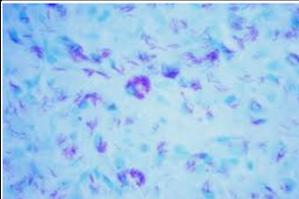
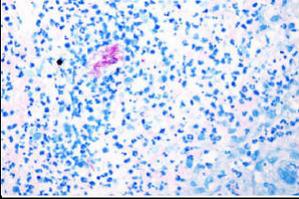
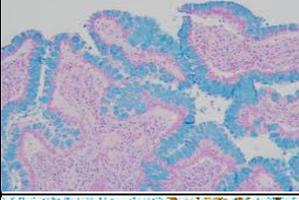
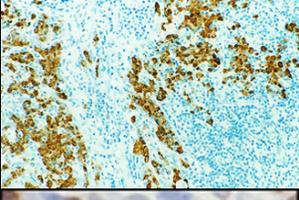
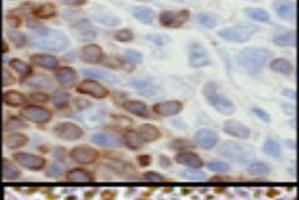
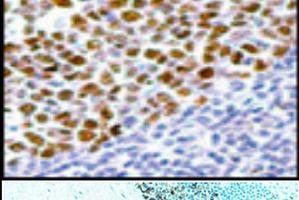
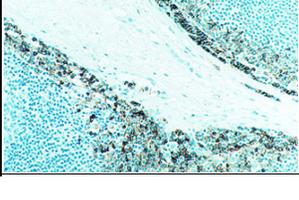
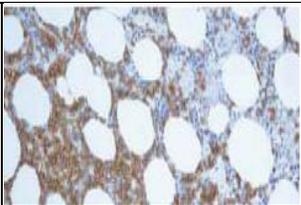
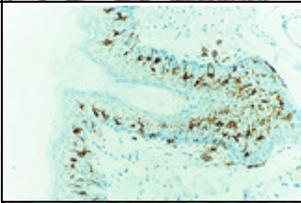
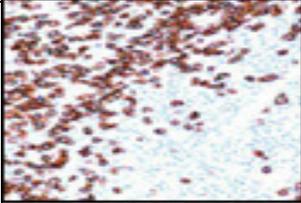
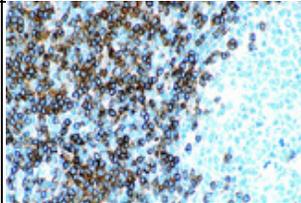
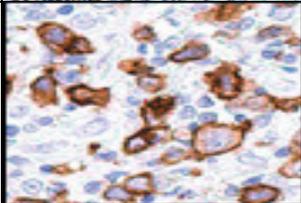
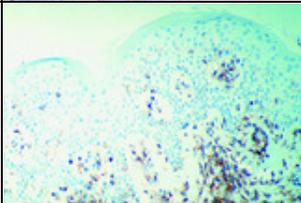
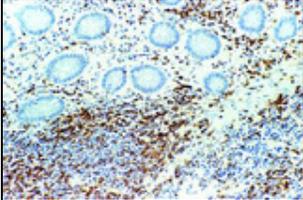
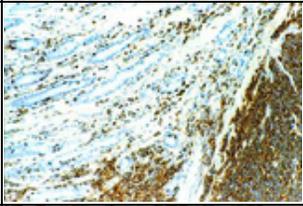
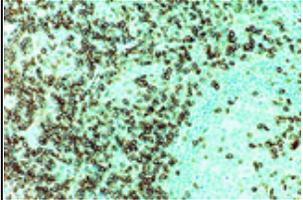
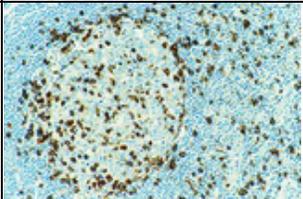
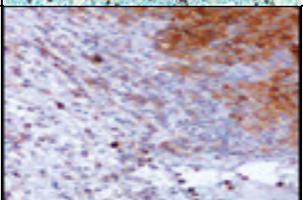
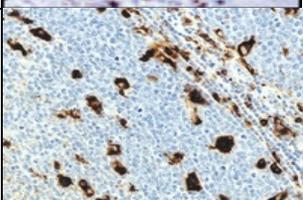
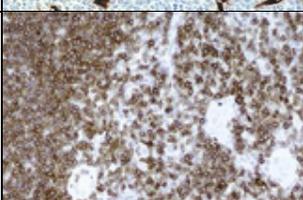
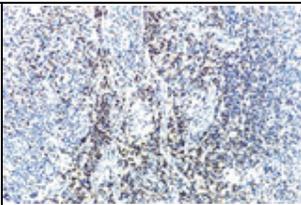
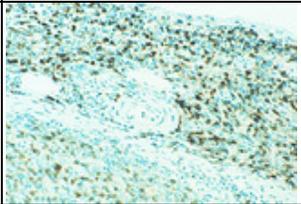
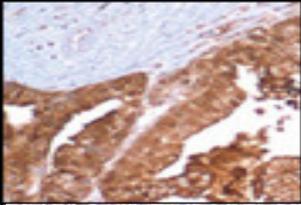
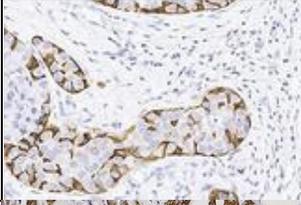
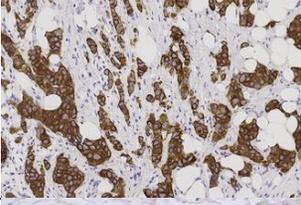
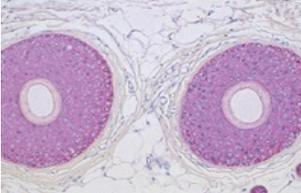
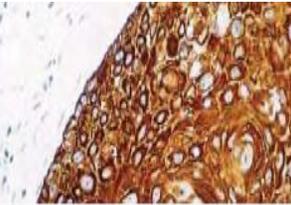
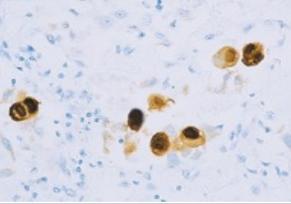
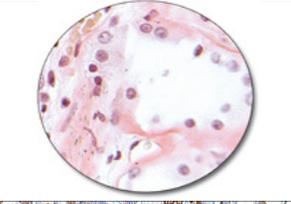
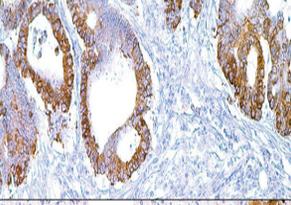
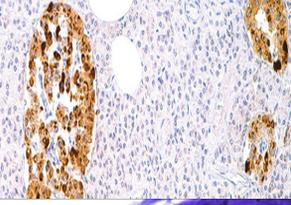
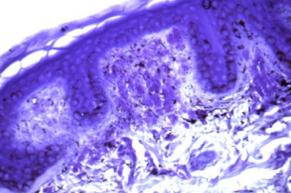


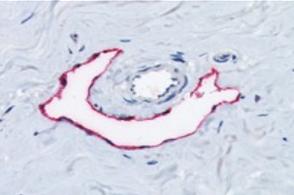
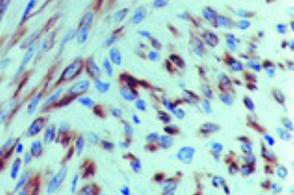
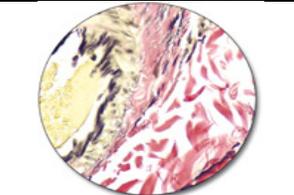
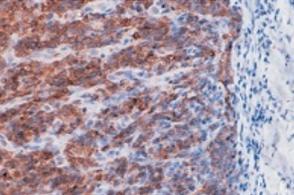
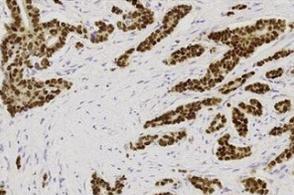
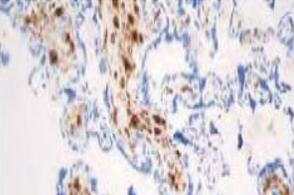
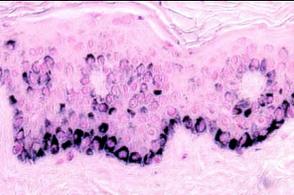
Stain	Image	What it stains for?	What does that mean?
AFB		Acid Fast Bacilli is a special bacterial stain used to identify acid-fast organisms, i.e. <i>Mycobacteria</i> .	<b>Acid-fastness-</b> Named for a property of certain bacteria that resist decolorization by acids during staining.
AFB – FITE		This is a modification of the Acid Fast Bacilli special bacterial stain that is gentler on tissue and more likely to detect delicate <i>Mycobacteria</i> such as <i>Mycobacterium Leprae</i> , among others.	<b><i>Mycobacterium Leprae</i></b> - a bacterium that causes leprosy (Hansen's disease).
