IHC PANEL MARKERS

Pancreas Cancer Panel

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.

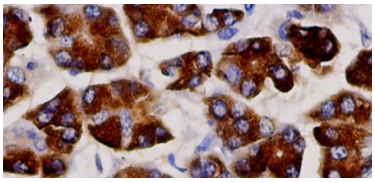
Antibodies for Pancreas Tumor

Pancreatic Lipase, Insulin, Chromogranin A, Glucagon, Synaptophysin, NSE, CEA, CA19.9, MUC4, MUC5AC, CK7, CK8, CK17, CK1, CK19, INSM1, ACT, CD64, CPA1, SMAD4, MRP3.

BioGenex

IHC PANEL MARKERS - Pancreas Cancer Panel

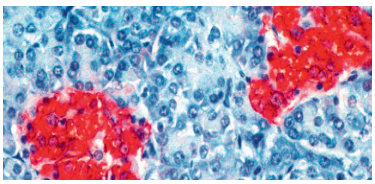
Pancreatic Lipase



Pancreatic Lipase, also designated as pancreatic triacylglycerol acyl hydrolase, PL or PTL belongs to AB hydrolase superfamily. It is a 56kDa protein secreted by pancreas which is essential for the efficient digestion of dietary fats. Pancreatic Lipase hydrolyses insoluble, emulsified triglycerides into diglycerides, monoglycerides and free fatty acids in the intestine. Exocrine pancreas failure or pancreatic insufficiency results in steatorrhoea or steatorrhea, where increased fat excretion is seen in fecal samples.

Antibody	Clone	Localization	Catalog Family
Pancreatic Lipase	A-3	Cytoplasm	AMC64, AXC64, MUC64

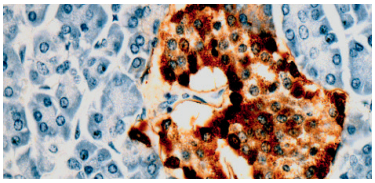
Insulin



Insulin is a hormone that regulates glucose homeostasis. It is synthesized in the pancreas within the beta-cells of the islets of Langerhans. Lack of insulin hormone gives rise to diabetes mellitus. This antibody recognizes the A chain loop of human Insulin. Cross-reactivity with bovine, rat and mouse Insulin has been observed. This antibody stains insulin in the cytoplasm of beta cells in the pancreas. Insulin antibody is the most sensitive and reliable means available for an accurate characterization of the function of islet cell tumors.

Antibody	Clone	Localization	Catalog Family
Insulin	HB125	Cytoplasm	AM029, AX029, MU029
Insulin	EP125	Cytoplasm	AN735, AY735, MU735

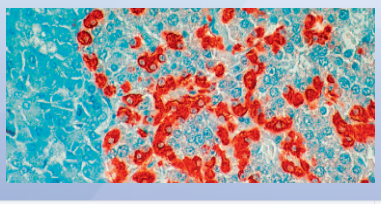
Chromoganin A



This antibody recognizes Chromogranin A (68 kD) and other related chromogranin polypeptides from human, monkey, and pig. Chromogranin is widely distributed has been demonstrated in several elements of the diffuse neuroendocrine system, including anterior pituitary, thyroid parafollicular C cells, parathyroid chief cells, pancreatic islet cells, intestinal enteroendocrine cells, and tumors derived from these cells. This antibody recognizes Chromogranin A and other chromogranin polypeptides in cytoplasm of positive cells.

Antibody	Clone	Localization	Catalog Family
Chromoganin A	LK2H10	Cytoplasm	AM126, AX126, MU126
Chromoganin A	PHE-5	Cytoplasm	AM356, AX356, MU356
Chromoganin A	CGA/413+CHGA 777+CHGA/798	Cytoplasm	AMA51, AXA51, MUA51

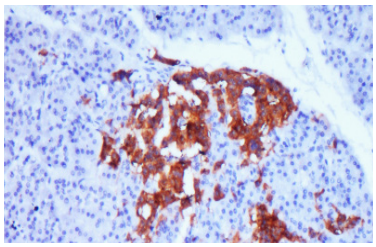
Glucagon



Glucagon is a polypeptide of 29 amino acids produced by the pancreatic alpha cells. In addition to its well-known effect of elevating blood glucose concentration, glucagon functions to inhibit gastric and pancreatic secretions. Tumors producing large amounts of glucagon are referred to as glucagonomas. This antibody stains the cytoplasm in A cells of the endocrine pancreas and reacts with glucagon in a number of mammalian species.

