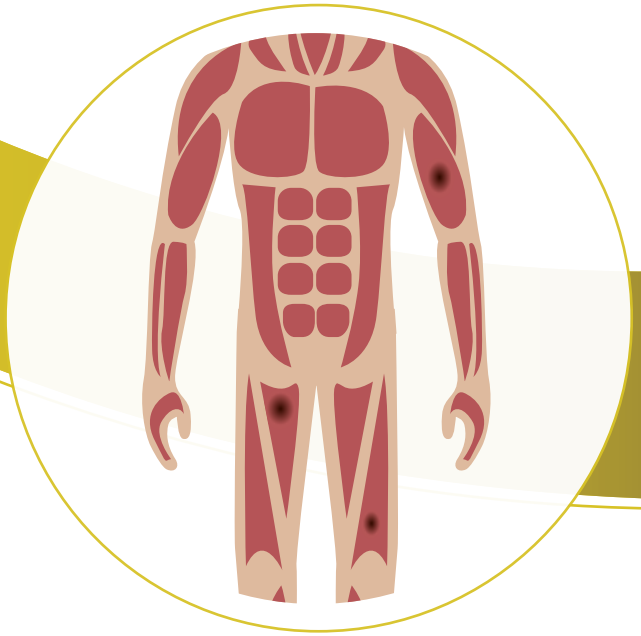
IHC PANEL MARKERS

Muscle 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 Muscle Cancer
SMA, Calponin, CD44, Calcitonin, Desmin, Caldesmon, Myogenin (Myf4), Dystrophin, Vimentin, S100, β-tubulin, BCL2, Actin, Pan CK, CD31, CD99, ERG, CD34, ALK, CD30, p57

BioGenex

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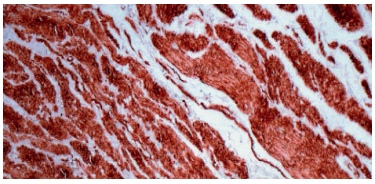
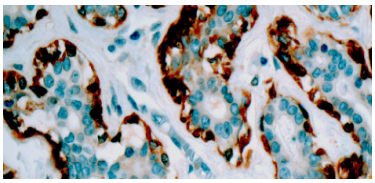
SMA



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
SMA	1A4	Cytoplasm	AM128, AX128, MU128

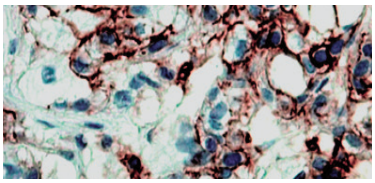
Calponin



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

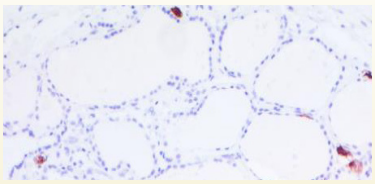
CD44



CD44 (phagocytic glycoprotein-1, homing cell adhesion molecule, HCAM, CD44s) is a cell surface 80-90 kD glycoprotein important in lymphocyte homing, T-cell activation and adhesion to hyaluronate and matrix proteins. It is expressed on the surface of a wide variety of cells, among which are T-cells, B-cells, monocytes, fibroblasts, keratinocytes, vascular endothelial cells, columnar epithelium of the GI tract, and transitional epithelium of the urinary tract. This antibody stains CD44 antigen in cell membranes of various cells such as T cells, B cells, monocytes, granulocytes and even on most erythrocytes, epithelial cells, central nervous white matter, fibroblasts, skeletal muscle and on a wide variety of tumors.

Antibody	Clone	Localization	Catalog Family
CD44	DF1458	Membrane	AM310, AX310, MU310

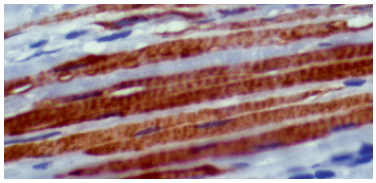
Calcitonin



Calcitonin (CT) is a polypeptide hormone with 32 amino acids synthesized primarily by the thyroid. CT is able to decrease blood calcium levels by direct inhibition of mediated bone resorption and by enhancing calcium excretion by the kidney. Immunohistochemical staining with anti-calcitonin antibody has proven to be an effective way of demonstrating calcitonin-producing cells in the thyroid. C-cell hyperplasia and medullary thyroid carcinomas stain positive for calcitonin. Studies of calcitonin have resulted in the identification of a wide spectrum of C-cell proliferative abnormalities.