ALCIAN BLUE		<b>Alcian Blue</b> is used to stain acidic polysaccharides found in mucin.	<b>Polysaccharides-</b> Chain of molecules that make up starches and sugars. <b>Mucin-</b> interwoven molecules found in many secretions including mucus.
ALK		<b>Anaplastic Lymphoma Kinase</b> is an enzyme produced in humans that is encoded by the ALK gene. Due to an abnormal gene rearrangement, it is overexpressed in Anaplastic Large Cell Lymphoma.	<b>Kinase-</b> a type of enzyme.
BCL-2		<b>B-Cell Lymphoma 2</b> is a regulator protein encoded by the BCL2 gene. This protein regulates apoptosis by either preventing it or causing it. Considered an oncogene because of its anti-apoptotic properties.	<b>Apoptosis-</b> Cell Death. <b>Oncogene-</b> A gene that has potential to cause cancer.
BCL-6		<b>B-Cell Lymphoma 6</b> is a protein encoded by the BCL6 gene. It is found in B-Cell germinal centers, both healthy and neoplastic.	<b>Germinal centers-</b> Place where B-lymphocytes mature. <b>Neoplasm-</b> is an abnormal mass of tissue as a result of abnormal growth or division of cells. <b>B-Cell-</b> white blood cell (specifically, a lymphocyte) that is part of the immune system.
CD10		<b>CD10</b> (Cluster of Differentiation 10) is a marker for B lymphocytes that come from the follicle (germinal) centers.	<b>Germinal centers-</b> Place where B-lymphocytes mature. <b>B-Cell-</b> white blood cell (specifically, a lymphocyte) that is part of the immune system.

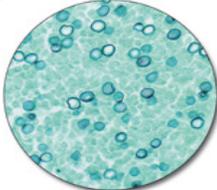
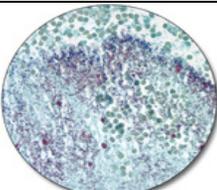
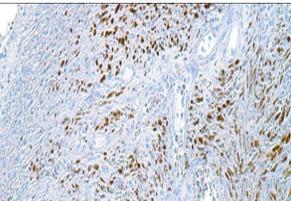
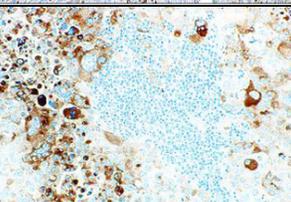
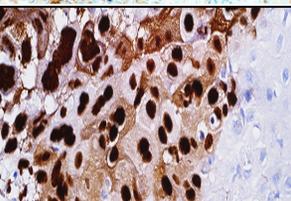
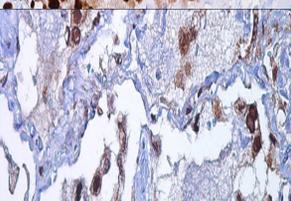
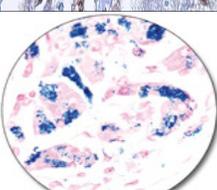
CD19		<b>CD19</b> (Cluster of Differentiation 19) is a protein found on B-lymphocytes.	<b>CD-</b> (Cluster of Differentiation) is a classification system used to identify cell surface molecules. <b>B-Cell-</b> white blood cell (specifically, a lymphocyte) that is part of the immune system.
