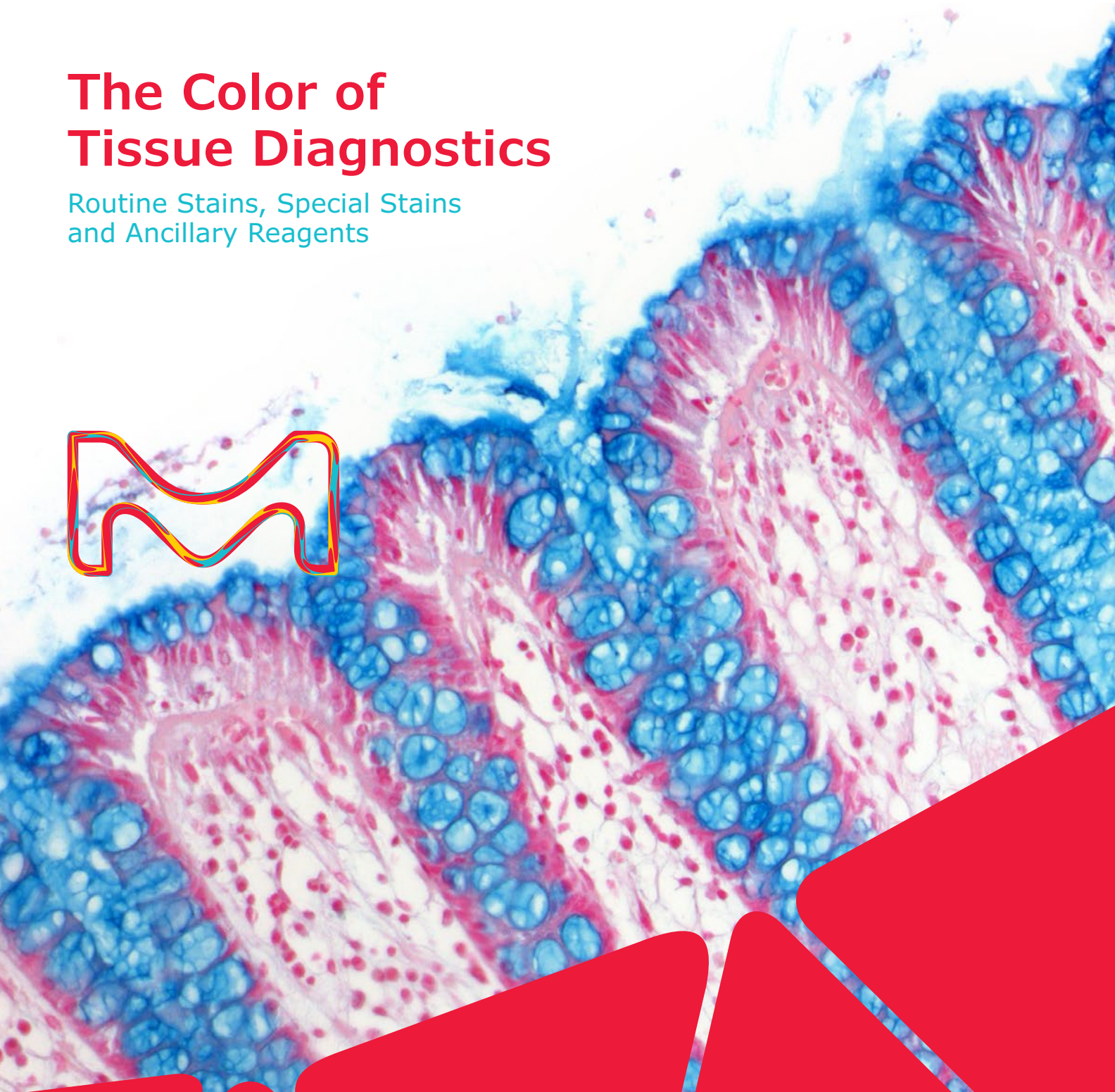
MilliporeSigma

The Color of Tissue Diagnostics

Routine Stains, Special Stains and Ancillary Reagents



MilliporeSigma is the U.S. and Canada Life Science business of Merck KGaA, Darmstadt, Germany.

Sigma-Aldrich®

Lab & Production Materials

For over 100 years,

MilliporeSigma has been a trusted provider of routine stains, special stains, and ancillary reagents. This long-standing tradition and expertise have solidified MilliporeSigma's position as a global leader in supplying high-quality products. The portfolio includes a comprehensive range for classical hematology, histology, cytology, and microbiology, which is continually expanding and adapting to meet user needs and comply with global regulations. Many of MilliporeSigma's products for these applications are classified as *in vitro* diagnostic (IVD) medical devices.

Quality Ensures Trust

MilliporeSigma prioritizes quality control, ensuring its Stains & Dyes products deliver consistently excellent results. These products are manufactured in compliance with a rigorous quality management system, using raw materials and solvents that meet the highest standards. Before release, each product undergoes thorough testing of relevant chemical and physical parameters, as well as functionality, in accordance with international standards.

Contents

Many of the products featured in this brochure belong to the group *in vitro* diagnostic (IVD) medical devices. Under US FDA regulations, these may be classified as Class I exempt IVDs. However, within the European Union, under the new In Vitro Diagnostic Regulation (IVDR) 2017/746, these products are categorized into risk-based classes A, B, C, and D. It is essential for these products to conform to the IVDR, which may involve a different classification from the US FDA's, and they must bear the CE mark indicating their compliance. The CE marking signifies that the products meet EU safety, health, and environmental protection requirements. However, some of the products featured in this brochure are not IVD medical devices but are required to facilitate the staining procedures.

Products included in this brochure are not available in all countries.
Contact your local sales representative or dealer for details.

Ancillary Reagents

Fixatives

Fixing is a procedure which is designed to stop all of the intracellular processes while maintaining the structure and integrity of the tissue and simultaneously prevent autolysis, decomposition, and putrefaction. The fixing agent is selected according to the diagnostic problem being addressed, the type and size of the available material, and the required embedding and staining methods to be used.

Ordering Information: Fixatives

Product	Cat. No.	Product Description	Package Size
Bouin's solution	**HT10132**	Prepared with saturated picric acid, formaldehyde and acetic acid. Excellent fixative for preserving soft and delicate structures. Used as a mordant in various trichrome procedures.	1 L
	HT101128		4 L
Formaldehyde solution	**252549**	Formaldehyde solution, ACS reagent, 37 wt% in water, 10-15% methanol stabilizer	25 mL, 100 mL, 500 mL, 4 X 100 mL, 6 X 500 mL, 1 L, 4 L,
Formaldehyde solution 4%, buffered, pH 6.9	**100496**	Ready-to-use fixing solution	5 L, 10 L
Formaldehyde solution about 37%	**104003**	Guaranteed reagent (GR) for analysis stabilized with about 10% methanol	1 L, 2.5 L, 5 L, 25 L
Formaldehyde solution min. 37% free from acid	**103999**	Contains calcium carbonate as acid binding basis; filter before use	1 L, 2.5 L
Formalin Free Fixative, Accustain™	**A5472**	A formalin-free tissue fixative that is a less toxic alternative to formalin. Performs well with PCR, *in situ* hybridization and immunohistological staining.	1 Gal
Formalin solution, neutral buffered, 10%	**HT5011**	General purpose histological tissue fixative.	48 x 15 mL
	HT5012		24 x 60 mL
	HT5014		24 x 120 mL
	HT501128		4 L
	HT501320		9.5 L
	HT501640		19 L
Formalin, 10%, Neutral Buffered with 0.03% Eosin	**F5304**	Intended for use as a general histological fixative. The addition of the eosin to the formulation allows the user to more easily visualize small fragments of tissue during the transfer of the tissue from the fixative to the tissue cassette.	4 L
Formalin, 10%, Neutral Buffered, Wintergreen Scented	**F5554**	Intended for use as a general purpose histological fixative. Wintergreen oil has been added to the standard formulation to provide a wintergreen scent.	4 L, 19 L
Glutardialdehyde solution 25%	**112179**	Electron microscopy, purified and filled under nitrogen	25 mL, 100 mL
Hartman's Fixative histological tissue fixative	**H0290**	An overnight fixative for the visualization of lymph nodes in radical dissection specimens. Helpful with both breast and colon specimens by turning lymph nodes white. Moore and Barr used a version of Hartman's fixative for fixing skin biopsy specimens for study of fine nuclear details. Rat testes for immunohistochemical and morphological comparison were fixed using conventional and modified Hartman's fixative for 24 hours, while eyes and testes for other analyses were fixed for 48 hours.	500 mL, 1 Gal
HistoChoice® Tissue Fixative	**H2904**	Preserves antigenic sites for antibody probes and nucleic acid sites for *in situ* hybridizations. Fixed sections do not require pre-digestion or other recovery procedures	100 mL, 1 L
M-FIX™ spray fixative	**103981**	Spray fixative for cytodiagnosis	100 mL, 1 L
Methanol Absolute - Acetone free	**M1775**	Suitable for use as a fixative and in preparing various Romanowsky type staining solutions.	1 Gal
Picric Acid solution 1.3% in H_2O (saturated)	**P6744**	For use as a general cytoplasmic stain, connective tissue fiber stain, and fixative.	1 Gal
Zinc Formalin Fixative	**Z2902**	Morphological preservation of nuclear and cytoplasmic components. Can replace neutral buffered formalin for routine tissue and immunohistochemical procedures. It is a non-precipitating fixative which can be used with automated and manual methods.	3.75 L

