225	CU18	Cytoplasm	AM135, AX135, MU135

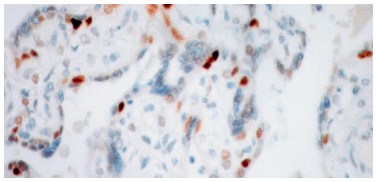
TAG72



Tumor-Associated Glycoprotein 72 (TAG-72) is an oncofetal mucin antigen expressed by normal secretory endometrium and most human adenocarcinomas, including colorectal, gastric, pancreatic, mammary, and ovarian. This antigen is expressed by invasive ductal breast carcinomas, colon, pancreatic, gastric, esophageal, lung, ovarian and endometrial adenocarcinomas. It is not expressed by leukemias, lymphomas, sarcomas, mesotheliomas, melanomas, or benign tumors. This antigen is also expressed on normal secretory endometrium, but not on other normal tissues. This antibody stains positive in the cytoplasm of specific carcinoma cells.

Antibody	Clone	Localization	Catalog Family
Tumor-Associated Glycoprotein (TAG-72)	B72.3	Cytoplasm	AM054, AX054, MU054

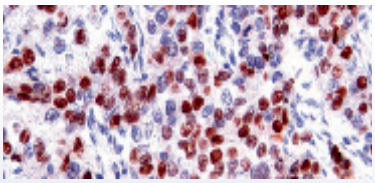
Cyclin E1



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, cyclinE1 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.

Antibody	Clone	Localization	Catalog Family
Cyclin E1	EP126	Nucleus	AN854, AY854, NU854

Cyclin D1

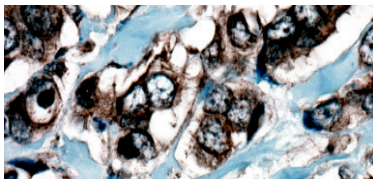


Cyclins are a family of key regulatory proteins of the cell cycle. Cyclin D1 controls the transition from G1-phase to S-phase of the cell cycle. In addition to breast carcinoma, overexpression is also seen in mantle cell lymphoma, laryngeal epithelial lesions, bladder urothelial tumors, and gastric carcinoma

Antibody	Clone	Localization	Catalog Family
Cyclin D1	EP12	Nucleus	AN815, AY815, NU815

IHC PANEL MARKERS - Breast Cancer Panel

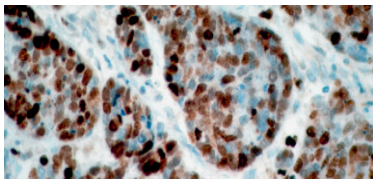
p120



Delta 1 Catenin (p120) is an efficient tyrosine kinase substrate implicated both in cell transformation by SRC and in ligand-induced receptor signaling through the EGF, PDGF, CSF-1 and ERBB2 receptors. The association of catenins to cadherins produces a complex which is linked to the actin filament network, and which seems to be of primary importance for cadherins cell-adhesion properties. Cytoplasmic accumulation of p120 Catenin has been observed in lung cancer, pancreatic cancer, and gastric cancer and colon cancers and is associated with poor progress in colon cancer patients. In breast lobular neoplasia, anti-p120 Catenin shows a diffuse cytoplasmic immunostaining pattern, while breast ductal neoplasia retains the membrane immunostaining pattern. P120 Catenin antibody is useful in differentiation of lobular carcinoma from ductal carcinoma of the breast and in identifying early lesions of lobular neoplasia.

Antibody	Clone	Localization	Catalog Family
p120	SP63	Membrane and cytoplasm	AN760, AY760, NU760

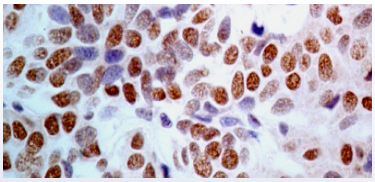
Topoisomerase II alpha



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

Antibody	Clone	Localization	Catalog Family
Topoisomerase II alpha	EP93	Nucleus and Cytoplasm	AN823, AY823, NU823

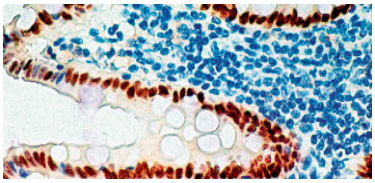
TTF-1



Thyroid Transcription Factor-1 (TTF-1), also known as thyroid-specific enhancer-binding protein (T/EBP), is a 40 kD protein that is a member of NKx2 family of homeodomain transcription factors that regulates the expression of thyroid- and lung-specific genes. It is a very selective marker for adenocarcinomas of lung and thyroid origin. Nuclear localization of this protein is seen in the epithelial cells of thyroid gland and lung. The anti-TTF-1 antibody is a useful tool for differentiating pulmonary adenocarcinoma from metastatic breast carcinoma and mesothelioma.