CD1a		<b>CD1a</b> (Cluster of Differentiation 1a) is a marker for antigen presenting cells like epidermal Langerhans cells. Antigen presenting cells work with immature T-Lymphocytes by "presenting" them with various antigens such as bacteria cell wall lipids, thereby initiating an immune response.	<b>CD-</b> (Cluster of Differentiation) is a classification system used to identify cell surface molecules. <b>T Cell-</b> white blood cell (specifically, a lymphocyte) that is part of the immune system. Called T because they mature in the thymus.
CD20		<b>CD20</b> (Cluster of Differentiation 20) is a protein marker expressed on the surface of B-cells.	<b>CD-</b> (Cluster of Differentiation) is a classification system used to identify cell surface molecules. <b>B-Cell-</b> white blood cell (specifically, a lymphocyte) that is part of the immune system.
CD3		<b>CD3</b> (Cluster of Differentiation 3) is a protein marker found on cell membranes of mature T-Cells. It forms works with the T cell receptor to transmit signals from outside to inside the cell.	<b>CD-</b> (Cluster of Differentiation) is a classification system used to identify cell surface molecules. <b>T-Cell-</b> white blood cell (specifically, a lymphocyte) that is part of the immune system. Called T because they mature in the thymus.
CD30		<b>CD30</b> (Cluster of Differentiation 30) is a protein found on the cell membranes of activated T-cells and B-cells.	<b>CD-</b> (Cluster of Differentiation) is a classification system used to identify cell surface molecules. <b>B-Cell-</b> white blood cell (specifically, a lymphocyte) that is part of the immune system. <b>T-Cell-</b> white blood cell (specifically, a lymphocyte) that is part of the immune system. Called T because they mature in the thymus.
CD34		<b>CD34</b> (Cluster of Differentiation 34) is a protein found on the cell membrane that aids in cell migration and cell-cell adhesion. It is expressed by cells of vascular endothelial origin, among others.	<b>CD-</b> (Cluster of Differentiation) is a classification system used to identify cell surface molecules.
CD4		<b>CD4</b> (Cluster of Differentiation 4) is a marker protein found on the cell membranes of immune cells such as helper T-cells and monocyte/macrophages.	<b>CD-</b> (Cluster of Differentiation) is a classification system used to identify cell surface molecules. <b>Helper T-Cells-</b> subgroup of T-Cells that "help" regulate the immune response in a number of complex ways through interplay with other immune cells.

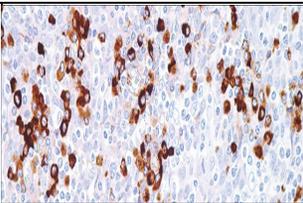
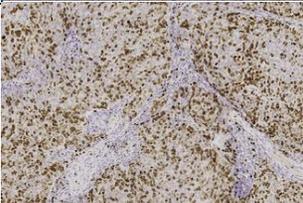
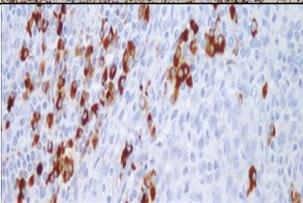
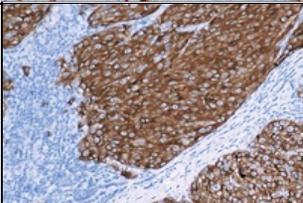
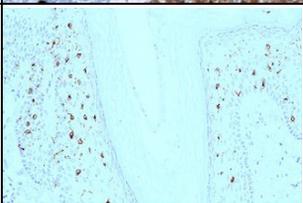
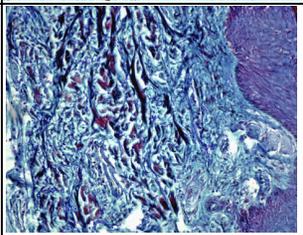
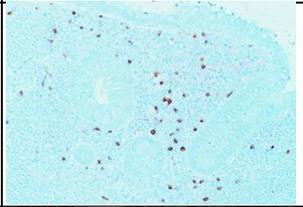
CD43		<b>CD43</b> (Cluster of Differentiation 43) is a transmembrane protein that is found on leukocytes, in particular on T cells.	<b>CD-</b> (Cluster of Differentiation) is a classification system used to identify cell surface molecules. <b>Leukocytes-</b> White blood cells. Lymphocytes (B and T cells) and granulocytes (neutrophils, eosinophils, macrophages) are all examples of leukocytes.
CD45		<b>CD45</b> (Cluster of Differentiation 45) Leukocyte Common Antigen or CD45 is a marker used to identify leukocytes.	<b>CD-</b> (Cluster of Differentiation) is a classification system used to identify cell surface molecules. <b>Leukocyte-</b> White blood cell. Lymphocytes (B and T cells) and granulocytes (neutrophils, eosinophils, macrophages) are all examples of leukocytes. <b>B-Cell-</b> white blood cell that is part of the immune system. <b>T-Cell-</b> white blood cell that is part of the immune system. Called T because they mature in the thymus
CD5		<b>CD5</b> (Cluster of Differentiation 5) is a marker that marks both T-cells and B-cells. It is commonly seen on reactive T cells or on neoplastic B cells in chronic lymphocytic leukemia (CLL) and mantle cell lymphoma.	<b>CD-</b> (Cluster of Differentiation) is a classification system used to identify cell surface molecules. <b>B-Cell-</b> white blood cell that is part of the immune system. <b>T-Cell-</b> white blood cell that is part of the immune system. Called T because they mature in the thymus
CD57		<b>CD57</b> (Cluster of Differentiation 57) or HNK1 (human natural killer-1) is a cell surface molecule found on T-cells and NK cells as well as neuroendocrine tumors.	<b>CD-</b> (Cluster of Differentiation) is a classification system used to identify cell surface molecules. <b>T-Cell-</b> white blood cell that is part of the immune system. Called T because they mature in the thymus <b>NK Cells-</b> "Natural Killer" cells are called natural killers because they do not require activation to kill cells. NK cells help speed up the immune response because they can detect tumor cells or infected cells and respond immediately.
CD63		<b>CD63</b> (Cluster of Differentiation 63) or NK1-C3 is a marker protein found on membranes of intracellular vesicles (lysosomes or endosomes). It's commonly expressed by melanocytic cells and in cellular neurothekeoma.	<b>CD-</b> (Cluster of Differentiation) is a classification system used to identify cell surface molecules.