Antibody	Clone	Localization	Catalog Family
Glucagon	Polyclonal	Cytoplasm	AR039, AW039, PU039

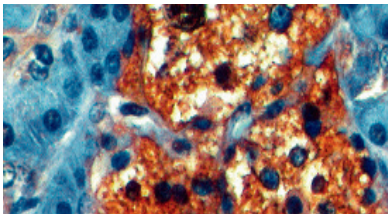
Synaptophysin



Synaptophysin, a 38 kD glycoprotein, is the major integral membrane protein of synaptic vesicles. It is a sensitive quantitative molecular marker of synaptic density and a useful marker in the identification and characterization of neuronal and neuroendocrine neoplasms of the adrenal medullary, pituitary, thyroid and islet cell tumors, gastrointestinal, bronchial, thymic and pancreatic carcinoid tumors. Immunohistochemistry of synaptophysin has been used in the evaluation of functional bowel disorders, cortical epileptogenesis, schizophrenia and amyotropic lateral sclerosis.

Antibody	Clone	Localization	Catalog Family
Synaptophysin	EP158	Cytoplasm	AN857, AY857, NU857
Synaptophysin	SYP/3551	Cytoplasm	AMA50, AXA50, MUA50

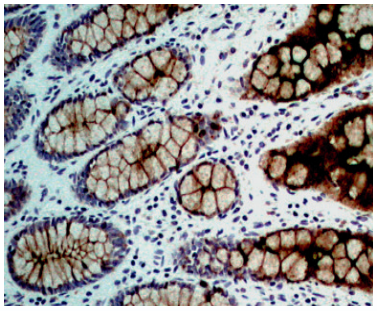
Neuron Specific Enolase (NSE)



NSE is a gene which encodes for a protein found in matured neurons and is used in panels along with chromogranin, synaptophysin and neurofilament. Elevated NSE concentrations are observed in patients with neuroblastoma, pancreatic islet cell carcinoma, medullary thyroid carcinoma, pheochromocytoma, and other neuroendocrine tumors as well as certain benign conditions. NSE is specific for such proteins, and aids in detection of neural and neuroendocrine lineage.

Antibody	Clone	Localization	Catalog Family
NSE	MIG-N3	Cytoplasm	AM055, AX055, MU055

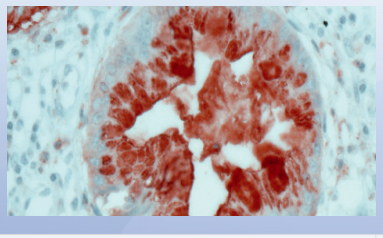
Carcinoembryonic Antigen



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

Antibody	Clone	Localization	Catalog Family
Carcinoembryonic Antigen	B01-94-11M-P	Cytoplasm	AM009, AX009, MU009
Carcinoembryonic Antigen	CEA88	Cytoplasm	AM365, AX365, MU857

CA19.9

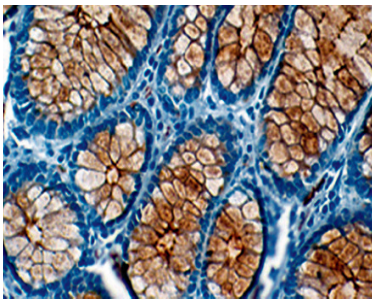


Carcinoma Antigen 19-9 (CA19-9) is a carbohydrate antigen that reacts specifically with Sialyl Lewis-containing glycolipids and has been isolated and characterized as the oligosaccharide sialylazed lacto-Nfucopentose II antigen. This monoclonal antibody is directed against the CA19-9 antigen, which is expressed in pancreatic carcinomas, and hepatobillary carcinomas, the tumor cells of colorectal and gastric cancers. It can also be found in chronic pancreatitis and in healthy colonic mucosa of patients with colorectal cancer.