Embedding Media

In order to achieve uniform sectioning quality, defined hardness and homogeneity of the material to be processed is necessary. This is achieved by the use of embedding agents which are harder and denser than the tissue. Traditional embedding agents are paraffins, synthetics, resins and gelatin.

Ordering Information: Embedding Media

Product	Cat. No.	Product Description	Package Size
Epoxy Embedding Medium kit	**45359**	Epoxy Embedding Medium (Epon 812 substitute) is a very widely used embedding resin for electron microscopy, as it penetrates into the tissue specimen faster than Araldite and other polymers due to its low viscosity. Epoxy can be hardened easely and uniformly at low temperatures by the addition of DDSA, NMA and the accelerator DPM-30. Slight shrinkage does occur during curing. Epoxy embedding medium is useful for embedding a variety of tissues as a wide hardness can be obtained with this resin to suit a specific tissue type by using two different anhydride curing agents (DDSA and NMA).	1 EA
Epoxy embedding medium, accelerator ≥95% (NT)	**45348**	Epoxy embedding medium, accelerator is used according to the protocol provided for Epoxy Embedding Medium kit, Prod. No. 45359. The embedding media is used for electron microscopy.	250 mL
Histosec® pastilles	**111609**	Paraffin embedding, contains DMSO. Histosec® paraffin pastilles products are selected paraffins with added polymers. Specially selected raw materials and standardized quality guarantee complete penetration of the tissue being processed and allow significantly shorter processing times. The increased elasticity of embedded tissue enables excellent individual and serial sections to be prepared.	4 x 2.5 kg, 25 kg
Histosec® pastilles without DMSO	**115161**	Paraffin embedding. Histosec® paraffin pastilles products are selected paraffins with added polymers. Specially selected raw materials and standardized quality guarantee complete penetration of the tissue being processed and allow significantly shorter processing times. The increased elasticity of embedded tissue enables excellent individual and serial sections to be prepared.	4 x 2.5 kg, 25 kg
Histosec ™ 60 pastilles (without DMSO)	**101676**	Histosec ™ 60 pastilles (without DMSO) - solidification point 58-60°C, are a ready-to-use embedding agent for histology used to embed specimens of animal origin.	4 x 2.5 kg
JB-4 Embedding Kit	**EM0100**	JB-4 is a water-soluble, GMA based, plastic resin kit intended for use in the preparation of embedded samples for high resolution light microscopy. It is a technique now widely used for research and clinical diagnosis. JB-4 yields semi-thin sections (0.5µ-2µ) with excellent morphological preservation.	1 KT
Osteo-Bed Bone Embedding Kit	**EM0200**	Suitable for use with large and small mineralized (undecalcified) bone sections. Yields clear, hard blocks for cutting sections. Not water-soluble.	1 KT
Spurr Low Viscosity Embedding Kit	**EM0300**	Low viscosity of 60 cps allows rapid infiltration into a variety of difficult materials. May be used to prepare mineral specimens for polishing.	1 KT
Paraffin pastilles	**107164**	Pure paraffin for histology	4 x 2.5 kg pastilles
Paraplast® for tissue embedding	**P3558**	Paraplast® is suitable for tissue infiltration. It is a refined combination of highly purified paraffin with plastic polymers. It produces minimal tissue compression and wrinkle-free sections, and cuts to 4µm thickness with excellent ribbon continuity.	1 kg
Paraplast Plus® for tissue embedding	**P3683**	Paraplast Plus® is a regular Paraplast® with approx. 0.8% DMSO added for enhanced ease of infiltration and sectioning. It is recommended for tissues which are difficult to process with regular Paraplast®. Paraplast Plus® cuts continuous ribbons at 2µm thickness or short ribbons at 1µm thickness.	1 kg
Paraplast X-TRA® for tissue embedding	**P3808**	Paraplast X-TRA® is a unique blend of highly purified paraffin and low molecular weight polymers for lower temperature infiltration and better compression resistance. It cuts continuous ribbons of 2µm thickness.	1 kg
PolyFreeze Tissue Freezing Medium	**P0091**	Water-soluble support matrix and a form of embedding medium for frozen sectioning.	6 X 120 mL
	SHH0023	Green support matrix or form of embedding medium for frozen sectioning.	6 X 120 mL
	SHH0025	Blue support matrix or form of embedding medium for frozen sectioning.	6 X 120 mL
	SHH0026	Clear support matrix or form of embedding medium for frozen sectioning.	6 X 120 mL

Decalcifiers and Tissue Softeners

Decalcification methods are necessary for microscopic examinations of bone and other hard tissue in routine histological procedures. The material to be decalcified/demineralized is placed in excess of decalcifying solution. The decalcification time is dependent on the size and structural density of the hard tissue, while the composition of the decalcifying solution also exerts a decisive influence on the process.

Ordering Information: Decalcifiers and Tissue Softeners

Product	Cat. No.	Product Description	Package Size
Decalcifying Solution-Lite	**D0818**	Decalcifying Solution-Lite is designed to be a universal effective decalcifying agent. It is intended to be used for the decalcification of routine, immunohistochemical and bone marrow core specimens.	1 L
OSTEOMOLL® rapid decalcifier-solution	**101736**	Bone-decalcification solution for bone and hard tissues in histology	1 L, 2.5 L
OSTEOSOFT® mild decalcifier-solution	**101728**	Bone-decalcification solution for sensitive, calcium-containing tissue in histology	1 L, 10 L

Mounting Media

Mounting agents are either aqueous or non-aqueous; which is determined by the protocol used. In the case of non-aqueous agents, the preparations must be fully dehydrated. One of the most important parameters of mounting agents is the refractive index (nD); this should be around 1.5, the refractive index of glass.

Ordering Information: Mounting Media

Product	Cat. No.	Product Description	Package Size
Canada balsam	**101691**	Natural resin	25 mL, 100 mL
	C1795		25 mL, 100 mL
CC/Mount™ tissue mounting medium	**C9368**	CC/Mount™ is an aqueous based permanent mounting medium, similar to Crystal Mount™, for the permanent preservation of tissue sections stained with peroxidase and alkaline phosphatase based systems as well as with various fluorescent dyes.	30 mL
DPX Mountant for histology	**06522**	Slide mounting medium with refractive index n20/D 1.52, and viscosity 1200-1800 mPa·s (20°C)	100 mL, 500 mL
Entellan™ rapid mounting medium	**107960**	Permanent slides (contains toluene)	500 mL
Entellan™ new rapid mounting medium	**107961**	Rapid mounting agent, permanent slides, no bubble formation at high ambient temperatures (contains xylene)	100 mL, 500 mL, 1 L
Entellan™ new for cover slipper	**100869**	Permanent slides, for use with cover slipper	500 mL
Glycerol Gelatin	**GG1**	Aqueous slide mounting medium. Prepared with gelatin, glycerol and phenol. Very similar in composition to Kaiser's glycerol jelly.	15 mL, 10 x 15 mL
ImmunoHistoMount™ mounting medium	**I1161**	ImmunoHistoMount™ is a permanent aqueous mounting medium designed for tissue sections and cell smears with peroxidase and alkaline phosphatase chromogens that cannot be dehydrated with organic solvents. It is **not** compatible with routine H&E staining.	30 mL
M-GLAS™ liquid cover glass	**103973**	Mounting agent for the even coating of cytological smears instead of cover slips (contains toluene)	500 mL
Organo/Limonene Mount™ mounting medium	**O8015**	This ready-to-use mounting medium is made with limonene, a natural product from orange peels. It is good for coverslipping stained tissues and cell smears that can be dehydrated with organic solvents. This mounting medium is suitable for organic solvent resistant immunohistochemistry (IHC) chromogens as well as an excellent choice for mounting H&E stained slides.	30 mL, 100 mL

Immersion Oil

Immersion oils are used in conjunction with immersion slides and are located between the surface of the specimen and the lens of the microscope. Immersion oils are liquids that are frequently of an oily nature and which have a defined refractive index. It is important that the refractive index (nD) is about 1.5, the refractive index of glass. This enables a homogeneous oil immersion to be achieved.