Antibody	Clone	Localization	Catalog Family
Thyroid Transcription Factor (TTF-1)	SP141	Nucleus	AN887, AY887, NU887

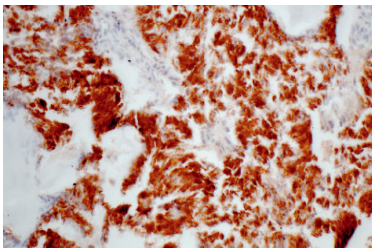
CDX-2



CDX2, a member of the caudal-related homeobox family, is an intestine-specific transcription factor that regulates both proliferation and differentiation in intestinal epithelial cells. It plays an important role in triggering cells towards the phenotype of differentiated villus enterocytes as well as in the maintenance of the phenotype. Clone CDX2-88 reacts with a conserved epitope of the 40kD CDX2 protein localized in the nucleus. It exclusively marks nuclei of colonic epithelial cells and colorectal cancers on formalin-fixed, paraffin-embedded tissue sections.

Antibody	Clone	Localization	Catalog Family
CDX-2	CDX2-88	Nucleus	AM392, AX392, MU392

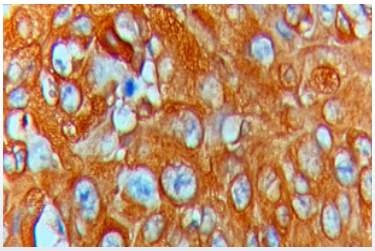
Cytokeratin 8



Cytokeratin 8 (52 kD) and 18 (45 kD) comprise a Cytokeratin pair as markers for simple epithelia. In most situations, Cytokeratin 8 exists in tissues together with Cytokeratin 18, but there are exceptions among some normal and abnormal epithelial cells. Therefore, it is useful to use both Cytokeratin 8 and Cytokeratin 18 in combination with other anti Cytokeratin antibody monoclonals when studying cytokeratin expression patterns. Clone C-51 is designed for the specific localization of Cytokeratin 8 and does not cross-react with human cytokeratin numbers 7, 17, 18, or 19. This antibody stains Cytokeratin 8 in cytoplasm of positive epithelial cells.

Antibody	Clone	Localization	Catalog Family
Cytokeratin 8	C51	Cytoplasm and Membrane	AM142, AX142, MU142

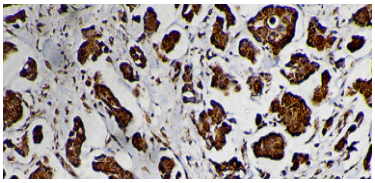
Laminin Receptor



Laminin Receptor belongs to a family of extracellular matrix glycoproteins that are the major non-collagenous constituent of basement membrane. The laminins are essential for various biological processes such as cell adhesion, cell- differentiation, cell-migration, cell- signaling, neurite outgrowth and metastasis. The laminin interacts with cell surface receptors including members of the integrin family and as well as non-integrin laminin-binding proteins. The high expression of laminin receptor is found to be in colon carcinoma and lung carcinoma than in normal cells.

Antibody	Clone	Localization	Catalog Family
Laminin Receptor	RPSA/2699	Nuc, Cyt & Mem	AMC29, AXC29, MUC29

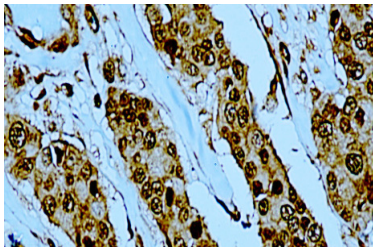
TARDBP



TARDBP is found in patients with frontotemporal lobar degeneration (FTLD) and amyotrophic lateral sclerosis (ALS). Additionally, TDP43 is involved in RNA splicing of the cystic fibrosis transmembrane conductance regulator gene (CFTR). TARDBP may play a role in the development of neurodegenerative disorders such as Alzheimer's and Parkinson's disease.

Antibody	Clone	Localization	Catalog Family
TARDBP	E-10	Nucleus and Cytoplasm	AMC45, AXC45, MUC45

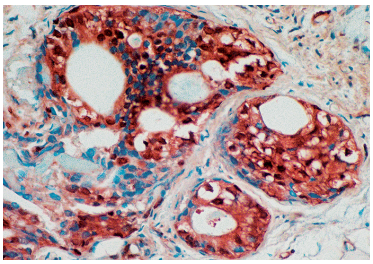
YAP



YAP encodes a nuclear effector of the Hippo signaling pathway which plays a pivotal role in regulating tissue growth and organ size. Deregulation of the Hippo pathway causes tumor formation and malignancy and hence, YAP may function as a potential target for cancer treatment. YAP is expressed at high levels in the lung, placenta, prostate, testis and ovary.