CD68		<b>CD68</b> (Cluster of Differentiation 68) is found in the cytoplasmic granules (lysosomes) of various granulocytes and is most commonly used as a marker for macrophages.	<b>CD-</b> (Cluster of Differentiation) is a classification system used to identify cell surface molecules. <b>Granulocytes-</b> White blood cells filled with microscopic granules containing enzymes, compounds that digest microorganisms. (Ex. neutrophils, basophils, and eosinophils are all types of granulocytes). <b>Macrophage-</b> the "cellular garbage can", macrophages are a special type of white blood cell whose primary job is to recognize, ingest, and destroy foreign material in the body.
CD7		<b>CD7</b> (Cluster of Differentiation 7) is a transmembrane protein found on mature T-cells.	<b>CD-</b> (Cluster of Differentiation) is a classification system used to identify cell surface molecules. <b>T-Cell-</b> white blood cell that is part of the immune system. Called T because they mature in the thymus

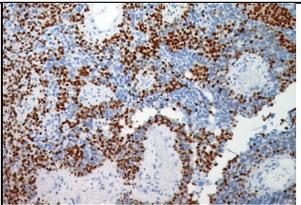
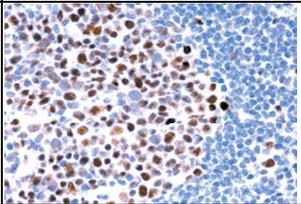
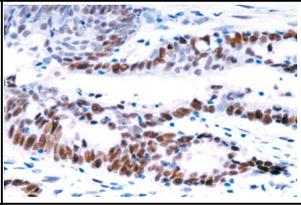
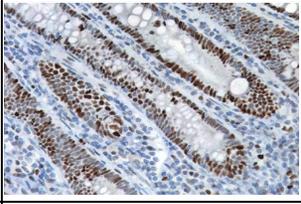
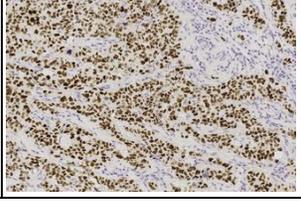
CD79a		<b>CD79a</b> (Cluster of Differentiation 79a) is a B-cell marker present from early stages of B cell differentiation to plasma cells.	<b>CD-</b> (Cluster of Differentiation) is a classification system used to identify cell surface molecules. <b>B-Cell-</b> White blood cell that is part of the immune system. <b>Plasma cells-</b> White blood cells that secrete antibodies. B-cells that form in the bone marrow are transformed by lymphnodes
CD8		<b>CD8</b> (Cluster of Differentiation 8) is a transmembrane protein found on the surface of cytotoxic T cells, and some natural killer cells.	<b>CD-</b> (Cluster of Differentiation) is a classification system used to identify cell surface molecules. <b>T-Cell-</b> white blood cell that is part of the immune system. Called T because they mature in the thymus
CEA		<b>Carcinoembryonic Antigen</b> is most commonly used as a marker for colorectal cancer. Anti CEA antibodies are used in IHC to mark this protein in tissue sections. Occasional normal tissue structures also react with anti CEA antibodies. In patients with colorectal carcinoma, blood CEA levels are sometimes monitored.	<b>IHC-</b> Immunohistochemistry is the method of staining tissue sections using specific antibodies to detect certain antigens. After detection, a series of chemical reactions are performed to visualize the normally invisible binding of antibodies with antigens. Sections are viewed microscopically
CK20		<b>Cytokeratin 20</b> is a cellular protein found in the mucosal epithelium of appendix, small intestines, colon, etc. Anti-CK20 is often used in combination with several other antibodies to help narrow down the site of origin of a malignancy.	<b>Epithelium-</b> is the term for tissue that lines or covers cavities and organs
CK5		<b>Cytokeratin 5</b> is a cellular protein found in the basal layer of the epidermis.	<b>Epidermis-</b> Outermost layer of human skin
CK7		<b>Cytokeratin 7</b> proteins present in glandular and transitional epithelia. Anti-CK7 is often used in combination with several other antibodies to help narrow down the site of origin of a malignancy.	<b>Glandular epithelia-</b> made up of cells that produce secretions <b>Transitional epithelia-</b> stratified epithelium found lining hollow organs that are subject to great mechanical change due to contraction and distention (eg bladder, ureter)
CKAE1/AE3		<b>CKAE1/AE3</b> recognizes the acidic and basic (Type I and II) subfamilies of cytokeratins. The combination of these two antibodies can be used to detect most human epithelia. This stain is often called a "pankeratin" stain as it recognizes many member of the keratin family.	<b>Cytokeratin-</b> a type of intermediate filament (protein making up the skeleton of the cell, or cytoskeleton) found in the intracytoplasmic cytoskeleton of epithelial tissue <b>Epithelia-</b> the cellular covering of internal and external body surfaces, including the lining of vessels and small cavities.

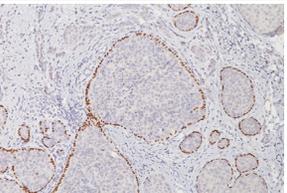
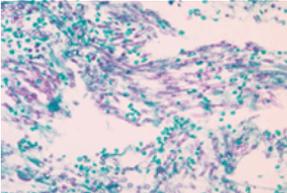
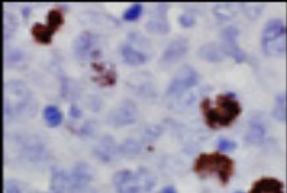
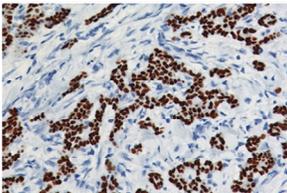
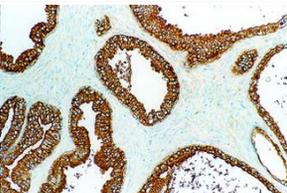
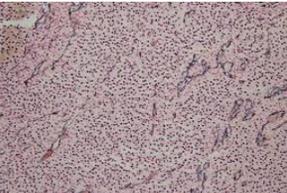
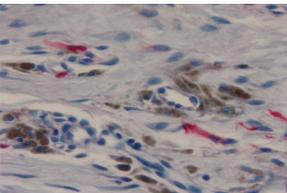
CK-HMW		<b>Cytokeratin (High Molecular Weight) 34βE12</b> reacts with human cytokeratin intermediate filament proteins. In particular, it reacts with a subset of these proteins that are high molecular weight. It has a use in evaluation of prostate lesions, and is also expressed found in squamous epithelium and sweat ducts in normal skin, among others.	<b>Cytokeratin</b> - a type of intermediate filament (protein making up the skeleton of the cell, or cytoskeleton) found in the intracytoplasmic cytoskeleton of epithelial tissue <b>Epithelia</b> - the cellular covering of internal and external body surfaces, including the lining of vessels and small cavities
CMV		<b>CMV</b> immunostains react with immediate early and early protein antigens in tissues infected with cytomegalovirus.	<b>Cytomegalovirus</b> - a species of virus that belongs to the viral family known as Herpesviridae or herpesviruses. Although it belongs to this family, it does not cause the clinical disease that we know as "herpes". Infection with CMV can be asymptomatic or result in mild symptoms in healthy adults.