Antibody	Clone	Localization	Catalog Family
CA19.9	C241:5:1:4	Cytoplasm	AM424, AX424, MU424

IHC PANEL MARKERS - Pancreas Cancer Panel

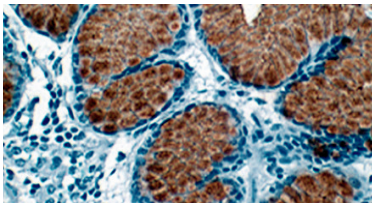
MUC4



MUC4 is a membrane-associated protein of the mucin (MUC) gene family, encoded by a gene on chromosome 3q29 and produced by epithelial cells as a heterodimer. The MUC4 protein is thought to play a protective role for vulnerable epithelia, particularly in the airway, eye, female reproductive tract, and mammary gland. Alterations in MUC4 expression have been observed in association with a variety of inflammatory and neoplastic states, reduction or loss has been reported in non-small cell lung carcinoma, hyperplastic polyps of the colon, and serrated colon adenomas, while overexpression of the MUC4/Sialomucin complex (SMC) has been identified in malignant progression of mammary tumors, and pancreas tumors in humans.

Antibody	Clone	Localization	Catalog Family

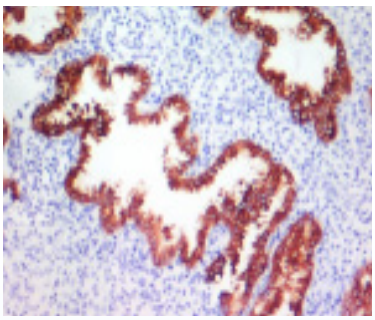
MUC5AC



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.

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

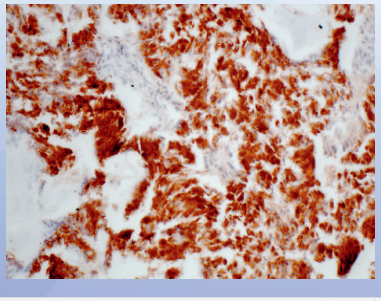
Cytokeratin 7



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

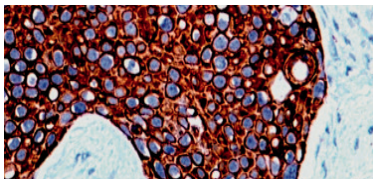
Cytokeratin 8



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

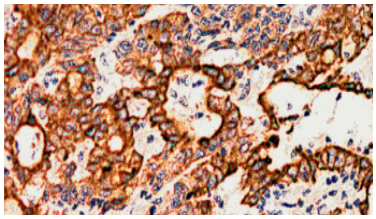
Cytokeratin 17



Cytokeratin 17 is 46 kD intermediate filament found in simple epithelia sometimes in association with Cytokeratin 7. This antibody has been used to distinguish cervical immature squamous metaplasia from high grade cervical intraepithelial neoplasia (CIN III). Anti-CK17 also labels myoepithelial cells in the benign breast tissue. CK17 labelling of breast carcinoma cells (so-called basal phenotype) has been associated with a poor prognosis.

Antibody	Clone	Localization	Catalog Family
Cytokeratin 17	E27	Cytoplasm	AM572, AX572, MU572

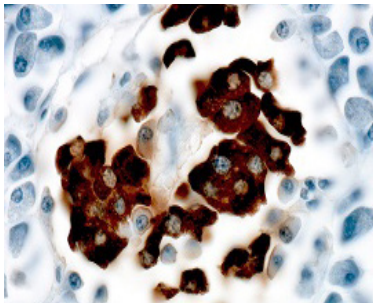
Cytokeratin 19



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

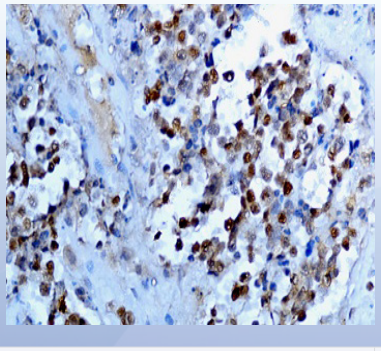
Insulin



Insulin is synthesized in the beta cell of the pancreas. It is a glucose homeostasis regulating hormone. It acts by increasing cell permeability to monosaccharides, amino acids and fatty acids, and accelerating glycolysis, the pentose phosphate cycle, and glycogen synthesis in the liver. One million to three million islets of Langerhans (pancreatic islets) form the endocrine part of the pancreas, which is primarily an exocrine gland produces Insulin. The endocrine portion accounts for only 2% of the total mass of the pancreas. Within the islets of Langerhans, beta cells constitute 65-80% of all the cells. The antibody labels both normal and neoplastic insulin-producing cells. It is useful in identifying insulinoma