Antibody	Clone	Localization	Catalog Family
YAP	G-6	Cytoplasm and Nucleus	AMC50, AXC50

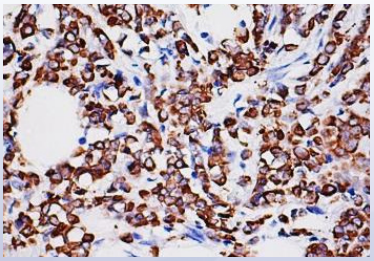
Anti-Estradiol



Estradiol plays an important role in the genesis and development of human breast cancer and endometrial carcinoma. It is synthesized primarily in the ovary, but also in the placenta, testis, and possibly the adrenal cortex. Estradiol is also produced by testicular Leydig tumors, as well as by Sertoli tumors of the testis and ovary. It is also produced in mammary gland carcinoma, and carcinoma of the adrenal cortex.

Antibody	Clone	Localization	Catalog Family
Anti-Estradiol	Polyclonal	Cytoplasm	AR038, PU038, AW038

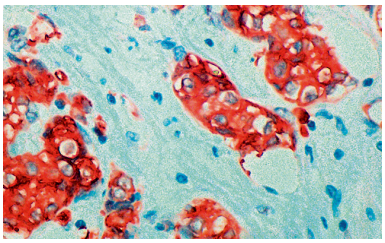
Anti-Cytokeratin 18



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 monoclonal cytokeratin antibodies when studying cytokeratin expression patterns.

Antibody	Clone	Localization	Catalog Family
Anti-Cytokeratin 18	IHC018	cytoplasm	AMA19, MUA19, AXA19

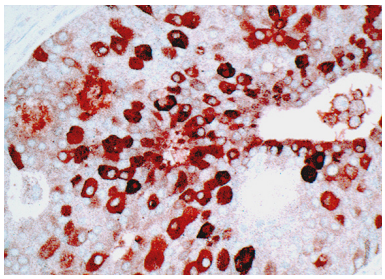
Anti-Heat Shock Protein 27 (HSP 27)



HSP 27 also known as 24K estrogen-regulated protein or HSP 28 is a small heat shock protein that has been shown to correlate with the expression of estrogen-receptor. Immunohistochemical studies of HSP 27 has shown that it is localized mainly in the female reproductive tract and in ER and PR positive breast tumor cell lines. Increased levels of HSP 27 have been shown to correlate with the presence of ER and PR in human breast tumor biopsy samples

Antibody	Clone	Localization	Catalog Family
Anti-Heat Shock Protein 27 (HSP 27)	G3.1	cytoplasm	AM171, MU171, AX171

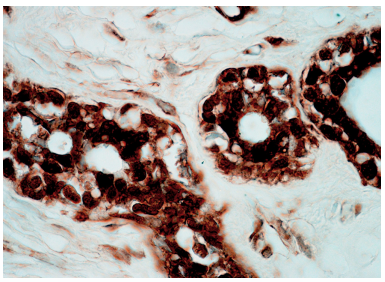
Anti-pS2 Estrogen Inducible Protein



This antibody specifically recognizes 6.5 kD human pS2 Estrogen-Regulated Protein. pS2 is specifically expressed and secreted by ER-mucosa cells of the normal stomach (antrum and body) of both female and male individuals. Primary breast tumors have been shown to express pS2 in ER+ primary breast tumors.

Antibody	Clone	Localization	Catalog Family
Anti-pS2 Estrogen Inducible Protein	PS2.1	Cytoplasm	AM190, MU190, AX190

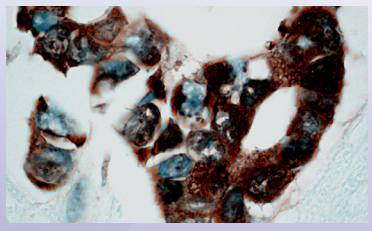
Anti-Glutathione S-Transferase Pi (GST Pi)



Glutathione S-transferases (GSTs) are a group of enzymes centrally involved with drug metabolism and detoxification. Because of their role in detoxification, they have been implicated in anticancer drug sensitivity and resistance. The glutathione S-transferases (GSTs) are a multigene family of isoenzymes which catalyse the conjugation of glutathione to electrophilic substrates. All eukaryotic species possess multiple cytosolic and membrane-bound GST isoenzymes, each of which displays distinct catalytic as well as noncatalytic binding properties.