Antibody	Clone	Localization	Catalog Family
Calcitonin	SP17	Cell Membrane	AN926, AN926, MU926

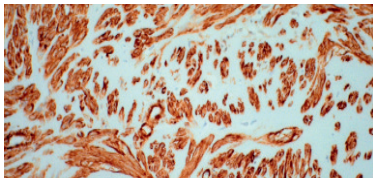
Desmin



Desmin is a 56 kD intermediate filament expressed by cells of smooth, skeletal, and cardiac muscle. In myofibrils, desmin is localized in skeletal and cardiac muscle Z lines, in regions of cell-cell juncture, at the site of apposition of the Z line with the plasma membrane, and in cardiac intercalated disks. The specificity of desmin to muscle cells makes it a useful marker in identifying sarcomas derived from smooth and striated muscle cells such as leiomyosarcomas and rhabdomyosarcomas. This antibody does not cross-react detectably with GFAP, keratin, vimentin, or neurofilament. This antibody stains positive in muscle cells.

Antibody	Clone	Localization	Catalog Family
Desmin	D33	Cytoplasm	AM072, AX072, MU072

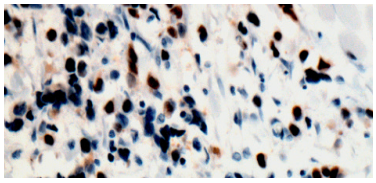
Caldesmon



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 myofibroblast 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, MU774

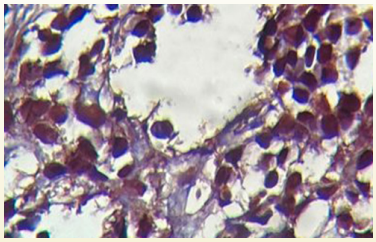
Myogenin (Myf4)



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

Antibody	Clone	Localization	Catalog Family
Myogenin (Myf4)	EP162	Nucleus	AN789, AY789, NU789
Myogenin (Myf4)	MGN185	Nucleus	AM987, AX987, MU987

p57



p57 kip2 is a protein which is cyclin-dependent kinase inhibitor (CDKI) and is paternally imprinted that is being expressed from maternal allele. P57 is an imprinted gene located at the chromosomal locus 11p15.5. The cyclin-dependent kinase inhibitor which belongs to the CIP/KIP family also includes additionally p21CIP1/WAF1 and p27KIP1. It is one of the less studied CIP/KIP member and has an important role in embryogenesis. p57 kip2 regulates the cell cycle. Few functions have been attributed to this protein also includes cytoskeleton organization. p57 kip2 is frequently down-regulated in many common human malignancies by several mechanisms showing its anti-oncogenic function.

Antibody	Clone	Localization	Catalog Family
p57	KP10	Nucleus	AMA45, AXA45, MUA45

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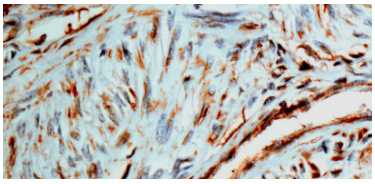
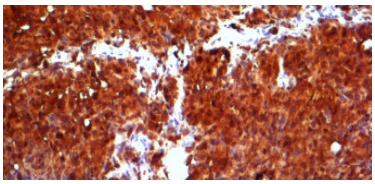
Vimentin



Vimentin is the major intermediate filament in a variety of mesenchymal or mesenchymally derived non-muscle cell types. Vimentin is found in all types of sarcomas and lymphomas. Positive staining for vimentin is seen in most cells of fibrosarcomas, liposarcomas, malignant fibrous histocytomas, angiosarcomas, chondrosarcomas and lymphomas. When the vimentin antibody is used in combination with other antibodies as a panel, it can aid in the histological classification of normal and malignant tissues. This antibody immunohistochemically labels a variety of mesenchymal cells.

