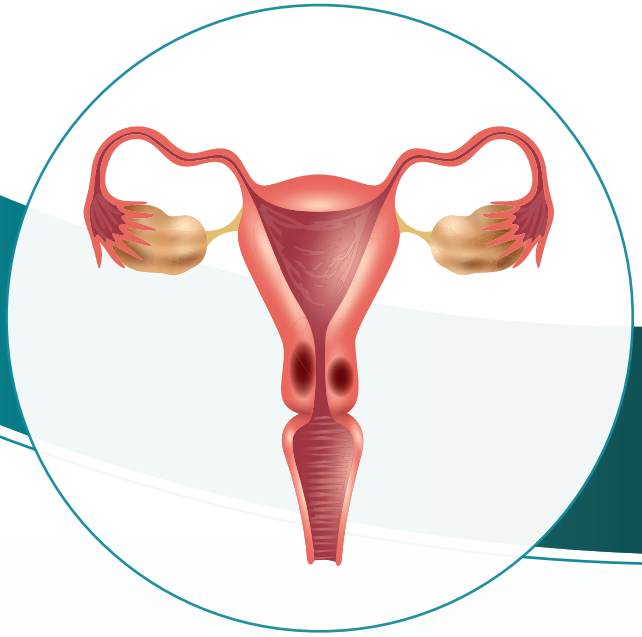
IHC PANEL MARKERS

Cervical 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 Cervical cancer
ARID1A, SOX2, Caldesmon, Cytokeratin 5, Cytokeratin 6, Beta-Catenin, CDK9, c-myc, Cytokeratin 10, Cytokeratin 13, Cytokeratin 14, Cytokeratin 17, Cytokeratin 19, Cytokeratin 5 & 6, Cytokeratin 7, E-Cadherin, EGFR, HPV-16, HSV-I, HSV-II, Ki-67, MCM2, MUC5AC, p16, p21/WAF1, p53

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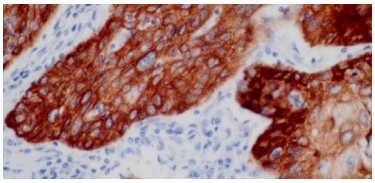
IHC PANEL MARKERS - Cervical Cancer

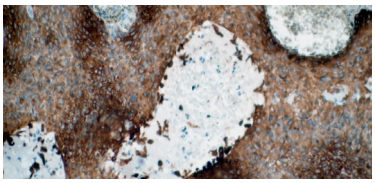
Cytokeratin 5



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 expressed in these cells are the type II keratin CK5 and type I keratin CK14, which essentially form 8-nm filaments.

Antibody	Clone	Localization	Catalog Family
Cytokeratin 5	EP42	Cytoplasm/Membrane	AN853, AY853, NU853-UC

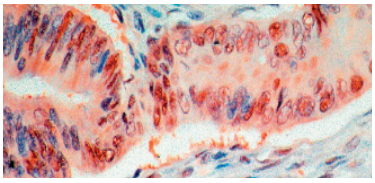
Cytokeratin 6



The human type II Cytokeratin 6 (CK6) a 56 kD protein expressed on stratified epithelia including oral mucosa, esophagus, basal layer of epidermis, the outer root sheath of hair follicles, and in glandular epithelia. It is well known for its strong induction in stratified epithelia that feature an enhanced cell proliferation rate or abnormal differentiation during wound healing, in several diseases (e.g. psoriasis, actinic keratosis) and in cancer. CK6 paired with CK5 is useful to differentiate mesothelioma (positive) from lung carcinoma (negative) or metastatic carcinoma (negative) in the pleura.

Antibody	Clone	Localization	Catalog Family
Cytokeratin 6	EP67	Cytoplasm/Membrane	AN845, AY845, NU845

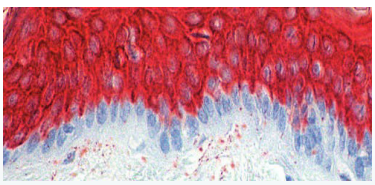
c-myc



Monoclonal antibody 9E10 reacts with the AEEQKLISEEDL epitope of c-myc protein. The c-myc gene product has been shown, through molecular studies, to be an essential protein for replication of cellular DNA and for the enhancement of mRNA transcription. The activated expression of one of the proto-oncogenes, c-myc, seems to accompany abnormalities in the progression of various malignancies such as lung, breast and colon carcinomas as well as melanomas. The antibody stains c-myc protein in the nucleus of positive cells.