Antibody	Clone	Localization	Catalog Family
Anti-Glutathione S-Transferase Pi (GST Pi)	Polyclonal	nucleus & cytoplasm	AR249, PU249, AW249

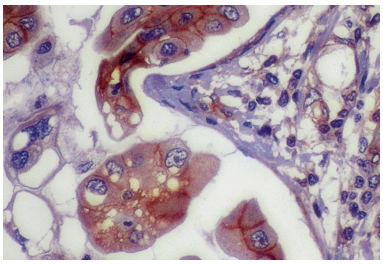
Anti-Heat Shock Protein 70 (HSP 70)



HSP70 is a member of a multigene family encoding several closely related 70-73 kD stress proteins (the HSP70 family). These genes differ in their intracellular location and regulation and are thought to be involved in protein-protein interactions such as those of the protein products of the p53 tumor suppressor gene and the human c-myc oncogene. Increased levels of HSP70 and its inducible from HSP72 in breast carcinoma and Alzheimer's respectively have been found. This antibody reacts with HSP70 in human, bovine, rabbit, guinea pig, chicken, and rat tissue.

Antibody	Clone	Localization	Catalog Family
Anti-Heat Shock Protein 70 (HSP 70)	BRM-22	nucleus and/or cytoplasm	AM289, MU289, AX289

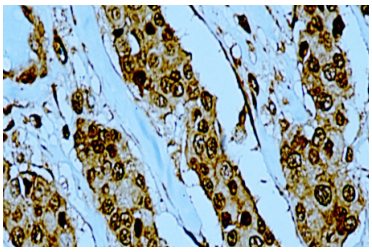
Anti-CD29



Integrins play an important role in cell adhesion and migration, and their normal function is critical in the induction and maintenance of cell differentiation. This antibody reacts with CD29, the 130 kD integrin ?1 subunit. CD29 is ubiquitous, with broad tissue distribution, but is not expressed on erythrocytes and is expressed only weakly on granulocytes. Loss or down-regulation of CD29 has been proposed to be one of the general pathways through which carcinoma cells may acquire a more invasive and differentiated phenotype

Antibody	Clone	Localization	Catalog Family
Anti-CD29	JB1a	membrane	AM298, MU298, AX298

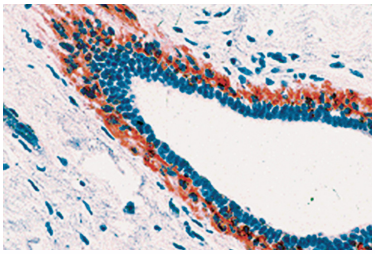
Anti-c-erbB-3 (HER-3)



The c-erbB-3 gene product is a 180kD 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 hematopoetic 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

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

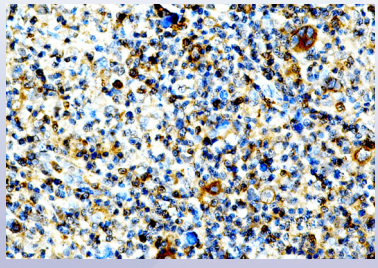
Anti-Myosin Heavy Chain, Smooth Muscle



SMMS-1 is a 204 kDa myoepithelium-associated protein and is a marker for smooth muscle cell phenotypes. Monoclonal antibody to smooth muscle myosin heavy chains in combination with monoclonal antibodies to calponin and heavy caldesmon may be used to study the differences between benign, in-situ lesions and invasive carcinomas. This antibody has been designed for specific localization of both vascular and visceral smooth muscle.

Antibody	Clone	Localization	Catalog Family
Anti-Myosin Heavy Chain, Smooth Muscle	SMMS.1	Cytoplasm	AM331, MU331, AX331

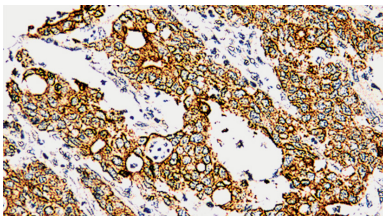
Anti-Bax Protein



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
Anti-Bax Protein	2D2	cytoplasm	AMA96, MUA96, AXA96

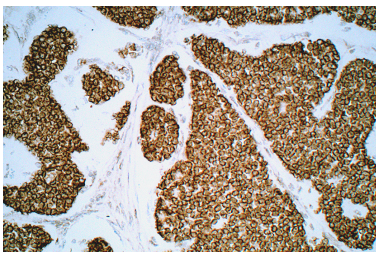
Anti-Cytokeratin, Pan



The lu-5 antibody recognizes an epitope on the surface of cytokeratin filaments which is present in a wide range of cytokeratins, except in intermediate-size filament proteins. This epitope may be found in all human epithelia and carcinomas and is resistant to formalin-fixation. The lu-5 antibody was determined as a useful pan cytokeratin marker for the detection of both normal and malignant epithelial and mesothelial cells