Ordering Information: Immersion Oil

Product	Cat. No.	Product Description	Package Size
Immersion oil for microscopy	**104699**	Viscosity about 100–120 mPa·s	100 mL, 500 mL
	56822	Immersion oil is used for high resolution (1000X) light microscopy work under oil immersion objective lens.	50 mL, 250 mL, 1 L

Buffers

Ordering Information: Buffers

Product	Cat. No.	Product Description	Package Size
Buffer tablets pH 6.4	**111373**	Buffer solution/rinsing solution pH 6.4. Used for preparing buffer solution according to WEISE for staining of blood smears.	100 tablets
Buffer tablets pH 6.8	**111374**	Buffer solution/rinsing solution pH 6.8. Used for preparing buffer solution according to WEISE for staining of blood smears.	100 tablets
Buffer tablets pH 7.2	**109468**	Buffer solution/rinsing solution pH 7.2. Used for preparing buffer solution according to WEISE for staining of blood smears.	100 tablets
DAB-buffer tablets	**102924**	Chromogene, non-aqueous specimen	50 tablets
Phosphate Buffer pH 6.6 at 25 °C	**P8165**	For use with Wright Stain for Geometric Data Hemastainer®	1 vial, 12 vials
Phosphate buffer pH 7.2 at 25 °C	**P3288**	Intended for use as a buffer in various Romanowsky type staining procedures, including Wright Stain, Wright Giemsa, Giemsa, May Grunwald, Jenner and Leishman.	1 vial, 12 vials

Alcohols

Ordering Information: Alcohols

Product	Cat. No.	Product Description	Package Size
Hydrochloric acid in ethanol	**100327**	Used for Ziehl-Nelsen and cold staining	1 L, 5 L
Reagent Alcohol	**R8382**	Used in most histology and cytology procedures for processing.	1 Gal
Reagent Alcohol 70%	**R3154**	Used in most histology and cytology procedures for processing.	1 Gal
Reagent Alcohol 80%	**R3279**	Used in most histology and cytology procedures for processing.	1 Gal
Reagent Alcohol 95%	**R3404**	Used in most histology and cytology procedures for processing.	1 Gal

Tissue Clearing

Ordering Information: Tissue Clearing

Product	Cat. No.	Product Description	Package Size
HistoChoice® Clearing Agent	**H2779**	An alternative to toluene and xylene for dewaxing paraffin tissue sections. Allows tissues to retain their structure, antigenic sites and nucleic acid sites. Prepared slides are suitable for antibody probing applications and *in situ* hybridizations	1 L
Neo-Clear® xylene substitute	**109843**	Xylene substitute for histoprocessing, deparaffination, dehydration	5 L, 25 L
Toluene	**179418**	Toluene, ACS reagent	500 mL, 6 x 500 mL, 1 L, 6 x 1 L, 2.5 L, 4 x 2.5 L, 4 L, 4 x 4 L, 18 L, 200 L
Xylene Substitute	**A5597**	Non-toxic xylene replacement. Compatible with all tissue processors. May not be compatible with all permanent mounting medias.	1 Gal, 4 X 1 Gal
Xylene (isomeric mixture)	**108298**	Developed specifically for histological and cytological processing, deparaffination, and dehydration.	4 L
Xylenes	**534056**	Xylenes, histological grade	500 mL, 4 L, 4 x 4 L, 18 L CS

Other Ancillary Reagents

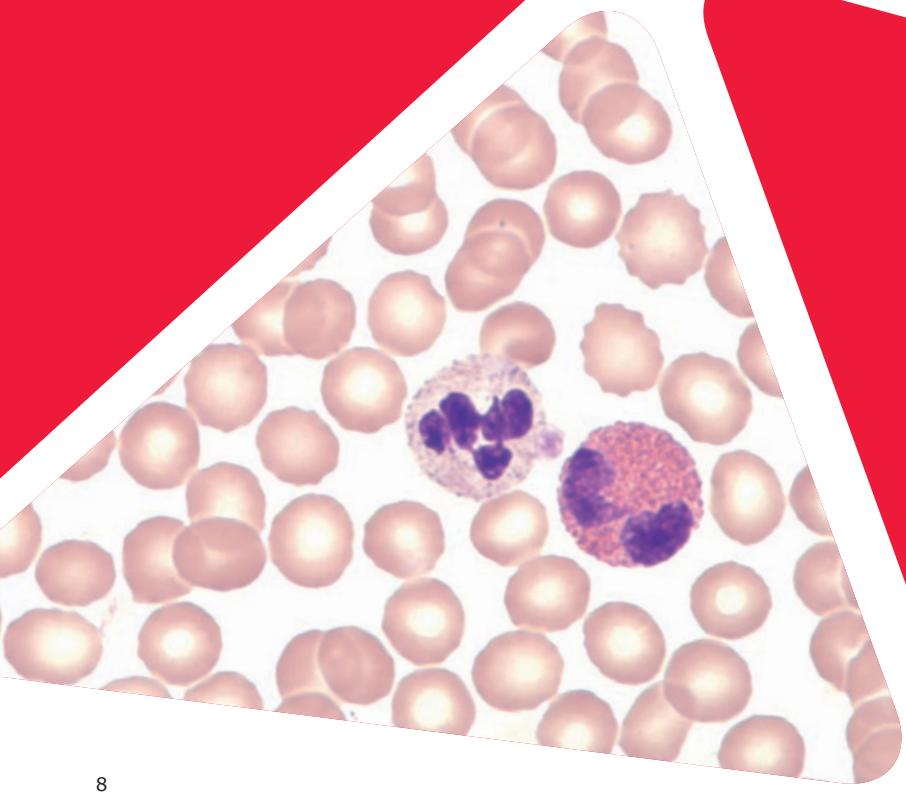
Ordering Information: Other Ancillary Reagents

Product	Cat. No.	Product Description	Package Size
Differentiation Solution	**A3179**	Acidified alcohol solution for the differentiation of regressive hematoxylin stains.	1 L
	A3429		4 L
Hanks' Balanced Salt solution	**H4385**	10x concentrated. Modified, without calcium, magnesium or sodium bicarbonate. pH 6.9 when diluted according to instructions	100 mL, 6 x 100 mL
Poly-L-lysine solution 0.1% (w/v) in H_2O	**P8920**	Poly-L-lysine polymers can be used in promoting cell adhesion to solid substrates, conjugation to methotrexate for increased drug transport, microencapsulation of islets, cell microencapsulation technology, microarray glass slide coating, and chromosomal preparations. Lower molecular weight poly-L-lysine (30,000-70,000) is less viscuous in solution, but higher molecular weight versions provide more attachment sites per molecule.	100 mL, 500 mL
Scott's Tap Water Substitute Concentrate	**S5134**	Used as a "blueing reagent" in hematoxylin and eosin staining procedures.	6 X 100 mL
Sigmacote® siliconizing reagent for glass and other surfaces	**SL2**	A special silicone solution in heptane that readily forms a covalent, microscopically thin film on glass, retards clotting of blood or plasma; water repellant. Ideal for glass, ceramics and fiber optics. Used to treat GC injection glass inserts. Ready to use without dilution; reusable if kept free of moisture.	25 mL, 100 mL
Sputofluol® pre-treatment solution	**108000**	Pre-treatment of specimens in the detection of mycobacteria	1 L
Türk's solution	**109277**	Counting leukocytes in the counting chamber	100 mL

Hematology

Panoptic staining according to Pappenheim, and staining according to Giemsa, Wright, and Leishman have long been standard techniques in hematological diagnostic procedures. Historically, most hematological samples were analyzed manually. Today, most samples are analyzed using semi- or fully automated staining systems capable of determining all the parameters necessary for diagnosis. Pathological or suspect blood and bone marrow smears are then subjected to classical differential analysis using stains.