Antibody	Clone	Localization	Catalog Family
c-myc Protein	9E10	Nucleus	AM318, AX318, MU318

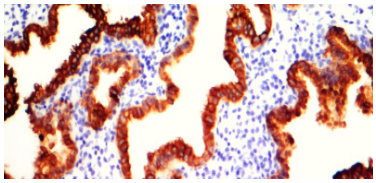
Cytokeratin 10



Cytokeratins 1 and 10 are expressed only in suprabasal layers, and their expression increases with epidermal maturation. In terminally differentiated keratinocytes of the stratum corneum, cytokeratins 1 and 10 are regarded as markers for orthokeratinization. Keratinizing areas expressing cytokeratin 10 have been demonstrated in various well differentiated squamous cell carcinomas derived from epidermis as well as from various internal sites of stratified epithelia.

Antibody	Clone	Localization	Catalog Family
Cytokeratin 10	DEK-10	Cytoplasm	AM201, AX201, MU201-UC

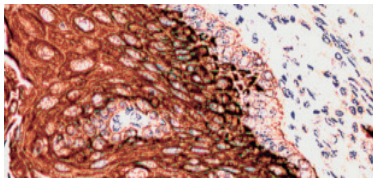
Cytokeratin 7



Cytokeratin 7 is a 54 kD marker of the 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

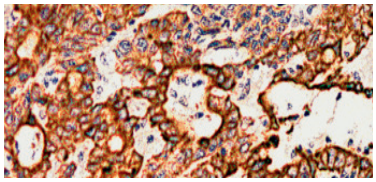
Cytokeratin 13



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

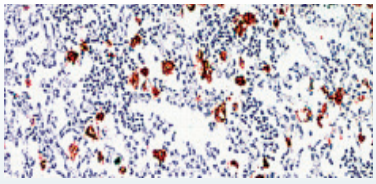
Cytokeratin 19



Cytokeratin 19 (molecular mass 40 kD) is a marker of simple epithelia. Cytokeratin 19 has been found in mesothelial and mesothelioma cells, ovarian cysts, cystadenomas, and ovarian carcinomas, in adenocarcinomas of the lung and in tumor cells of pulmonary metastases, in the ductal cells of normal pancreas and in pancreatic cancers. It has been shown to be present in the basal layer of non-keratinizing stratified squamous epithelia such as the oral cavity and the ectocervix.

Antibody	Clone	Localization	Catalog Family
Cytokeratin 19	RCK108	Cytoplasm	AM246, AX246, MU246

HSV-I



Human herpes simplex virus type I (HSV-I) is part of the herpesvirus family which also includes HSV-II, Epstein-Barr virus (mononucleosis), herpes zoster (chicken pox) and cytomegalovirus. They grow in the cell nuclei, bud through the nuclear membrane and cause latent infections. There is a significant degree of cross-reactivity between HSV-I and HSV-II. No cross-reactivity is seen with the Epstein-Barr virus, cytomegalovirus or herpes zoster virus.

Antibody	Clone	Localization	Catalog Family
HSV-I	Polyclonal	Nuclear	AR084, AW084, PU084

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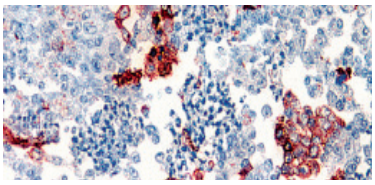
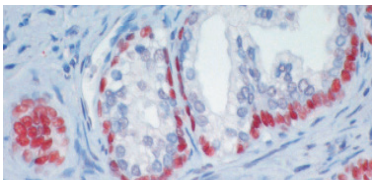
HSV-II



The antibody reacts with all the major glycoproteins present in the viral envelope and at least one core protein as determined by crossed immunoelectrophoresis. It does not cross-react with cytomegalovirus and Epstein-Barr virus.