Antibody	Clone	Localization	Catalog Family
Anti-Cytokeratin Pan	C11	cytoplasm	AM181, MU181, AX181

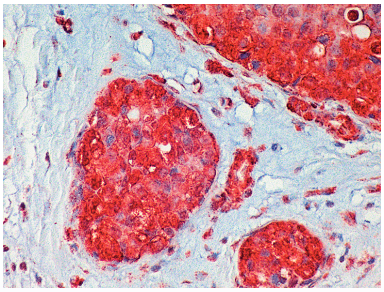
Anti-Cytokeratin cocktail, broad spectrum



Human cytokeratins of molecular mass 40kD to 68kD are a family of water-insoluble proteins that form a major part of epithelial cell?s cytoskeleton. Immunohistochemical analysis of a large number of neoplasms has established keratin protein immunohistochemistry as an important aid for classification of epithelial neoplasms. Monoclonal antibodies AE1 and AE3 identifies the basic and acidic subfamilies of cytokeratin respectively, thus the combination of these two antibodies can be used to detect almost all human epithelia. These antibodies show no cross-reactivities with other cytoskeletal proteins.

Antibody	Clone	Localization	Catalog Family
Anti-Cytokeratin cocktail, broad spectrum	LL002+DEK-10+RCK108 +OV-TL12/30 +C11	cytoplasm	AM372, MU372, AX372

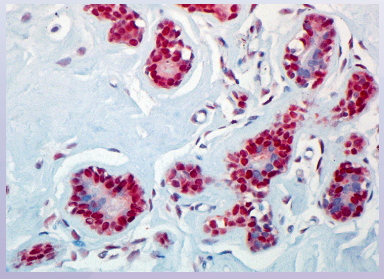
Anti-Transforming Growth Factor (TGF) Alpha



Transforming Growth Factor alpha (TGF-a) is a 50 amino acid protein that is encoded by the TGFA gene and it is involved in cellular signaling and the regulation of normal and malignant cell growth by protein kinase activity. TGF-? is one of the various ligands for the epidermal growth factor receptor and involved in the regulation of development and progression by activating a signaling pathway of gastrointestinal tumors. Macrophages secrete TGF-a to trigger proliferation of cancer cells. TGF-a is synthesized by several cells, like macrophages, brain cells, epidermal keratinocytes, fibroblasts, and cells of hematopoetic origin like eosinophils and stimulated macrophages.

Antibody	Clone	Localization	Catalog Family
Anti-Transforming Growth Factor (TGF) Alpha	TGF88	cytoplasm	AM377, MU377, AX377

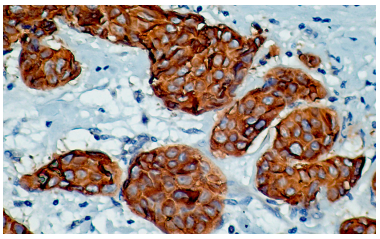
Anti-p27 (Kip1)



p27kip1 (p27) is a cyclin kinase inhibitor belongs to the universal cyclin-dependent kinase inhibitor (CDKI) family. The phosphorylation on serine 10 (s10) and threonine 187 (T187) of p27/Kip1 regulates its activity. p27/Kip1 induces arrest at G1 check point and it inhibits cyclinE-Cdk2 complex, cyclinA-CDK2 and cyclinD1-CDK4 complexes. In normal cells the expression level of p27/Kip1 is high, but level of p27/Kip1 protein expression decreases in many types of cancers, and appears to be a poor prognostic factor in several tumor models, including carcinomas of the lung, breast, colorectal, and prostate.

Antibody	Clone	Localization	Catalog Family
Anti-p27 (Kip1)	DCS72	nucleus	AM396, MU396, AX396

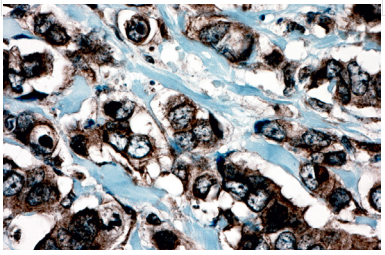
Anti-Cytokeratin 7 & 8



Cytokeratins are a family of intermediate filament proteins that assemble into filaments through forming heterodimers of one acidic type I cytokeratin (cytokeratins 9 to 23) and one type neutrol-basic II cytokeratin (cytokeratins 1 to 8). Cytoikeratins 7 and 8 are two closely related type II cytokeratins characteristic of simple epithelia. Cytokeratin 7 is less widespread than cytokeratin 8 and is expressed in sebaceous and sweat glands and some cells of the inner hair root sheath. Cytokeratin 8 is primarily found in the non squamous epithelia.