Antibody	Clone	Localization	Catalog Family
Insulin	EP125	Cytoplasm	AN735, AY735, NU735

INSM1

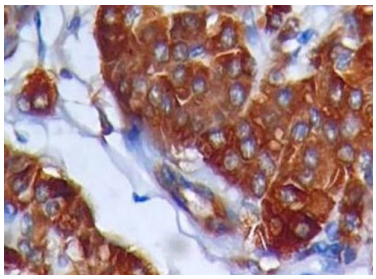


INSM1 (Insulinoma-associated protein 1), also known as IA-1, is a transcriptional factor with a zinc finger DNA-binding domain that is involved in neuroendocrine cell differentiation as a transcriptional repressor. The expression of INSM1 is seen in fetal Neuroendocrine developmental tissues and in normal adult neuroendocrine tissues such as adrenal medulla, pineal gland, pituitary gland, gastrointestinal enterochromaffin cells, pancreatic islet cells, thyroid C cells and developing neurons. This helps in identification of neuroendocrine tumors such as Small Cell Lung Cancer (SCLC), Pituitary tumors, Medullary Thyroid Carcinoma, Merkel Cell Carcinoma, Olfactory Neuroblastoma and Pheochromocytoma and their distinction from other neoplasms, such as adenocarcinomas, which exhibit little to no INSM1 expression.

Antibody	Clone	Localization	Catalog Family
INSM1	A-8	Nucleus	AMB44, AXB44, MUB44

IHC PANEL MARKERS - Pancreas Cancer Panel

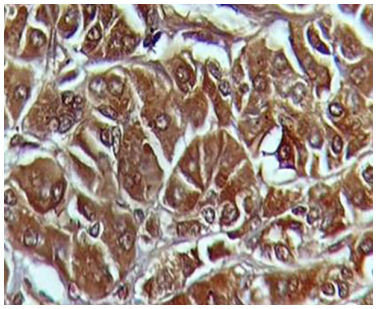
Alpha 1



Alpha 1-Antichymotrypsin (AACT) also known as cell growthinhibiting gene 24/25 protein and Serpin A3, is a 65-76kDa alpha globulin glycoprotein belongs to the Serpin family. It inhibits the activity of proteases by cleaving them into a different shape or conformation. Deficiency of this protein has been associated with liver disease and variations in this protein's sequence have been implicated in Alzheimer's disease. The Alpha 1-Antivhymotrypsin antibody reacts with histiocytes and widely used to identify tumors derived from histiocytes. Its expression is also seen in acinar tumors of the pancreas and salivary gland.

Antibody	Clone	Localization	Catalog Family
Alpha 1	AACT/1451	Cytoplasm	AMC09, AXC09, MUC09

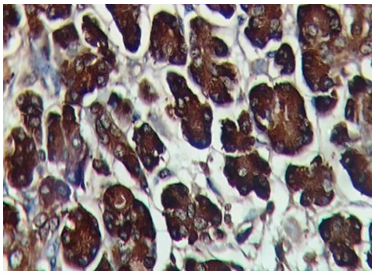
CD64



CD64 (also known as FcγRI, FcR I) is a 72kDa single chain type I high-affinity Fc-gamma receptor integral transmembrane glycoprotein belongs to the Immunoglobulin Superfamily. It plays an important role in the activation and inhibition of both innate and adaptive immune responses such as degranulation, endocytosis, phagocytosis, antigen presentation, ADCC (antibody-dependent cellular toxicity), cytokine release, superoxide generation and B cell proliferation. CD64 binds with a signaling FcRγ homodimer to form the functional high affinity FcγRI complex which is regulated by IFN-γ stimulation. The expression of CD64 is found on monocytes, macrophages, activated granulocytes, dendritic cells and early myeloid lineage cells.