Antibody	Clone	Localization	Catalog Family
HSV-II	Polyclonal	Membrane	AR085, AW085, PU085

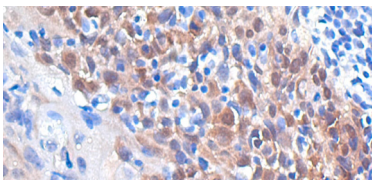
p63



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

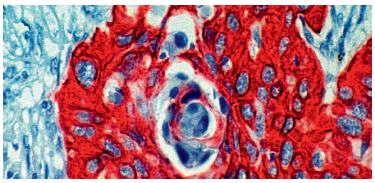
p16



p16/INK4A is a tumor-suppressor protein member of the Ink4 family of CDK inhibitors. The abnormalities arising in genes controlling the G1 checkpoint can lead to escape from senescence and tumor development. The p16/INK4 binds to CDK4/6 or ternary complex and prevents the formation of cyclin D-bound CDK4/6 complex and prevents phosporylation of Rb family members, resulting in E2F1 binding and G1 cell cycle arrest, followed by inhibition of cell cycle progression.

Antibody	Clone	Localization	Catalog Family
p16	G175-405	Nucleus and/or Cytoplasm	AM540, AX540, MU540
p16	16p04	Cytoplasm/Nucleus	AMA07, AXA07, MUA07
p16	IHC116	Cytoplasm/Nucleus	AMA08, AXA08, MUA08

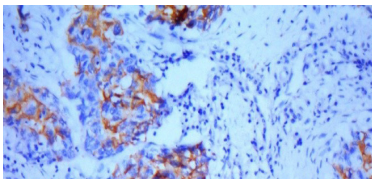
Cytokeratin 14



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. In cervix, loss of expression is associated with high risk HPV.

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

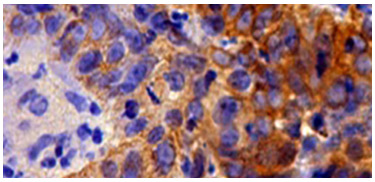
Cytokeratin 17



Cytokeratin 17 is a type 1 keratin found in epidermal appendages and contains 432 amino acids. Cytokeratin 17 modulates the function of TNF-alpha in the specific context of hair cycling. This protein regulates protein synthesis and epithelial cell growth through binding to the adapter protein SFN and by stimulating Akt/mTOR pathway (By similarity) and is involved in tissue repair. Cytokeratin 17 also promotes cell proliferation and migration of cells therefore signaling its role in the expansion of tumor/cancerous cells (especially oral squamous cell carcinoma).

Antibody	Clone	Localization	Catalog Family
Cytokeratin 17	KRT17/778	Membrane/Cytoplasm	AM981, AX981, MU981

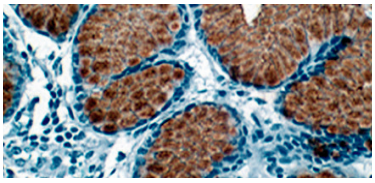
Cytokeratin 5&6



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. Cytokeratin 5&6 can help to identify squamous origin in poorly differentiated metastatic carcinomas of cervix.

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

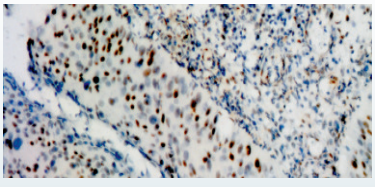
MUC5AC



Mucins are high molecular weight glycoproteins with 80% carbohydrates and 20% core protein. Gastric Mucin 5AC antigen is found in columnar mucus cells of surface gastric epithelium and in goblet cells of the fetal and precancerous colon but not in normal colon. Resurgence of gastric mucin during colonic carcinogenesis is suggestive of either re-expression of the peptide core of gastric mucin in the adult colon or due to changes in the glycosylation pattern of mucin, which expose the hidden Mucin 5AC antigen. Cervical cancers can display moderate to strong cytoplasmic staining of MUC5AC.