MilliporeSigma offers a large portfolio of hematology staining kits and solutions to aid in the differential diagnosis of hematological diseases. Starting from the early stains to the current stains, MilliporeSigma has improved staining quality and simplified protocols to ensure accurate results.



Staining Kits and Solutions

Ordering Information: Staining Kits and Solutions

Product	Cat. No.	Product Description	Package Size
Reticulocyte Stain	**R4132**	Utilizes New Methylene Blue for the identification of reticulocytes in blood films.	120 mL
Brilliant cresyl blue solution	**101384**	Staining of reticulocytes and trichomonads for microscopy	100 mL, 25 L
Fetal Hemoglobin Kit	**285C**	Intended for the acid elution of adult hemoglobin and the semi-quantitative determination of fetal hemaglobin in blood smears.	50 assays
	285D		200 assays
Citrate Phosphate Buffer Concentrate	**2851**	Used to elute adult hemoglobin by the procedure of Oski and Naiman, a modification of the Kleihauer Betke procedure for the demonstration of Fetal Hemoglobin.	100 mL
Acid hematoxylin solution	**2852**	Nuclear counterstain.	100 mL
Eosin B solution	**2853**	Counterstain with sodium azide added as a preservative. 0.1% aqueous solution.	100 mL
Ethylenediaminetetraacetic acid disodium salt solution	**2854**	EDTA and its salts are used as chelating agents; 2% solution	15 mL
Ethanol Fixative 80% v/v	**2858**	Used as a fixative for blood films	240 mL
Giemsa's azure eosin methylene blue solution	**109204**	Staining of blood and bone marrow smears	100 mL, 500 mL, 1 L, 2.5 L
Giemsa stain, modified	**GS500**	When blood films are stained using Giemsa Stain, the nucleus and cytoplasm of white blood cells take on characteristic blue or pink coloration. The use of purified eosin and thiazine dyes minimizes lot-to-lot variation.	500 mL
	GS1L		1 L
	GS80		2.5 L
	GS128		4 L
Hemacolor® Rapid staining of blood smears	**111674**	Staining set for hematological and clinical specimen	1 PAC (3 x 100 mL, 3 buffer tablets)
	111661		1 PAC (3 x 500 mL, 6 buffer tablets)
Hemacolor® Solution 2	**111956**	Color reagent red (eosin solution)	2.5 L
Hemacolor® Solution 3	**111957**	Color reagent blue (thiazine solution)	2.5 L
Iron Stain Kit	**HT20**	Stains for loosely bound iron in RBC, bone marrow, or tissue	1 KT
May-Grünwald's eosin-methylene blue solution modified	**101424**	Staining of blood and bone marrow smears and clinical-cytological specimens	100 mL, 500 mL, 1 L, 2.5 L, 25 L
May-Grünwald Stain	**MG500**	For use in the differential staining of cellular elements of blood	500 mL
	MG1L		1 L
	MG80		2.5 L
	MG128		4 L
Sudan Black B Staining System	**380B**	Intended for the histochemical demonstration of neutrophil granules in blood or bone marrow films.	1 KT
Wright's eosin methylene blue solution	**101383**	Used for staining blood and bone marrow smears and clinical-cytological specimens	100 mL, 500 mL, 2.5 L
Wright Stain, Modified	**WS16**	Popular hematology stain used for differentially staining the cellular elements of blood. For dip, rack, and batch staining techniques.	500 mL
	WS32		1 L
	WS80		2.5 L
	WS128		4 L
Wright-Giemsa Stain, Modified	**WG16**	When blood films are stained using Wright-Giemsa Stain, the white blood cell nucleus and cytoplasm take on the characteristic blue or pink coloration. The combination of purified eosin and thiazine dyes in the product eliminates inconsistent staining and yields reproducible chromogenic responses.	500 mL
	WG32		1 L
	WG80		2.5 L
	WG128		4 L

Cytochemical Kits and Reagents

Sigma-Aldrich®, now a part of MilliporeSigma, pioneered the commercial introduction of stabilized diazonium salts and substituted naphthol substrates for the cytochemical demonstration of numerous medically important cellular enzymes. In addition to the stabilized diazonium salts, MilliporeSigma also introduced stabilized solutions of Fast Red Violet LB base, Fast Blue BB base and Fast Garnet GBC base. The availability of stabilized base solutions allows the laboratorian to adjust working reagent volumes according to needs. Cytochemistry stains are a useful adjunct in the diagnosis of various hematological diseases. All kits are provided in a convenient, easy-to-use format and may be used for clinical and research purposes.

Cytochemical stains are used for localizing and determining the activity of intracellular components and enzymes. In hematology, PAS, peroxidase, esterase, and phosphatase reactions play an important role in hematological disease typing.

Ordering Information: Cytochemical Kits and Reagents

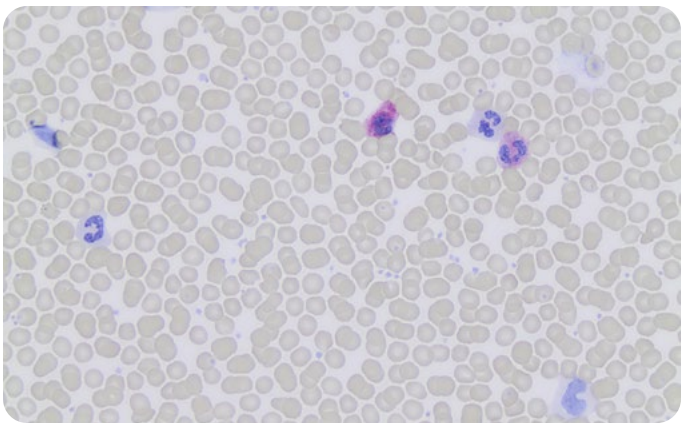
Product	Cat. No.	Product Description	Package Size
Kits			
Leukocyte Alkaline Phosphatase	**85L1**	For the histochemical demonstration of alkaline phosphatase activity in leukocytes of human blood or bone marrow films.	1 KT
Leukocyte Alkaline Phosphatase	**85L2**	For the histochemical demonstration of alkaline phosphatase activity in leukocytes of human blood or bone marrow films.	1 KT
Leukocyte Alkaline Phosphatase Kit (based on naphthol AS-BI and fast blue BB salt)	**86C**	For the histochemical demonstration of alkaline phosphatase activity in leukocytes of human blood or bone marrow films.	1 KT
Leukocyte Alkaline Phosphatase Kit (based on naphthol AS-BI and fast red violet LB)	**86R**	For the histochemical demonstration of alkaline phosphatase activity in leukocytes of human blood or bone marrow films.	1 KT Contains Fast Red Violet LB
Leukocyte α-Naphthyl Acetate (Non-Specific Esterase)	**90A1**	For the histochemical demonstration of α-naphthyl acetate esterase activity in leukocytes of human blood, bone marrow films, or tissue touch preparations.	1 KT Select reagents packaged in gelatin capsules.
Leukocyte Naphthol AS-D Chloroacetate (Specific Esterase) Kit	**90C2**	For the histochemical demonstration of naphthol AS-D chloroacetate esterase activity in leukocytes of human blood, bone marrow films, or tissue touch preparations.	1 KT Select reagents packaged in gelatin capsules.
Leukocyte α-Naphthyl Acetate (Non-Specific Esterase)	**91A**	For the histochemical demonstration of α-naphthyl acetate esterase activity in leukocytes of human blood, bone marrow films, or tissue touch preparations.	1 KT formulated with all liquid reagents.
Leukocyte Naphthol AS-D Chloroacetate (Specific Esterase) Kit	**91C**	For the histochemical demonstration of naphthol AS-D chloroacetate esterase activity in leukocytes of human blood, bone marrow films, or tissue touch preparations.	1 KT Kit with all liquid reagents
Lymphocyte α-Naphthyl Butyrate Esterase, Lymphocyte	**181B**	Histochemical stain for the detection of α-naphthyl butyrate esterase in lymphocytes of blood, bone marrow films, and tissue touch preparations.	1 KT
Leukocyte Acid Phosphatase (TRAP) Kit	**386A**	Used to demonstrate acid phosphatase and tartrate resistant acid phosphatase (TRAP) in blood, bone marrow and tissue touch preparations.	1 KT Select reagents packaged in gelatin
Leukocyte Acid Phosphatase (TRAP) Kit	**387A**	Used to demonstrate acid phosphatase and tartrate resistant acid phosphatase (TRAP) in blood, bone marrow and tissue touch preparations.	1 KT Kit with all liquid reagents
Sudan Black B Staining System	**380B**	Intended for the histochemical demonstration of neutrophil granules and their precursors in blood or bone marrow films.	1 KT
Leukocyte Peroxidase (Myeloperoxidase) Kit	**390A**	Intended for use as a general laboratory histochemical stain for the demonstration of leukocyte peroxidase	1 KT
Leukocyte Peroxidase (Myeloperoxidase) Kit	**391A**	Intended for use as a general laboratory histochemical stain for the demonstration of leukocyte peroxidase	1 KT