COLLOIDAL IRON		<b>Colloidal Iron</b> stain is used to identify acidic mucins (containing carboxylated and sulfated mucopolysaccharides) and glycoprotein mucin in tissue	<b>Mucopolysaccharides</b> - Any of a group of compounds occurring chiefly as components of connective tissue. They are complex polysaccharides containing amino groups. Also known as glycosaminoglycans. <b>Mucin</b> - proteins produced by epithelial tissues, mucins are used in a wide array of cellular functions from lubrication to barrier formation and cell signaling.
CONGO RED		<b>Congo Red</b> stain is used to detect amyloid	<b>Amyloid</b> - A hard, waxy deposit consisting of protein that has a characteristic structure known as a beta pleated sheet.
COX-2		<b>COX-2</b> is an enzyme that is involved in the conversion of arachidonic acid to prostaglandin H2. It is used by pathologists to stain various carcinomas and may be of significance in evaluation of vulvar epithelial neoplasia.	<b>Arachidonic Acid</b> - polyunsaturated fatty acid present in the phospholipids of membranes of the body's cells, and is abundant in the brain, muscles, and liver <b>Prostaglandin H2</b> - a precursor for many other biologically significant molecules
CRG		<b>Chromogranin A</b> can be used to identify a range of neuroendocrine tumours. Chromogranin is highly specific for both benign and malignant cells of this type (neuroendocrine).	<b>Neuroendocrine</b> - cells that receive input from the nervous system and release hormones (messengers of the endocrine system) in response. <b>Benign</b> - cells (tumor) that lacks the ability to invade neighboring tissue or metastasize <b>Malignant</b> - cells (tumor) that have the ability to become progressively worse and to potentially result in metastases and death.
CRYSTAL VIOLET		<b>Crystal Violet</b> stain is used to detect amyloid	<b>Amyloid</b> - A hard, waxy deposit consisting of protein that has a characteristic structure known as a beta pleated sheet.

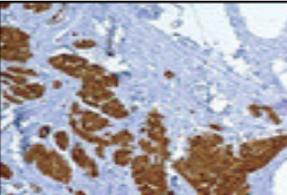
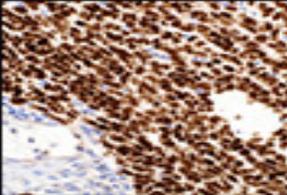
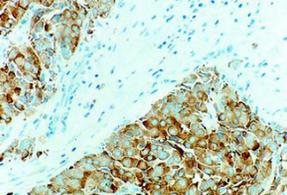
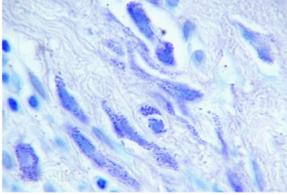
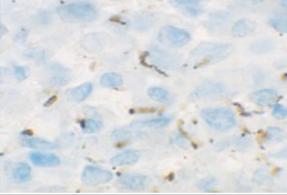
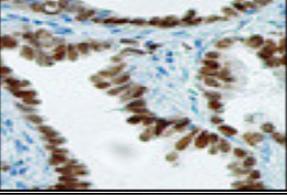
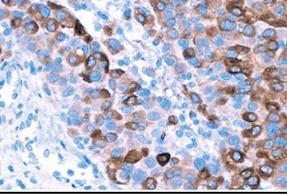
D2-40		D2-40 is a marker used to identify lymphatic endothelial cells	<b>Endothelial cells</b> - thin layer of cells that lines the interior surface of blood vessels and lymphatic vessels, forming an interface between circulating blood or lymph in the lumen and the rest of the vessel wall.
DESMIN		Desmin reacts with both striated (skeletal and cardiac) and smooth muscle cells in normal tissue.	<b>Striated muscle</b> - a form muscle with fibers that have repeating sarcomeres. This muscle is involved in voluntary movement (eg biceps, triceps). <b>Smooth muscle</b> - Non-striated muscle involved in involuntary movement (eg beating of heart, contraction of intestines). <b>Sarcomere</b> - the basic organizational unit of a muscle
ELASTIC STAIN		Elastic Stain is used to stain elastic fibers in tissue	<b>Elastic fibers</b> - bundles of extracellular proteins (elastin) produced by fibroblasts in the dermis of skin and smooth muscle cells in arteries. Elastin imparts skin with its ability to stretch and recoil. Elastic fibers are damaged with age and sun exposure.
EMA		EMA is expressed in a variety of normal and neoplastic epithelia.	<b>Epithelia</b> - the cellular covering of internal and external body surfaces, including the lining of vessels and small cavities.
ER		<b>Estrogen receptors</b> are a group of hormone receptor proteins found inside the nucleus of cells. They are receptors that are activated by the hormone estrogen.	<b>Estrogen</b> - One of the primary female sex hormones. Estrogen derives its name from the important role it plays in the estrous reproductive cycles
FACTOR XIIIa		<b>Factor XIIIa</b> is an enzyme of the blood coagulation system that crosslinks fibrin. It is also expressed in dermal dendritic cells and is commonly used in the diagnosis of dermatofibroma.	<b>Blood Coagulation System</b> - the process by which blood forms clots. <b>Dermatofibroma</b> - A common, benign dermal proliferation resulting in a small tumor nodule noted by patients as a flesh colored bump, often on the lower extremities.