Antibody	Clone	Localization	Catalog Family
MUC5AC	45M1	Cytoplasm	AM456, AX456, MU456

HPV-16



This antibody stains Papillomarvirus type 16 in the nucleus of infected cells or tissues stained by immunohistochemical techniques.

Antibody	Clone	Localization	Catalog Family
HPV-16	Cam Vir-1	Nucleus	AM362,AX362,MU362

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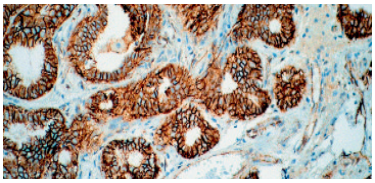
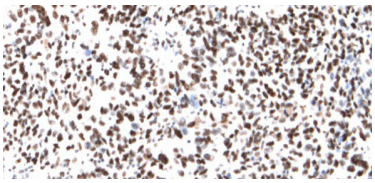
Beta-Catenin



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, including cervical cancer 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 and membrane	AN778, AY778, NU778

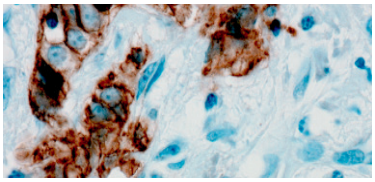
CDK9



CDK9 (Cyclin-dependent kinase 9), is a serine/threonine kinase that forms the catalytic core of the positive transcription elongation factor b (P-TEFb). This enzyme is critical for stimulating transcription elongation of most protein coding genes, including key developmental and stimulus-responsive genes, by RNA polymerase II (RNAPII). CDK9 is not a typical Cdc-2 like kinase and it does not act in cell cycle regulation processes; rather, it acts in differentiation processes.

Antibody	Clone	Localization	Catalog Family
CDK9	K.513.1	Nucleus	AN908, AY908, NU908

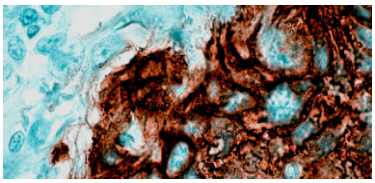
E-Cadherin



E-Cadherin is a transmembrane glycoprotein that plays an important role in epithelial cell adhesion. In prostate cancers, the expression of E-cadherin is reported to be reduced or absent in comparison with its expression in normal prostate which is uniformly strong. A decreased expression of E-Cadherin is associated with metastatic potential and poor prognosis in breast cancer and esophagus cancer. In combination with p120 Catenin or Cytokeratin, it is useful for the differentiation between ductal (E-Cadherin positive) and lobular (E-Cadherin negative) breast carcinomas. It may also help in diagnosis of mesothelioma. E-Cadherin has positive staining on cervical cancer.

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

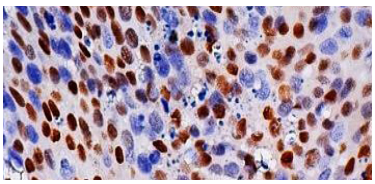
EGFR



EGFR (LRVAP) reacts with the 170 kD EGFR transmembrane glycoprotein. It binds specifically to the intracellular portion, regardless of phosphorylation state. The extracellular domain binds epidermal growth factor (EGF) as a proliferation signal. The EGFR antibody is made against a sequence which is unique from related tyrosine kinase receptors and hence shows no cross-reactivity. EGFR is associated with HPV infection and present at cervical cancers.

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

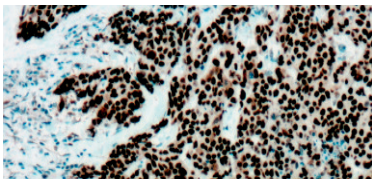
p21/WAF1



The p21/WAF1 protein is a p53 regulated gene product 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 in general seen to be negative.