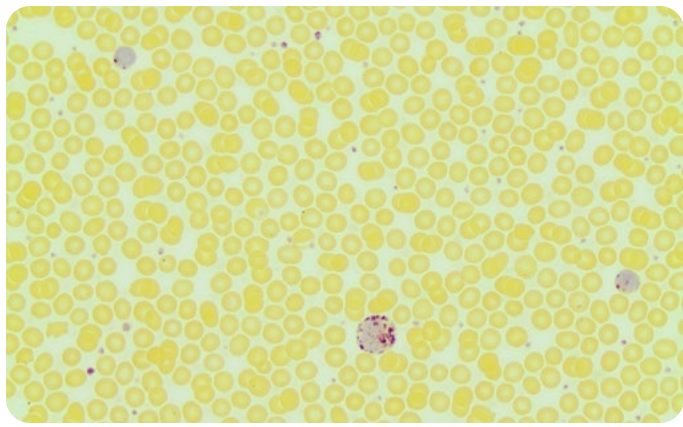
Ordering Information: Cytochemical Kits and Reagents (continued)

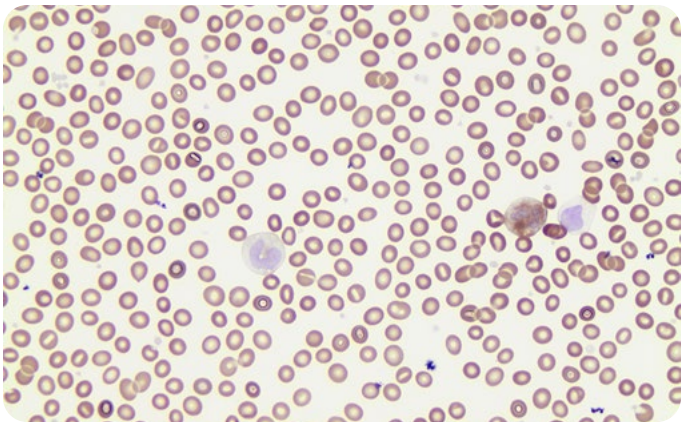
Product	Cat. No.	Product Description	Package Size
Reagents			
Citrate Solution	**854**	For the preparation of a 60% citrate buffered acetone solution used as a fixative for blood smears. No dilution required. Add 30 mL citrate solution to 20 mL absolute acetone for preparation of fixative.	200 mL
Citrate Concentrated Solution	**854C**	pH approx. 3.0 when diluted 1:50. For the preparation of a 60% citrate buffered acetone solution used as a fixative for blood smears.	20 mL
FRV-Alkaline solution	**862**	Fast red violet LB base, 5 mg/mL, in hydrochloric acid, 0.4 mol/L, with stabilizer. For use with Sigma-Aldrich® kit 86R, for the demonstration of alkaline phosphatase in granulocytes.	10 mL
FBB-Alkaline solution	**863**	Fast Blue BB base, 5 mg/mL, in hydrochloric acid, 0.4 mol/L, with stabilizer. Kit component with Sigma-Aldrich® kit 86C, for the demonstration of Alkaline Phosphatase activity in peripheral blood smears or bone marrow smears.	10 mL
Naphthol AS-MX phosphate	**855**	Naphthol AS-MX phosphate, 0.25% (w/v), buffered at pH 8.6, 25ºC. For use in Sigma-Aldrich® procedure 85 (kit numbers 85L1 and 85L2) for the demonstration of Alkaline Phosphatase, Leukocyte (LAP). Substrate for the histochemical demonstration of alkaline phosphatase.	20 mL
Naphthol AS-BI Alkaline solution	**861**	Naphthol AS-BI Alkaline solution can be used as a stand alone solution or be used as a kit component for Sigma-Aldrich® Alkaline Phosphatase procedure, kits 86C and 86R.	10 mL
Trizmal™ buffer	**903C**	For use in the Naphthol AS-D Chloroacetate Kit, 90C2. pH 6.3 (concentrate), 0.2 M	50 mL
Naphthol AS-D Chloroacetate solution	**911**	For use in Sigma-Aldrich® procedure 91C for the demonstration of specific esterase in blood, bone marrow films, tissue touch preparations, cytocentrifuge preparations and paraffin tissue sections.	10 mL
Fast Red Violet LB Base solution	**912**	Fast Red violet LB base, 15 mg/mL in 0.4 mol/L hydrochloric acid with stabilizer. Used as a kit component in procedure 91 for the demonstration of specific esterase activity in peripheral blood smears or paraffin sections.	10 mL
Trizmal™ buffer	**913**	For use in the Naphthol AS-D Chloroacetate Esterase Kit, 91C. pH 6.3 (concentrate), 1 M	50 mL
Sodium nitrite solution	**914**	For use in the Naphthol AS-D Chloroacetate Esterase and Naphthyl Acetate Esterase procedures, kits 91C and 91A.	10 mL
Citrate Solution	**915**	Citric Acid, 18 mmol/L, sodium citrate, 9 mmol/L, sodium chloride, 12 mmol/L with surfactant. pH 3.6 +/- 0.1 at 25°C, 27mM	50 mL
α-Naphthyl acetate solution	**916**	12.5 mg/mL, in methanol solution with stabilizers. Reagent used in procedure 91A for the demonstration of non-specific esterase activity in leukocytes.	10 mL
Fast Blue BB Base solution	**917**	Fast Blue BB base, 15 mg/ml in 0.4mol/l hydrochloric acid with stabilizers.	10 mL
Sodium fluoride solution	**919**	For use in inhibiting α-naphthyl acetate reaction on monocytes. Optional reagent in Sigma-Aldrich® Esterase procedure 91A.	25 mL
α-Naphthyl Butyrate solution	**1801**	2.4 g/L alpha-naphthyl butyrate in methanol solution with solubilizers. Intended for use in the Sigma-Aldrich® α-Butyrate Esterase kit, procedure 181B.	50 mL
Pararosaniline solution	**1804**	Pararosaniline, 40 g/L, in 2 mol/L hydrochloric acid. When mixed with a 4% sodium nitrite solution, a freshly hexazotized pararosaniline solution is produced. May be used in a variety of cytochemistry procedures, including Sigma-Aldrich® procedures, 181B and 181C.	15 mL
Phosphate buffer solution	**1805**	Contains sodium and potassium phosphates. Intended for use in the Sigma-Aldrich® Butyrate Esterase procedure, 181B.	1 vial
Methylene Blue solution 1.4% (w/v) in 95% ethanol	**1808**	Used as a counterstain in the various Lymphocyte Enzyme kits, procedure 181	50 mL
Glutaraldehyde solution	**3802**	Used as the fixative in the Sudan Black B staining procedure 380.	75 mL
Citrate Concentrate	**3861**	Citrate buffer, 0.38 mol/L, pH 5.4 when diluted according to procedure 386. Intended for use in procedure 91A and 386A.	20 mL