FONTANA MASSON		<b>Fontana-Masson stain</b> is a silver based histochemical stain used to demonstrate melanin.	<b>Melanin</b> - produced by melanocytes and stored in keratinocytes, melanin is a natural pigment found in most organisms

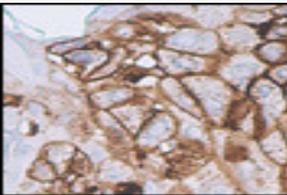
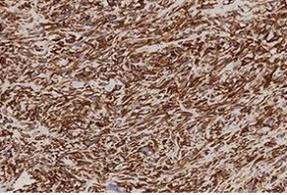
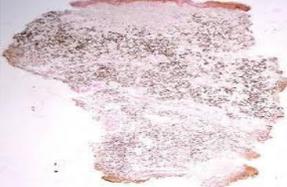
GMS		Grocott-Gomori's <b>Methenamine Silver</b> stain is used widely in screening for fungal organisms.	<b>Fungus</b> - eukaryotic organisms (including unicellular yeasts and multicellular molds) that have cell walls that contain chitin. Some, but not all fungi may be associated with human disease.
GRAM		<b>Gram staining</b> is a method used by microbiologists to differentiate bacterial species into two large groups (Gram-positive and Gram-negative). The Gram stain is used by the pathologist to aid in identification of bacteria in tissue sections, which can be quite difficult due to their small size.	<b>Gram positive</b> - bacteria that are stained dark blue or violet because of their thick peptidoglycan layer, which is superficial to the cell membrane <b>Gram negative</b> - bacteria that do not retain crystal violet dye because of their much thinner peptidoglycan layer. More resistant to certain classes of antibiotics due to a unique outer lipid membrane.
HHV8		<b>HHV-8</b> stains Human Herpesvirus 8, the virus that causes Kaposi Sarcoma.	<b>Kaposi Sarcoma</b> - a tumor caused by human herpesvirus 8 that may occur on the skin or involve internal organs. The tumor is derived from proliferation of endothelial cells (the cells that line vascular spaces). It's prognosis is highly variable.
HMB-45		<b>HMB-45</b> (Human Melanoma Black) is a monoclonal antibody that reacts against a protein in melanocytes. It is used in the study of things like nevi and melanomas.	<b>Melanocytes</b> - Melanin-producing cells. <b>Melanin</b> - Pigment responsible for skin color. <b>Melanoma</b> - A malignant tumor of melanocytes.
HSV1		<b>Herpes Simplex Virus 1</b> stains the virus that causes cold sores.	<b>Cold Sores</b> - a type of herpes simplex occurring on the lip.
HSVII		<b>Herpes Simplex Virus 2</b> stains the virus that causes genital herpes.	<b>Genital herpes</b> - a genital infection by Herpes simplex virus, which involves blisters similar to cold sores.
IRON		The Prussian Blue reaction is used to stain for the presence of ferrous iron deposits.	<b>Iron</b> - a part of all cells and does many things in our bodies from carrying oxygen to helping with digestion. Iron is most famous for its role in arrying oxygen, and is present in very high levels in red blood cells.

KAPPA		<p><b>Kappa</b> a protein is useful in the identification of certain lymphomas and plasmacytomas. When the vast majority of a B cell or plasma cell population expresses the kappa protein on their surface, it is a good indication that the cells are clonal.</p>	<p><b>Leukemia</b>- a type of blood cancer that begins in the bone marrow  <b>Plasmacytoma</b>- a malignant plasma cell tumor growing within soft tissue or within the axial skeleton  <b>Non-Hodgkin's lymphoma</b>- cancer of the lymph tissue  <b>Clonal</b>- used to describe a population of cells when all members are derived from the same single ancestor cell.</p>
KI-67		<p><b>KI-67</b> stains the nuclear protein involved in cellular proliferation.</p>	<p><b>Cellular proliferation</b>- the process of cell growth and development followed by division to make more cells.</p>
LAMBDA		<p><b>Lambda</b> a protein is useful in the identification of certain lymphomas and plasmacytomas. When the vast majority of a B cell or plasma cell population expresses the kappa protein on their surface, it is a good indication that the cells are clonal.</p>	<p><b>Leukemia</b>- a type of blood cancer that begins in the bone marrow  <b>Plasmacytoma</b>- a malignant plasma cell tumor growing within soft tissue or within the axial skeleton  <b>Non-Hodgkin's lymphoma</b>- cancer of the lymph tissue  <b>Clonal</b>- used to describe a population of cells when all members are derived from the same single ancestor cell.</p>
MART-1		<p><b>Melanocytic Antigen</b> Recognized by cytotoxic T lymphocytes (also known as Melan-A). Most commonly used melanocytic marker. This stain may be positive in both benign and malignant melanocytic proliferations (such as nevi and melanoma).</p>	<p><b>Melanocytes</b>- Melanin-producing cells  <b>Melanin</b>- Pigment responsible for skin color  <b>Melanoma</b>- A malignant tumor of melanocytes</p>
LANGERIN		<p><b>Langerin</b> (CD207) is a cell surface protein encoded by the gene CD207. This gene is expressed in Langerhans cells.</p>	<p><b>Langerhans Cells</b>- Antigen-presenting immune cells of the skin and mucosa that are normally present in all layers of the epidermis. These cells can infiltrate the dermis in the rare disease Langerhans Cell Histiocytosis.</p>
MASSON'S TRICHROME		<p>Generally used to highlight collagen and to distinguish collagen and bone from keratin and muscle in tissue.</p>	<p><b>Collagen</b>- An extracellular protein that imparts structure and strength to connective tissue. Collagen is a major component of tendons, ligaments and skin, corneas, cartilage, bones, blood vessels, the gut, and intervertebral discs.</p>
MAST CELL TRYPTASE		<p>Tryptase an enzyme (specifically, a serine protease) found in secretory granules of mast cells. It is used as a marker for mast cells.</p>	<p><b>Serine proteinase</b>- A type of enzyme that cleaves peptide bonds in other proteins. In doing so, the serine protease is often responsible for converting proteins from their inactive to active state. Ultimately, actions of serine proteases are needed for all fundamental physiologic functions.  <b>Mast Cell</b>- Best known for their role in allergy and anaphylaxis, mast cells also involved in wound healing and defense against pathogens.</p>

MITF		<b>Microphthalmia-associated transcription factor (MITF)</b> is a transcription factor needed for development of melanocytes (and osteoclasts). It is expressed in the nucleus of melanocytes and is used as a marker for cells of this lineage.	<b>Melanocytes-</b> Melanin-producing cells <b>Osteoclast-</b> is a type of cell that resorbs bone
MLH-1		<b>MutL homolog 1, colon cancer, nonpolyposis type 2 (E. coli)</b> , is a protein needed for repair of damaged DNA; its loss is commonly associated with hereditary nonpolyposis colorectal cancer.	<b>Hereditary nonpolyposis colorectal cancer- (Lynch syndrome)</b> An autosomal dominant syndrome caused by defects in genes that are needed to repair mismatched DNA segments. Patients have increased risk of colon cancer as well as other types of cancers (including endometrial, ovarian, and gastrointestinal). <b>DNA mismatch repair-</b> DNA is made of two paired strands of nucleotide bases, each base "pairing" with a base on the opposite strand. When bases are not correctly apired, they are said to be "mis matched". The process of mismatch repair recognizes these erroneously inserted bases and repairs the defect.