Antibody	Clone	Localization	Catalog Family
p21/WAF1	CIP1/4377R	Nucleus	ANA13, AYA13, NUA13

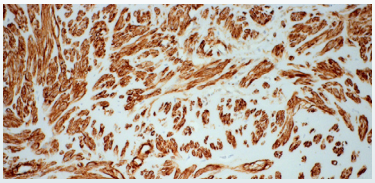
p53



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. p53 is degraded in cervical cancer, and the p53 mutation is strongly associated with cervical cancer.

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

Caldesmon



Anti-Caldesmon is a regulatory protein of smooth muscle and other tissues forming assoociations with actin, myosin, tropomyosin, and calmodulin. It is useful in differentiation of smooth muscle from myofibroblast tumors, uterus leiomyoma from endometrial stroma tumor. Caldesmon is a marker for identification of epitheloid mesothelioma.

Antibody	Clone	Localization	Catalog Family
Caldesmon	EP9	Cytoplasm	AN774, AY774, NU774

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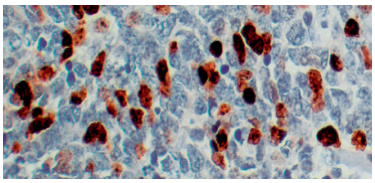
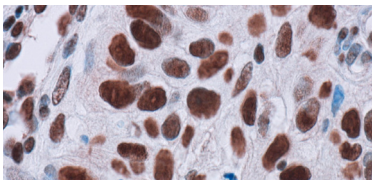
Ki-67



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 gastrointestinal mucosa, and undifferentiated spermatogonia. Ki67 can be applied to distinguish benign / non-neoplastic and malignant / neoplastic lesions of cervix.

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

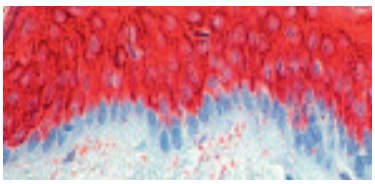
MCM2



Minichromosome maintenance protein 2 (MCM2) is known as DNA replication licensing factor. MCM2, is a member of the MCM family that regulates mammalian DNA replication. This family is composed of six related subunits, called the hexameric MCM2-7 complex, that are conserved in all eukaryoes. It functions as a replicative helicase, the molecular motor that both unwinds duplex DNA and powers fork progression during DNA replication. MCM2 acts as a factor to license DNA for one and only one round of replication per cell cycle.

Antibody	Clone	Localization	Catalog Family
MCM2	SP85	Membrane	AN773, AY773, NU773

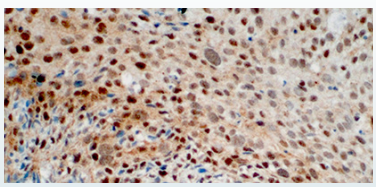
Cytokeratin 10



Cytokeratins 1 and 10 are expressed only in suprabasal layers, and their expression increases with epidermal maturation. In terminally differentiated keratinocytes of the stratum corneum, Cytokeratins 1 and 10 are regarded as markers for orthokeratinization. Keratinizing areas expressing Cytokeratin 10 have been demonstrated in various well differentiated squamous cell carcinomas derived from epidermis as well as from various internal sites of stratified epithelia. This antibody stains cytoplasm in epithelial cells of the stratum corneum. Cytokeratin 10 stains keratinizing cervical squamous cell carcinoma.

Antibody	Clone	Localization	Catalog Family
Cytokeratin 10	DEK-10	Cytoplasm	AM201, AX201, MU201

SOX2



SOX2 or SRY related HMG BOX gene 2 is a transcription factor belongs to the SRY-related HMG-box (SOX) and it is involved in the regulation of embryonic development, determination of cell fate. SOX2 factor is critical for stem cell potency in the central nervous system, and it also regulates gene expression in the stomach. SOX2 is necessary for Oct3/4 regulation, expression . An essential function of SOX2 is to stabilize embryonic stem cells in a pluripotent state by maintaining the requisite level of Oct3/4 expression.

Antibody	Clone	Localization	Catalog Family
SOX2	Polyclonal	Nucleus	AR788, PU788, AW788

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.

Other Panel Markers from BioGenex	
Breast cancer panel	Pancreas tumor
B&T cell Associated Lymphoma	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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