Antibody	Clone	Localization	Catalog Family
Anti-Cytokeratin 7 & 8	JB1OV-L12/30 & C51	cytoplasm	AM587, MU587, AX587

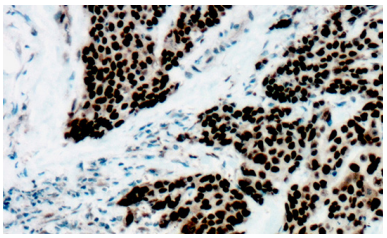
Anti-Catenin Delta 1 (P120)



Catenins are proteins that are linked to cytoplasmic domain of transmembrane cadherins. P120 Catenin is a member of Armadillo gene family of junctional plaque proteins. The catenins forms association with cadherins, it results in a complex that is linked to the actin filament network. 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, anti p120 Catenin shows a diffuse cytoplasmic immunostaining pattern, while breast ductal neoplasma retains the membrane immunostaining pattern.

Antibody	Clone	Localization	Catalog Family
Anti-Catenin Delta 1 (P120)	Polyclonal	cytoplasm/membrane	AR706, PU706, AW706

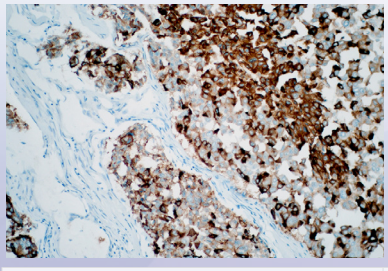
Anti-P53



Tumor protein p53, a nuclear protein, plays an crucial role in cell cycle regulation, specifically in G0 to G1 checkpoint transition. Tumor protein p53 levels are very low in normal cells, it acts as a tumor suppressor by either promoting apoptosis or cell cycle arrest according to tissue physiology or cell cycel stage. p53 is overexpressed in over 50% of human cancers.

Antibody	Clone	Localization	Catalog Family
Anti-P53	EP9	nucleus	AN728, NU728, AY728

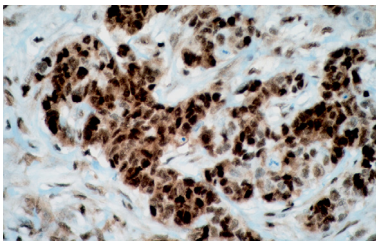
Anti-Mucin 1 (MUC1)



Mucins are high molecular weight glycosylated proteins, involved in the protection and lubrication of luminal epithelial surfaces. MUC1 is a ?transmembrane protein involved in several signaling pathways, including Ras, beta-catenin, p120 catenin, p53 and estrogen receptor alpha. Recent studies indicate MUC1 regulates gene expression, it enters the nucleus by complexing with beta-catenin and inside the nucleus it activates T-cell factor/leukocyte enhancing factor 1 transcription factors.

Antibody	Clone	Localization	Catalog Family
Anti-Mucin 1 (MUC1)	EP85	membrane/cytoplasm	AN813, NU813, AY813

Anti-p27 (Kip1)



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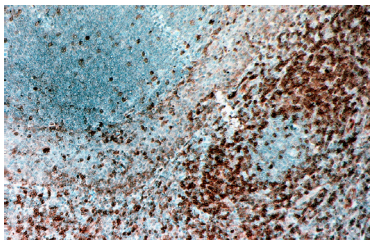
Antibody	Clone	Localization	Catalog Family
Anti-p27 (Kip1)	EP104	nucleus	AN817, NU817, AY817

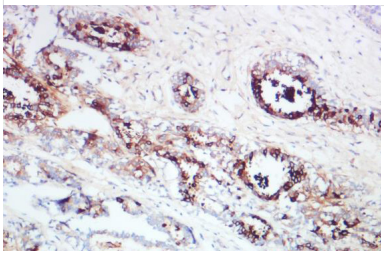
Anti-Paxillin



Paxillin is a multidomain cytoskeletal protein with a role in actin-membrane attachment at sites of cell adhesion to the extracellular matrix (focal adhesion). Paxillin?s C- terminal region consist of four LIM domains that interacts with cytoplasmic tail of beta-integrin to target paxillin to focal adhesion. ?The signaling activity of is controlled by N-terminus of Paxillin. Epithelial cells of various tissues, neuronal cells and mesenchymal derived cells express Paxillin.