MSH2		<b>DNA mismatch repair protein Msh2 (MutS protein homolog 2 or MSH2)</b> is a protein needed for repair of damaged DNA; its loss is commonly associated with hereditary nonpolyposis colorectal cancer.	<b>Hereditary nonpolyposis colorectal cancer- (Lynch syndrome)</b> An autosomal dominant syndrome caused by defects in genes that are needed to repair mismatched DNA segments. Patients have increased risk of colon cancer as well as other types of cancers (including endometrial, ovarian, and gastrointestinal). <b>DNA mismatch repair-</b> DNA is made of two paired strands of nucleotide bases, each base "pairing" with a base on the opposite strand. When bases are not correctly apired, they are said to be "mis matched". The process of mismatch repair recognizes these erroneously inserted bases and repairs the defect.
MSH6		<b>MSH6 or mutS homolog 6</b> is a is a protein needed for repair of damaged DNA; its loss is commonly associated with hereditary nonpolyposis colorectal cancer.	<b>Hereditary nonpolyposis colorectal cancer- (Lynch syndrome)</b> An autosomal dominant syndrome caused by defects in genes that are needed to repair mismatched DNA segments. Patients have increased risk of colon cancer as well as other types of cancers (including endometrial, ovarian, and gastrointestinal). <b>DNA mismatch repair-</b> DNA is made of two paired strands of nucleotide bases, each base "pairing" with a base on the opposite strand. When bases are not correctly apired, they are said to be "mis matched". The process of mismatch repair recognizes these erroneously inserted bases and repairs the defect.
MUCICARMINE		This stain is based on a modified Mayer's mucicarmine technique for visualization of neutral epithelial mucins in tissue.	<b>Mucin-</b> proteins produced by epithelial tissues, mucins are used in a wide array of cellular functions from lubrication to barrier formation and cell signaling.
NGFR (p75)		<b>Nerve Growth Factor Receptor, NGFR</b> , is expressed not only in neurons, but also in various cells derived from the neural crest. P75 marks melanocytes and may be positive in melanomas, neuroblastomas, pheochromocytomas, neurofibromas, and neurotized nevi. Importantly to the pathologist, it may be positive in some cases of melanoma when morphology is unusual and other classic markers are negative (spindle cell melanoma).	<b>Neurons-</b> a cell of the nervous system, neurons contain dendrite that receive isgnals, a cell body, and axons that transmit signals. Bindles of axons make up nerves.. <b>Melanocytes-</b> Melanin-producing cells <b>Melanoma-</b> A malignant tumor of melanocytes <b>Neuroblastoma-</b> a neuroendocrine tumor, the most common extracranial solid cancer in childhood. <b>Pheochromocytoma-</b> a neuroendocrine tumor <b>Neurofibroma, neurotized nevi-</b> common, benign cutaneous neoplasms.
P53		<b>p53 (cellular tumor antigen p53, phosphoprotein p53 or tumor suppressor p53)</b> is a protein encoded by the <i>TP53</i> gene. The p53 protein is considered the "guardian of the genome" due to its critical role as a tumor suppressor gene.	<b>Cell cycle-</b> a process of resting followed by growth, DNA replication and cellular division. Ultimately, the cell produces two daughter cells. <b>Antigen-</b> a substance that is recognized by and binds to an antibody. Different antibodies are able to bind different, specific antigens.

P63		Tumor protein <b>p63</b> is a transcription factor in the same family as p53. It is useful to pathologists because it can be used as a marker of squamous and/or myoepithelial origin of cells. It is particularly helpful in cases of spindled cell squamous cell carcinoma, where the morphology is not classic and other markers may be negative.	<b>Transcription Factor-</b> a protein that binds DNA (recognizing specific sequences in the DNA) and facilitates transcription (the process by which segments of DNA make RNA and ultimately proteins).
PAS/GRN FOR FUNGUS		The Periodic Acid-Schiff (PAS)-Green stain is most commonly used for the visualization of fungi in dermatologic specimens.	<b>Fungi-</b> a large group of eukaryotic organisms that includes microorganisms such as yeasts and molds.
PHH3		<b>Phospho-Histone H3 (PHH3)</b> immunostain highlights mitotic figures. PHH3 is a core histone protein, which together with other histones, forms the major protein constituents of the chromatin in eukaryotic cells.	<b>Mitotic figures-</b> the microscopic appearance of a cell undergoing mitosis; a cell with the chromosomes that are visible by the light microscope. <b>Mitosis-</b> is the process by which a cell, which has previously replicated each of its chromosomes, then separates the chromosomes into two identical sets of chromosomes during the process of cell division. The result is two daughter cells, each with its own set of nuclear chromosomes..
PR		The <b>progesterone receptor (PR)</b> , also known as NR3C3 or nuclear receptor subfamily 3, group C, member 3), is an intracellular steroid hormone receptor activated by progesterone.	<b>Protein-</b> made of amino acids, proteins are responsible for a myriad of cellular functions including enzymatic reactions, DNA replication and transcription, signal transduction and molecular transport. <b>Steroid-</b> is a type of organic compound. Examples include estrogen and testosterone. <b>Progesterone-</b> So named because it supports gestation, progesterone has roles in the female menstrual cycle and pregnancy.