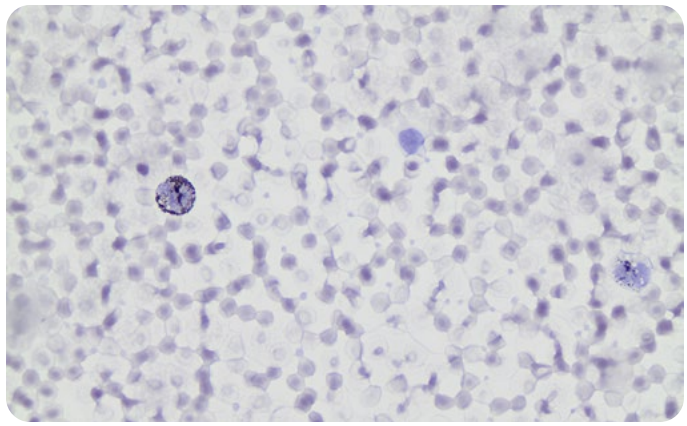
Ordering Information: Cytochemical Kits and Reagents (continued)

Product	Cat. No.	Product Description	Package Size
Acetate solution	**3863**	Intended for use in the Leukocyte Acid Phosphatase procedure, 386 or 387	50 mL
Naphthol AS-BI Phosphoric Acid	**3864**	Napthol AS-BI phosphoric acid, 12.5 mg/mL in N,N-dimethyl formamide. For use in Sigma-Aldrich® Acid Phosphatase procedure, 386.	40 mL
Naphthol AS-BI Phosphoric acid solution	**3871**	Napthol AS-BI phosphoric acid, 12.5 mg/mL. For use in the Sigma-Aldrich® Acid Phosphatase (TRAP) procedure, kit 387A.	10 mL
Fast Garnet GBC Base solution	**3872**	Fast Garnet GBC base, 7.0 mg/mL, in 0.4 mol/L hydrochloric acid with stabilizer. Intended for use in Sigma-Aldrich® procedure 387 for the demonstration of Acid Phosphatase (TRAP).	10 mL
Tartrate Solution	**3873**	Tartrate buffer 0.335 mol/L. For use in the Acid Phosphatase (Leukocyte) Kit, 387A.	10 mL
Peroxidase Indicator Reagent	**3901**	Contains p-Phenylenediamine diHCL (1 part) and catechol (2 parts). Commonly referred to as Hanker-Yates Reagent. Kit component in the Sigma-Aldrich® Leukocyte Peroxidase (Myeloperoxidase) procedure, 390A.	10 vials
Fast Blue RR Salt	**FBS25**	Actual weight of the capsule will vary with dye lot and has been optimized by assay. Used as a kit component for the determination of alkaline phosphatase in Sigma-Aldrich® kits 85L1 and 85L2 and for the determination of nonspecific esterase in Sigma-Aldrich® kit 90A1. Fast Blue RR Salt has been used for the staining of alkaline phosphatase activity in cells.	10 capsules









Top Left: Leukocyte Alkaline Phosphatase (based on naphthol AS-BI and fast red violet LB)

Top Right: Leukocyte Acid Phosphatase (TRAP)- without tartrate inhibition

Bottom Left: Leukocyte Peroxidase (Myeloperoxidase) Hanker-Yates substrate

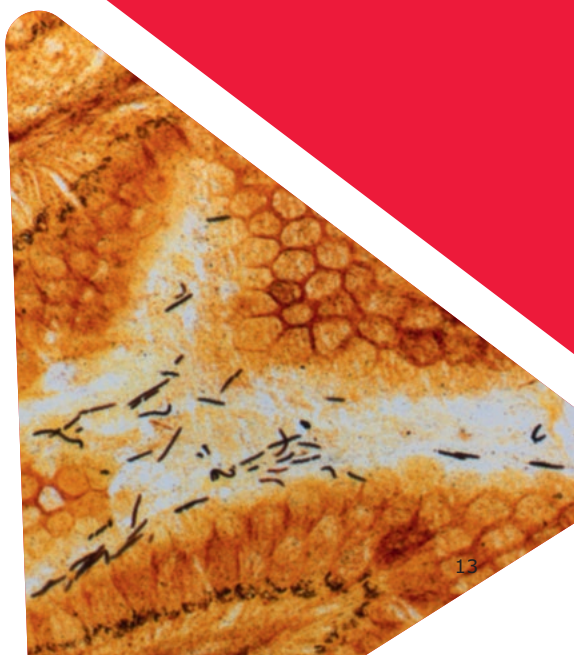
Bottom Right: Sudan Black B Staining

Histology

In his book “Cellular Pathology”, in 1856, Rudolf Virchow stated quite clearly that the diagnosis and prognosis of numerous diseases can be facilitated by investigating cells and tissues under the microscope. This was the birth of histopathology in diagnostic medicine. Numerous staining techniques were initially developed in an empirical way for analyzing tissue sections; the staining and recognition of cell nuclei, cytoplasm, intra- and extra-cellular components was then made possible by the development of more and more specific staining mixtures.

Classical techniques are still adequate in 90–95% of diagnoses; in 5–10% of cases – where diagnosis cannot be regarded as being certain – additional differential staining methods must be used. These enabled additional morphological criteria and functional properties to be evaluated, hence making diagnosis more reliable. Such techniques include histochemical stains, immunohistochemical methods, DNA hybridization, fluorescence in-situ hybridization, PCR, flow cytometry etc.

MilliporeSigma is a leading supplier of stains, chemicals and kits for use in routine histology. We offer the most commonly used special stain products with individual reagents available as prepared solutions or in convenient kit forms. For customers wishing to prepare their own staining solutions, we offer high quality dry dyes, as well as other chemicals and general purpose laboratory reagents.