Antibody	Clone	Localization	Catalog Family
Anti-Cytokeratin cocktail, broad spectrum	EP89	cytoplasm	AN876, NU876, AY876

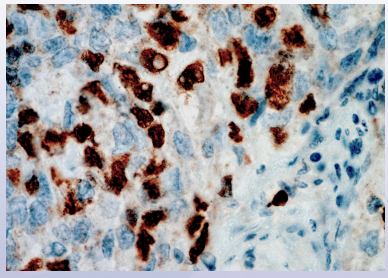
Anti-GCDFP-15



It recognizes a protein of 15kDa, identified as Gross cystic disease fluid protein 15 (GCDFP-15). It is a major protein component of benign breast gross cysts. It is a known marker of breast cancer, as it is found in approximately 50% of all breast cancer specimens. GCDFP-15, also known as prolactin inducible protein (PIP), is a prolactin and androgen controlled protein. This antibody is useful in the identification of metastatic breast carcinoma, or fluid analysis.

Antibody	Clone	Localization	Catalog Family
Anti-GCDFP-15	PIP/1571	membrane	AM953, MU953, AX953

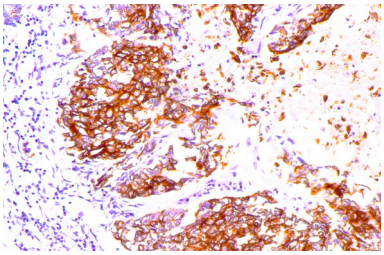
Anti-Pax-5



PAX5 is a member of the paired box (PAX) family of transcription factors. Paired box transcription factors are important regulators in early development, and alterations in the expression of their genes are thought to contribute to neoplastic transformation. PAX5 is the B-cell lineage specific activator protein (BSAP) that is expressed at early but not late stages of B-cell differentiation.

Antibody	Clone	Localization	Catalog Family
Anti-Pax-5	24/Pax-5	membrane	AM967, MU967, AX967

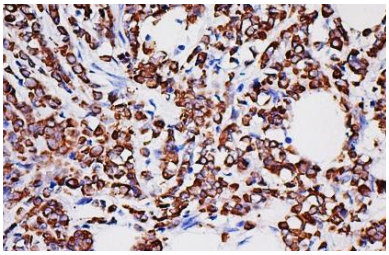
Anti-Cytokeratin 13



Cytokeratin 13 is a part of the keratin gene family, more specifically a type 1 keratin, as non-keratinized squamous epithelial marker. Type 1 keratins, compared to type 2 keratins, tend to be smaller and more acidic. These keratins constitute the type intermediate filaments of the intracytoplasmic cytoskeleton that are responsible for the structural integrity of mammalian epithelial cells. Cytokeratin 13 has been found to play a directive role in prostate cancer metastasis. The levels of Cytokeratin 13 were able to predict bone metastasis and overall survival rate of the patient.

Antibody	Clone	Localization	Catalog Family
Anti-Cytokeratin 13	KRT13/2213	membrane	AM989, MU989, AX989

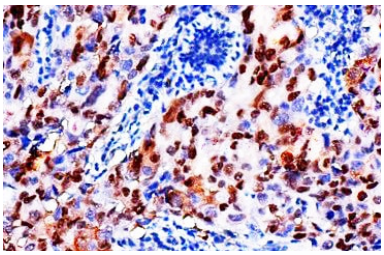
Anti-Cytokeratin 18



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 monoclonal cytokeratin antibodies when studying cytokeratin expression patterns.

Antibody	Clone	Localization	Catalog Family
Anti-Cytokeratin 18	IHC018	cytoplasm	AMA19, MUA19, AXA19

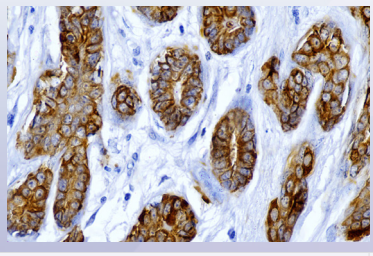
Anti-Cyclin D1



Cyclin D1 belongs to the Cyclin D family. Cyclin D1 is required for the cell cycle G1/S transition. Cyclin D1 forms a serine/threonine kinase holoenzyme complex with and functions as a regulatory subunit of CDK4 or CDK6. Cyclin D1 also phosphorylates and inactivates the retinoblastoma protein and promotes progression through the G1/S phase.