PSAP		<b>Prostatic acid phosphatase (PAP)</b> is an enzyme produced by the prostate gland. PAP levels can be elevated in prostate disease.	<b>Enzyme-</b> Large molecules that catalyze reactions in the body. Thousands of enzymatic reactions occur in the human body, and are critical to life. <b>Prostate-</b> A gland of the male reproductive system that produces seminal fluid to protect sperm.
RETICULIN		<b>Reticular fibers</b> are found in connective tissue and are made from type III collagen. Crosslinked reticular fibers are known as reticulin.	<b>Connective tissue-</b> tissue whose primary role is in providing strength and structure. <b>Collagen-</b> The protein component of connective tissues.
S-100		<b>S-100</b> protein is expressed in neuroectodermal tissue, including nerves and melanocytes. Langerhans cells in skin and interdigitating reticulum cells in the paracortex of lymph nodes also express <b>S-100</b> protein.	<b>Langerhans Cells-</b> Antigen-presenting immune cells of the skin and mucosa that are present in all layers of the epidermis. <b>Neuroectoderm-</b> A developmental tissue type that yields neural crest (origin of melanocytes, adrenal medullary cells, the ciliary body of the eye, among others) and the neural tube (origin of brain and spinal cord).

SMOOTH MUSCLE ACTIN		Anti-smooth muscle actin does not stain cardiac or skeletal muscle; however, it does stain myofibroblasts and myoepithelial cells and is useful as a muscle marker.	<b>Actin</b> is a major component of the cytoskeleton and is present in most cell types. <b>Cytoskeleton-</b> is the "skeleton" of the cell, providing structure and a scaffold for function.
SOX-10		<b>SOX10 (Sry-related HMG-BOX gene 10)</b> , a nuclear transcription factor that participates in neural crest development. SOX10 is expressed in cells of melanocytic lineage, has been recently shown to be a sensitive marker of melanoma, including conventional, spindled, and desmoplastic subtypes.	<b>Neural crest cells-</b> developmental tissue that gives rise to melanocytes, adrenal medullary cells, and the ciliary body of the eye, among others. <b>Melanin-</b> Pigment responsible for skin color <b>Melanoma-</b> A malignant tumor of melanocytes
SYNAPTOPHYSIN		<b>Synaptophysin</b> is an integral membrane glycoprotein. It is reported to occur in presynaptic vesicles of neurons in brain, spinal cord, retina, in similar vesicles of the adrenal medulla as well as in neuromuscular junctions.	<b>Synaptophysin-</b> Reported to be expressed in a wide spectrum of neuroendocrine tumors including neuroblastomas, ganglioneuroblastomas, pheochromocytomas, chromaffin and non-chromaffin paragangliomas. This stain is generally used as a neuroendocrine marker by pathologists.
TOLUIDINE BLUE		<b>Toluidine blue</b> is a dye with high affinity for acidic tissue components. Toluidine blue highlights metachromatic granules of mast cells and is used by pathologists to identify mast cells in tissue sections.	<b>Metachromatic-</b> the phenomenon of metachromasia is when a dye stains various tissue components with a different color than the dye itself. Tissue components that can be stained in this way are considered to be metachromatic. <b>Mast Cells-</b> Best known for their role in allergy and anaphylaxis, mast cells are also involved in wound healing and defense against pathogens. Activated mast cells release numerous molecules into the extracellular environment, such as heparin, histamine, serotonin, and prostaglandins.
TREPONEMA PALLIDUM (SPIROCHETES)		<b>Treponema pallidum</b> is a spirochaete, a unique phylum of bacteria. Subspecies of <i>Treponema pallidum</i> cause diseases such as syphilis, bejel, pinta, and yaws.	<b>Bacteria-</b> a large group of unicellular microorganisms that have cell walls but lack organelles and an organized nucleus. Some bacteria cause disease in humans, while others are harmless or even beneficial. Bacteria are found everywhere in nature. There are ten times as many bacteria in the human body as human cells!
TTF-1		Also known as <b>thyroid transcription factor 1 (TTF-1)</b> , is a protein which in humans is encoded by the <i>NKX2-1</i> gene. It is involved in transcription in various tissues, including thyroid and lung. It is used by pathologists to indicate possible origin of a tumor in these tissues.	<b>Transcription-</b> the process by which DNA produces RNA and ultimately proteins.
TYROSINASE		<b>Tyrosinase</b> is an enzyme involved in the production of melanin. This stain is generally positive in melanocytes.	<b>Enzyme-</b> Large molecules that catalyze reactions in the body. Thousands of enzymatic reactions occur in the human body, and are critical to life. <b>Melanin-</b> Pigment responsible for skin color

<b>VARICELLA ZOSTER VIRUS</b>		<p><b>Varicella zoster virus (VZV)</b> is a member of the herpes virus family. VZV is the infectious agent responsible for chickenpox and shingles (herpes zoster).</p>	<p><b>Chickenpox (or chicken pox)</b>- caused by primary infection with varicella zoster virus (VZV). Chickenpox has historically been common in children and highly contagious. A vaccine was recently developed.</p> <p><b>Herpes zoster (zoster, shingles)</b>, occurs in older adults who had chickenpox as children. When chickenpox resolves, the virus becomes dormant in nerve cell bodies. With age, stress, or an impaired immune system, the virus may resurge as shingles. This disease is characterized by a painful blistering rash that follows dermatomes, thereby being generally linear and unilateral.</p>
<b>VIMENTIN</b>		<p><b>Vimentin</b> is an intermediate filament protein expressed in mesenchymal cells.</p>	<p><b>Intermediate filaments (IFs)</b>- proteins that are important in forming the cytoskeleton (or skeleton of the cell).</p> <p><b>Mesenchyme</b>- Also called mesenchymal connective tissue, is a type of undifferentiated loose connective tissue that is derived mostly from mesoderm. Mesenchymal cells ultimately develop into bone, cartilage, and circulatory system elements.</p>
<b>VON KOSSA</b>		<p>The <b>Von Kossa stain</b> is used by pathologists to identify calcium in tissue sections. Von Kossa has been the most popular method for indirectly identifying the presence of calcium in tissue since 1901. The Von Kossa procedure does not stain for calcium itself, but instead it stains calcium deposits or salts.</p>	<p><b>Calcium</b>- Calcium is essential for living organisms. It is a major component of bone and teeth. The majority of cells in the body use calcium movement into and out of the cell to regulate a diversity of complex cellular processes.</p>