Antibody	Clone	Localization	Catalog Family
Vimentin	V9	Cytoplasm	AM074, AX074, MU074

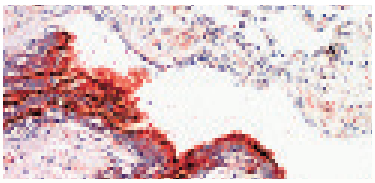
S100



S100 protein is a low molecular weight soluble protein first isolated from the brain and initially believed to be exclusively a glial marker. Two subunits of S100 protein have been identified. The beta subunit is present in all S100 positive cells and tumors. In contrast, the alpha subunit is detectable only in neurons and lymph node macrophages. The presence of S100 protein is readily demonstrated in routinely processed malignant melanomas. S100 protein has also been found in normal melanocytes, Langerhans cells, histiocytes, chondrocytes, lipocytes, skeletal and cardiac muscle, Schwann cells, epithelial and myoepithelial cells of the breast, salivary and sweat glands, in addition to glial cells. Neoplasms derived from these cells also express S100 protein to varying degrees. A large proportion of well-differentiated tumors of salivary gland, adipose, cartilaginous tissue, and Schwann cell-derived tumors express S100 protein.

Antibody	Clone	Localization	Catalog Family
S100-beta	EP32	Cytoplasm	AN713, AY713, NU713
S100	Polyclonal	Cytoplasm & Nucleus	AR058, AW058, PU058

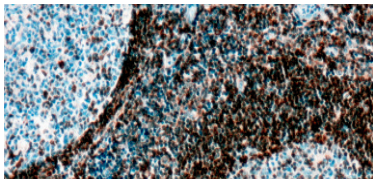
Beta-Tubulin



Microtubules, along with microfilaments and intermediate filaments, form the major part of the extensive cytoplasmic network known as the cytoskeleton. The thickest of these filaments are the 20-25 nm microtubules composed of tubulin and several additional microtubule-associated proteins (MAP). Tubulin is a heterodimer composed of α-tubulin and ß-tubulin. Each subunit is a 55 kD acidic protein. Tubulin assembles into the microtubule system during interphase, then reassembles into the mitotic spindle during cell division. Immunoblot analysis shows that this antibody binds to the beta subunit of tubulin from cultured fibroblasts and chick brain tubulin. This antibody labels the cytoplasmic network of microtubules and mitotic spindles of cultured cells.

Antibody	Clone	Localization	Catalog Family
Beta-Tubulin	DM-1B	Cytoplasm	AM122, AX122, MU122
Beta-Tubulin II	JDR3B8	Cytoplasm	AM176, AX176, MU176
Beta-Tubulin III	SDL3D10	Cytoplasm	AM177, AX177, MU177
Beta-Tubulin IV	ONS1A6	Cytoplasm	AM178, AX178, MU178

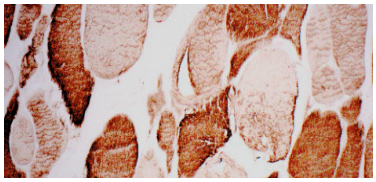
Bcl 2



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, AX723, MU723
Bcl 2	Bcl2/100	Cytoplasm	AM287, AX287, MU287
Bcl-2 Alpha	SP66	Membrane	AN758, AY758, NU758

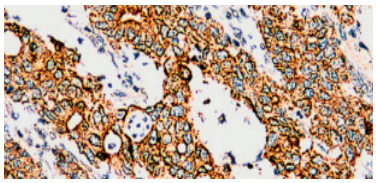
Actin



Actin, a major component of the cytoskeleton, is a globular protein about 5 nm in diameter and is composed of one polypeptide chain with a mass of approximately 47kD. This antibody recognizes alpha actin of skeletal, cardiac and smooth muscle cells and gamma actin from smooth muscle cells. It is non-reactive with other mesenchymal cells and all epithelial cells except for myoepithelium. It can be used to stain leiomyomas, leiomyosarcomas, rhabdomyomas and rhabdomyosarcomas. This antibody labels cytoplasm in skeletal, cardiac and smooth muscle cells.