Antibody	Clone	Localization	Catalog Family
Anti-Cyclin D1	E3P5S	nucleus	ANA20, NUA20, AYA20

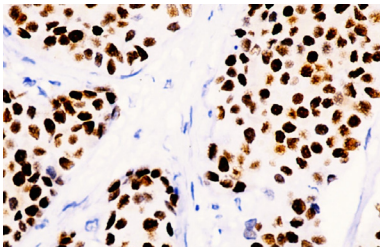
Anti-Cytokeratin



Cytokeratins are polypeptide chains that constituent major part of epithelial cell cytoskeleton. Cytokeratin (CAM 5.2) expression is seen in majority of epithelial tumors, including lung, liver, Breast Carcinoma, Gastro-Intestinal tract, breast, genitourinary system, female reproductive organs and some endocrine organs. It might not react with some squamous cell carcinomas. This antibody can be successfully used as a clinically reliable marker for neoplasms of epithelial origin and for distinguishing carcinomas from malignant tumors of nonepithelial origin such as lymphomas, melanomas, and sarcomas.

Antibody	Clone	Localization	Catalog Family
Anti-Cytokeratin	CAM5.2	cytoplasm	AMB50, MUB50, AXB50

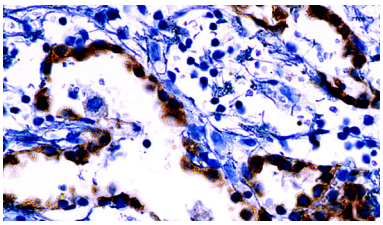
Anti-Estrogen Receptor Alpha



Estrogen receptor α (also known as ERα, ER-alpha, Estradiol receptor, Nuclear receptor subfamily 3 group A member 1) is a ligand-activated transcription factor belongs to steroid/thyroid hormone receptor superfamily. It is critically involved in regulating the normal function of reproductive tissues. ERα also regulates transcription by recruiting coactivator proteins and interacting with general transcriptional machinery.

Antibody	Clone	Localization	Catalog Family
Anti-Estrogen Receptor Alpha	1D5	nucleus	AMC94, MUC94, AXC94

Anti-Progesterone Receptor



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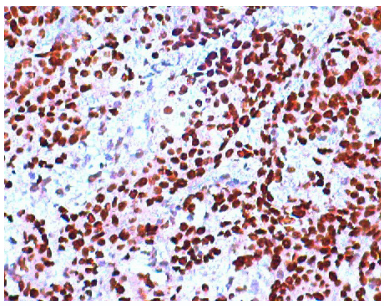
Antibody	Clone	Localization	Catalog Family
Anti-Progesterone Receptor	PGR/6854R	nucleus	AND06, NUD06, AYD06

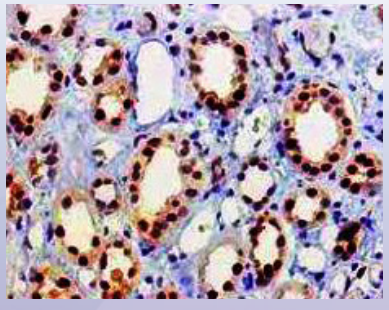
TRPS-1



TRPS-1 (Trichorhinophalangeal syndrome 1), a GATA transcription factor, is highly prevalent in both Estrogen Receptor alpha (ERα+ and ERα−) breast cancer subtypes. It plays a crucial role in mesenchymal-to-epithelial transition during development and differentiation of various tissues, including cartilage, bone, kidney, and hair follicles. Identified as a regulator of normal mammary epithelial cell growth, TRPS-1 is implicated in breast cancer development. Importantly, it exhibits minimal expression in various other carcinomas, indicating its specificity for breast cancer, especially in triplenegative breast cancer (TNBC). These findings emphasize TRPS-1's importance as a specific and valuable marker for breast cancer, especially in the context of TNBC.

Antibody	Clone	Localization	Catalog Family
TRPS-1	TRPS1/8131R	nucleus	AND65, NUD65, AYD65

SLUG



Slug, a 29 kDa transcriptional repressor belonging to the Snail family, exhibits induced expression in response to FGF, BMP, and TGF-β. Functioning as a negative regulator of gene expression, it binds to E-cadherin and integrin promoters, suppressing transcription and influencing cell adhesion and the embryonic epithelial-mesenchymal transition, a mechanism exploited by invasive cancer cells. Additionally, Slug protects damaged cells from apoptosis by suppressing of the proapoptotic Puma protein via histone deacetylase-1. Controlling the activity of multiple genes like TP53, BRCA2, PUM, and CDH1, Slug plays a crucial role in neural crest development. In breast, esophageal, and colorectal carcinomas, Slug's presence often signifies a poor prognosis for survival.

Antibody	Clone	Localization	Catalog Family
SLUG	A-7	nucleus	AMD59, MUD59, AXD59

IHC PANEL MARKERS - Breast Cancer Panel

BioGenex Primary Antibody Format

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.

Other Panel Markers from BioGenex	
B&T cell Associated Lymphoma	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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