Antibody	Clone	Localization	Catalog Family
CD64	C-6	Mem & Cyt	AMA56, AXA56, MUA56

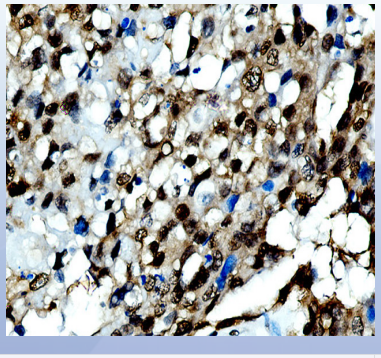
CPA1



Carboxypeptidase A1/ CPA1 is a 419 amino acid zinc metalloenzymes belongs to the peptidase M14 family. It is a secreted monomeric protein involved in zymogen inhibition and functioning to block enzyme activation pathways. It is highly expressed in pancreatic tissue and functions as a pancreatic exopeptidase. CPA1 plays a key role in protein digestion and degradation by using zinc as a cofactor to catalyze the release of C-terminal amino acids from a variety of proteins. Abnormal levels of CPA1are observed in pancreatic cancer, suggesting a possible role in either tumor progression or tumor suppression events.

Antibody	Clone	Localization	Catalog Family
CPA1	CPA1/2712	Cytoplasm/Secreted	AMC55, AXC55, MUC55

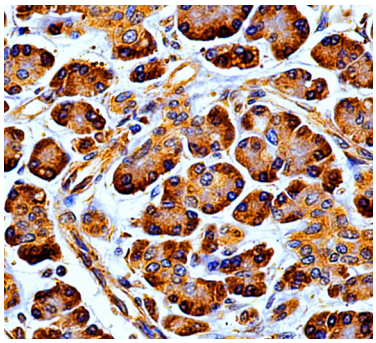
SMAD4



SMAD4, also designated as DPC4 or SMAD family member n°4, is a DNA-binding protein that belongs to the SMAD family of transcription factors. It also defined as a signal transducer and forms complexes with other members of the SMAD family. Activated SMAD4 complexes accumulate in the nucleus and serves as a mediator between extracellular growth factors from the TGFβ family and genes inside the cell nucleus. It is implicated as downstream effectors of TGFβ/BMP signalling which negatively regulates growth of epithelial cells and the extracellular matrix (ECM). SMAD4 expression is found in skin, Pancreatic, colon, uterus and epithelial cells. Mutations in SMAD4 have been found in multiple cancers including cholangiocarcinoma, colorectal, head and neck, and pancreatic cancer.

Antibody	Clone	Localization	Catalog Family
SMAD4	rSMAD4/6310	nucleus and cytoplasm	AMD23, MUD23, AXD23

MRP3



MRP3 (Multidrug Resistance-Associated Protein 3) belongs to the MRP sub-family within the ATP-binding cassette (ABC) transporter superfamily, plays a pivotal role in the efflux of organic anions, such as bile acids and anti-cancer drugs, from the liver and small intestine into the bloodstream. This function contributes to the development of multi-drug resistance. MRP3 is expressed in various organs, including the liver, gallbladder, small intestine, colon, kidney, and adrenal gland. Elevated levels of MRP3 expression have been observed in liver diseases and specific types of cancer, including hepatocellular carcinoma, ovarian cancer, and acute lymphoblastic leukaemia. Overexpression of MRP3 has been identified as a prognostic factor in acute lymphoblastic leukaemia (ALL) and adult acute myeloid leukaemia (AML).

Antibody	Clone	Localization	Catalog Family
MRP3	ABCC3/2971	Cytoplasm	AMD53, MUD53, AXD53

IHC PANEL MARKERS - Pancreas Cancer Panel

BioGenex Primary Antibody Format and Pack Size

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

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

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

Other Panel Markers from BioGenex	
Breast cancer panel	Neuroendocrine tumor
B&T cell Associated Lymphoma	Liver cancer
Cervical cancer	Kidney cancer
Colorectal and stomach cancer	Head & neck cancer
Lung cancer	Bladder cancer
Melanoma	Germ cell tumor
Muscle cancer	Vascular tumor
Ovarian cancer	Pituitary gland
Prostate/Testicular cancer	Esophagus cancer

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

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