Antibody	Clone	Localization	Catalog Family
Actin	HHF35	Cytoplasm	AM090, AX090, MU090

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 a useful pan cytokeratin marker for the detection of both normal and malignant epithelial and mesothelial cells. The Lu-5 antibody stains surface of cytokeratin filaments in a wide variety of normal and tumor tissues.

Antibody	Clone	Localization	Catalog Family
Cytokeratin Pan	Lu-5	Cytoplasm	AM181, AX181, MU181
Cytokeratin Pan	C11	Cytoplasm	AM357, AX357, MU357

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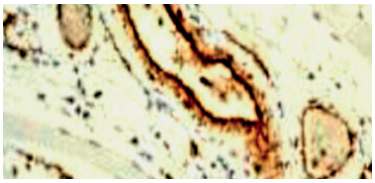
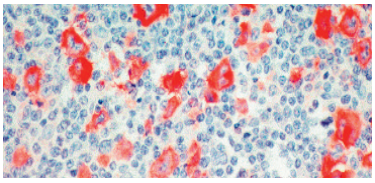
CD31



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

Antibody	Clone	Localization	Catalog Family
CD31	JC/70A	Membrane and Cytoplasm	AM232, AX232, MU232

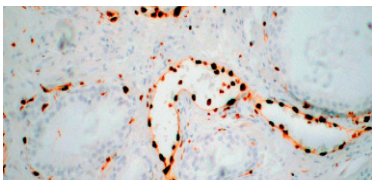
CD30



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

Antibody	Clone	Localization	Catalog Family
CD30	Ber-H2	Membrane Cytoplasm	AM327, AX327, MU327
CD30	HRS-4	Membrane & Cytoplasm	AM351, AX351, MU351

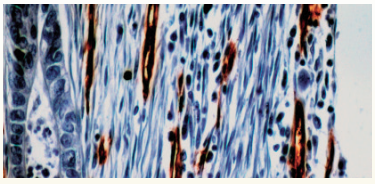
ERG



ERG is directed against the C-terminus of the ETS transcription regulator, ERG, and is capable of detecting both wildtype ERG, and truncated ERG resulting from ERG gene rearrangement. This antibody exhibits a nuclear staining pattern and may be used to aid in the identification of prostate adenocarcinomas through the detection of truncated ERG. This ERG antibody also recognizes Fli-1 by western blot analysis.

Antibody	Clone	Localization	Catalog Family
ERG	EP111	Nucleus	AN782, AX782, MU782

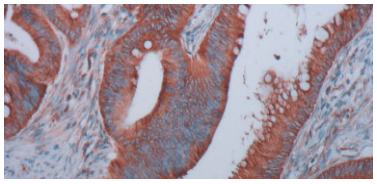
CD34



This is an antibody to the CD34 antigen in human endothelial and hematopoietic cells. It stains positive in a variety of vascular and lymphatic tumors. QBEnd/10 may now prove to be a more specific method of evaluating vascularization than Factor VIII antibody and is an important tool for tumor evaluation. This antibody stains endothelial cell cytoplasm and cross-reacts with basement membrane collagen.

Antibody	Clone	Localization	Catalog Family
CD34	QBend/10	Membrane	AM236, AX236, MU236
CD34	EP88	Membrane	AN779, AX779, MU779

Alk/p80



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

Antibody	Clone	Localization	Catalog Family
Alk/p80	SP8	Cytoplasm & Nuclear	AN770, AX770, MU770

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BioGenex Primary Antibody Format and Pack Size

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

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

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

Other Panel Markers from BioGenex	
Breast cancer panel	Pancreas tumor
B&T cell Associated Lymphoma	Liver cancer
Cervical cancer	Kidney cancer
Colorectal and stomach cancer	Head & neck cancer
Lung cancer	Bladder cancer
Melanoma	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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