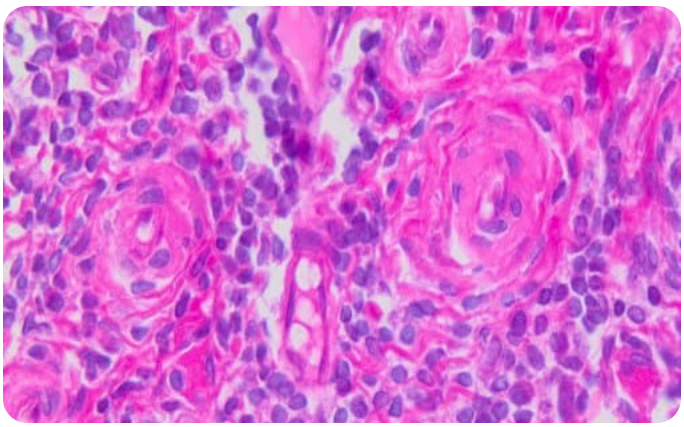
Routine Stains

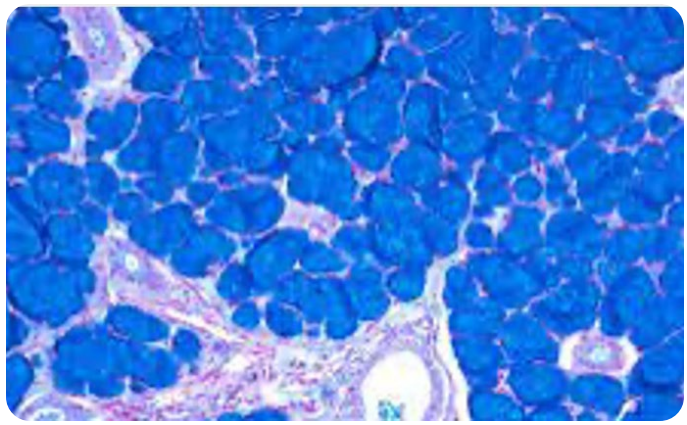
Ordering Information: Routine Stains

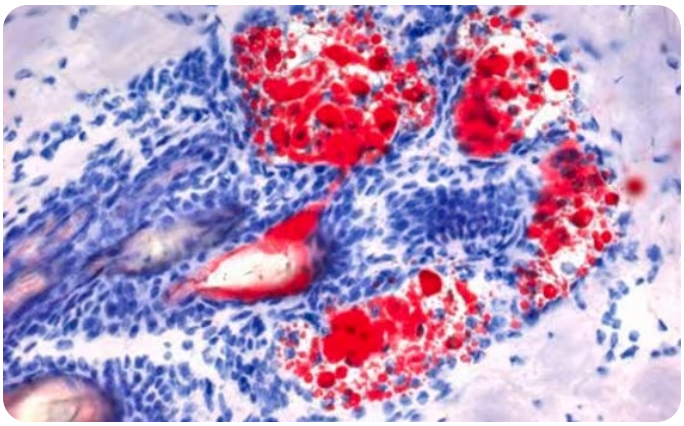
Product	Cat. No.	Product Description	Package Size
Alcian Blue solution, 1% in 3% acetic acid, pH 2.5	**B8438**	Used in the histological staining of acidic glycosaminoglycans (GAGs; mucopolysaccharides) that are carboxylated or sulfated. Sulfated glycosaminoglycans appear to be the preferred substrate for alcian blue at pH 2.5. Alcian blue has been used to stain hyaluronan (HA), a nonsulfated GAG, but the intensity of the staining of HA is affected by the method of tissue fixation used. Alcian blue staining of GAGs in tissue may be modified through the addition of an electrolyte such as magnesium chloride.	250 mL, 500 mL
Aniline Blue solution, 2.5% in 2% acetic acid	**B8563**	Aniline blue is used to stain collagen fibers in tissue sections using the Masson's trichrome protocol for staining multiple components. Collagen is stained blue by this method.	250 mL, 500 mL
Eosin-Y solution 0.5% alcoholic	**102439**	Counterstaining in H&E	500 mL, 2.5 L
Eosin-Y solution 0.5% aqueous	**109844**	Counterstaining in H&E	1 L, 2.5 L
Eosin Y solution 1%, alcoholic	**117081**	Counterstaining in H&E	1 L
Eosin Y solution, alcoholic	**HT110116**	General purpose cytoplasmic counterstain. Certified Eosin Y, 0.5% (w/v) in acidified 90% ethanol. Used with hematoxylin and eosin staining.	500 mL
	HT110132		1 L
	HT110180		2.5 L
	HT1101128		4 L
Eosin Y solution, alcoholic, with phloxine	**HT110316**	General purpose cytoplasmic counterstain. Certified Eosin Y, 0.1% (w/v) and certified phloxine B, 0.1% (w/v) in acidified ethanol. Used with hematoxylin and eosin staining	500 mL
	HT110332		1 L
	HT110380		2.5 L
	HT1103128		4 L
Eosin Y solution, aqueous	**HT110216**	General purpose cytoplasmic counterstain. Certified Eosin Y, 0.5% (w/v) in water. Not acidified. Used with hematoxylin and eosin staining	500 mL
	HT110232		1 L
	HT110280		2.5 L
	HT1102128		4 L
Hematoxylin solution modified acc. to Gill III	**105174**	Used as a nuclear stain in progressive and regressive staining.	500 mL, 1 L, 2.5 L
Hematoxylin Solution, Gill No. 1	**GHS116**	Certified hematoxylin. Gill No. 1 formulation is used as a progressive cytology stain. Used with hematoxylin and eosin staining.	500 mL
	GHS132		1 L
	GHS1128		4 L
Hematoxylin Solution, Gill No. 2	**GHS216**	Certified hematoxylin. Gill No. 2 formulation may be used for cytology and/or histology as a progressive or regressive stain depending on length of staining time.	500 mL
	GHS232		1 L
	GHS280		2.5 L
	GHS2128		4 L
Hematoxylin Solution, Gill No. 3	**GHS316**	Certified hematoxylin. Gill No. 3 formulation may be used for cytology and/or histology as a progressive or regressive stain depending on length of staining time. Used with hematoxylin and eosin staining.	500 mL
	GHS332		1 L
	GHS380		2.5 L
	GHS3128		4 L
Hematoxylin Solution, Harris Modified	**HHS16**	Certified hematoxylin. General purpose nuclear stain, regressive type. Used with hematoxylin and eosin staining	500 mL
	HHS32		1 L
	HHS80		2.5 L
	HHS128		4 L

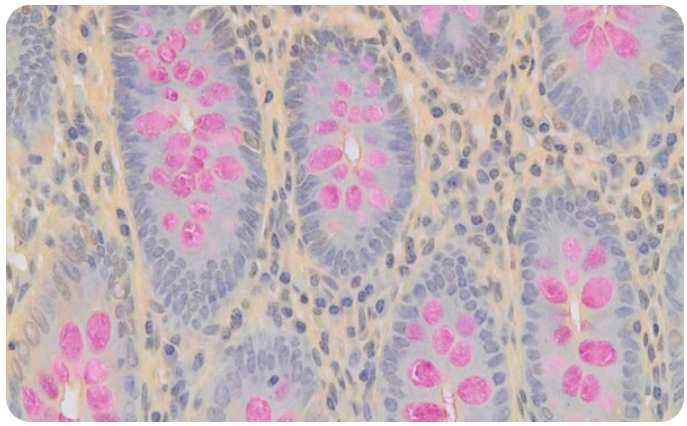
Ordering Information: Routine Stains (continued)

Product	Cat. No.	Product Description	Package Size
Hematoxylin Solution, Mayer's	**MHS1**	Certified hematoxylin. General purpose nuclear stain, progressive type. Used with hematoxylin and eosin staining.	100 mL
	MHS16		500 mL
	MHS32		1 L
	MHS80		2.5 L
	MHS128		4 L
Giemsa's azure eosin methylene blue solution	**109204**	Staining of bone marrow sections and lymph node sections	100 mL, 500 mL, 1 L, 2.5 L, 25 L
Nuclear Fast Red solution	**N3020**	Used as a red nuclear counterstain.	100 mL
Oil red O color solution	**102419**	Visualisation of neutral lipids in cryosection	250 mL
Oil Red O solution 0.5% in isopropanol	**O1391**	Oil Red O is a lysochrome (fat-soluble dye) diazo dye used for staining of neutral triglycerides and lipids on frozen sections and some lipoproteins on paraffin sections. In histology, a supersaturated solution of oil red O in isopropanol may be used to stain fat in tissue.	250 mL, 500 mL
Oil Red O solution 0.5% in propylene glycol	**O1516**	Oil Red O is a lysochrome (fat-soluble dye) diazo dye used for staining of neutral triglycerides and lipids on frozen sections and some lipoproteins on paraffin sections. In histology, a supersaturated solution of oil red O in isopropanol may be used to stain fat in tissue.	250 mL, 500 mL
Weigert's iron hematoxylin solution	**HT1079**	Recommended in lengthy or acidic stain procedures. Resists decolorization better than aluminum based hematoxylin formulations.	1 set









Top Left: Hematoxylin & Eosin (H&E)
Bottom Left: Oil Red O Staining Solution

Top Right: Alcian Blue
Bottom Right: Weigert's Iron Hematoxylin

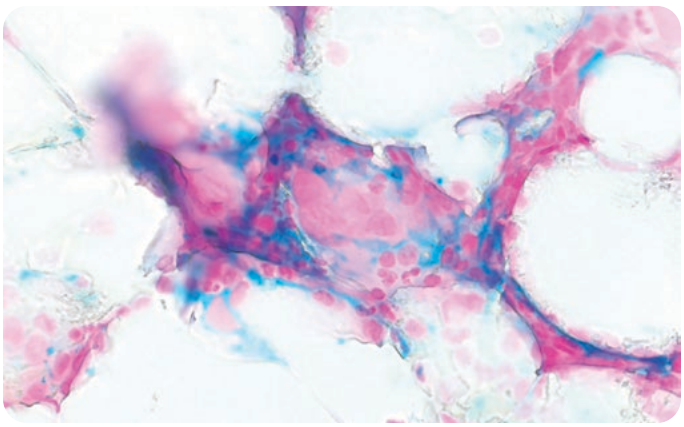
Special Stains

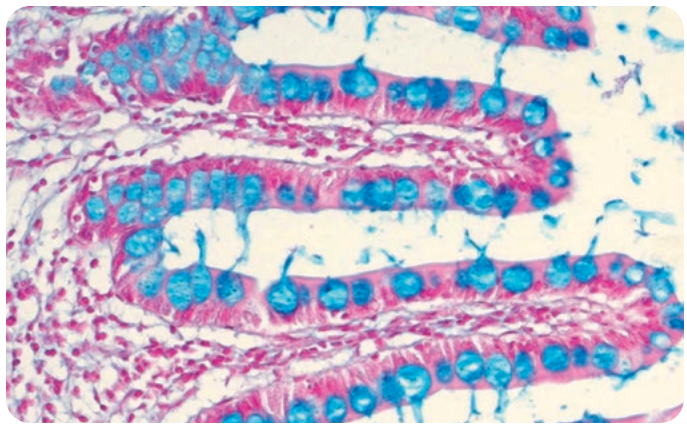
Ordering Information: Special Stain Kits and Reagents

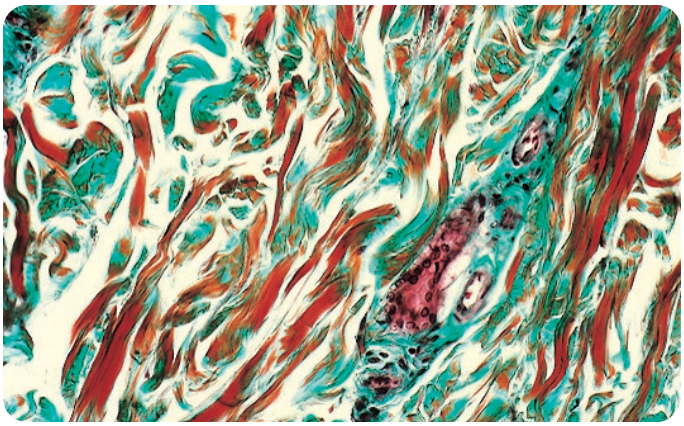
Product	Cat. No.	Product Description	Package Size
Elastic Stain Kit	**HT25A**	Modified Verhoeff Van Gieson Elastic Stain Kit	1 KT
Van Gieson Solution Acid Fuchsin	**HT254**	Stains collagen brilliant red and muscle and cytoplasm yellow. Intended for use in the Sigma-Aldrich® Elastic Stain Kit HT25A	250 mL
Elastica van Gieson staining kit	**115974**	Demonstration of elastic fibers on connective tissue.	4 x 500 mL
Picrofuchsin solution acc. to van Gieson	**100199**	For connective tissue staining	500 mL
ELASTIN color solution acc. to Weigert	**100591**	Visualisation of elastic fibers	500 mL
Iron Stain Kit	**HT20**	Deposits of loosely bound iron in erythrocytes, bone marrow, or tissue stain an intense blue when treated with acid ferrocyanide according to the well-known Prussian blue reaction.	1 KT
HEMATOGNOST Fe®	**112084**	Detection of free ionic iron with Prussian blue method	4 x 250 mL
Trichrome Stain (Masson) Kit	**HT15**	May be useful in study of diseases of connective tissue and muscle characterized by fibrotic and dystrophic changes	1 KT
Masson-Goldner staining kit	**100485**	Visualization of connective tissue	4 x 500 mL
Trichrome stain LG solution	**HT10316**	Intended for use in the study of connective tissue, muscle and collagen fibers. Stains collagen green. Also known as Gomori One Step Trichrome (Light Green) procedure.	500 mL
Trichrome Stain AB solution	**HT10516**	Intended for use in the study of connective tissue, muscle and collagen fibers. Stains collagen blue and muscle red. Also known as Gomori One Step Trichrome (Aniline Blue) procedure.	500 mL
Fontana-Masson Stain Kit	**HT200**	Intended for use in the histological visualization of argentaffin cells and melanin in paraffin or frozen sections. Includes both a standard and microwave method for rapid staining.	1 KT
Methenamine silver plating kit acc. to Gomori	**100820**	For detection of argent-affine structures in histological tissue. Visualization of basal membranes, bacteria and fungi	1 set
Periodic Acid-Schiff (PAS) Kit	**395B**	Cellular elements which may be demonstrated with the PAS procedure include glycogen, fungal walls, basement membrane, certain epithelial sulfomucins and sialomucins, neutral mucosubstances, colloid material of the thyroid and the pars intermedia of the pituitary.	1 KT
PAS staining kit	**101646**	Detection of aldehyde and mucosubstance. Visualization of muco-polysaccharides	2 x 500 mL
Periodic Acid Solution	**3951**	Product Description: For use in PAS staining for the demonstration of lymphocytes and mucopolysaccharides	100 mL
	395132		1 L
Schiff's reagent	**3952016**	For use in PAS staining for the demonstration of lymphocytes and mucopolysaccharides	500 mL
Schiff's reagent	**109033**	PAS method. Detection of polysaccharides	500 mL, 2.5 L
Reticulum Stain Kit	**HT102A**	Intended to demonstrate reticular fibers in paraffin sections.	1 KT
Reticulin silver plating kit acc. to Gordon & Sweets	**100251**	Detection of reticular fibres in paraffin sections	1 set
Silver Stain (Modified GMS) Kit	**HT100A**	The Silver Stain modified GMS kit is intended for use in the histologic demonstration of fungi, basement membrane and some opportunistic organisms.	1 KT
Silver plating kit acc. to von Kossa	**100362**	Detection of microcalcification and calcium deposits in paraffin sections	1 set
Weigert's iron hematoxylin solution	**HT1079**	Recommended in lengthy or acidic stain procedures. Resists decolorization better than aluminum based hematoxylin formulations. Weigert's iron hematoxylin solution set consists of HT107 Part A and HT109 Part B.	1 set
	HT107	To be used in conjunction with HT109. Recommended in lengthy or acidic stain procedures. Resists decolorization better than aluminum based hematoxylin formulations. Part A.	500 mL, 500 mL-KP
	HT109	To be used in conjunction with HT107. Recommended in lengthy or acidic stain procedures. Resists decolorization better than aluminum based hematoxylin formulations. Part B.	500 mL, 500 mL-KP

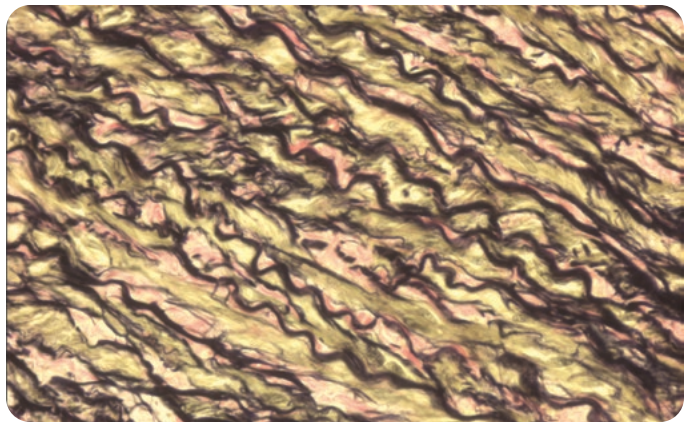
Ordering Information: Special Stain Kits and Reagents (contunied)

Product	Cat. No.	Product Description	Package Size
Weigert's iron hematoxylin kit	**115973**	Nuclear staining in connective tissue	2 x 500 mL
Alcian blue staining kit, pH 2.5	**132647**	Alcian blue staining kit, pH 2.5	2 x 500 mL
Alcian blue solution	**101647**	Alcian blue PAS staining	500 mL
Amyloid Stain, Congo Red Kit	**HT60**	Amyloid protein is detected in tissue with Congo Red, a metachromatic stain. Staining is intensified by pretreatment of tissue with alkaline sodium chloride.	1 KT
Mucicaramine stock solution	**HT3018**	Stains mucin of epithelial origin in tissue.	250 mL
	HT30116		500 mL
Tartrazine solution	**HT3024**	Yellow counterstain suitable for a wide range of histological staining procedures	120 mL
	HT3028		250 mL
Methyl Green-Pyronin (MGP) solution	**HT70116**	May be useful in the identification of plasma cells and RNA in tissue sections and cytologic preparations.	500 mL
Nuclear fast red-aluminum sulfate solution 0.1%	**100121**	For nuclear staining and for counterstaining in histochemical reactions e.g. Berlin blue	500 mL
Mayer's hemalum solution	**109249**	Counterstaining in histology	500 mL, 1 L, 2.5 L









Top Left: HEMATOGNOST Fe®, bone marrow
Bottom Left: Masson-Goldner stain

Top Right: Alcian blue-nuclear fast red staining, intestine
Bottom Right: Elastic Stain

Control Slides

TISSUE-TROL™ Control Slides

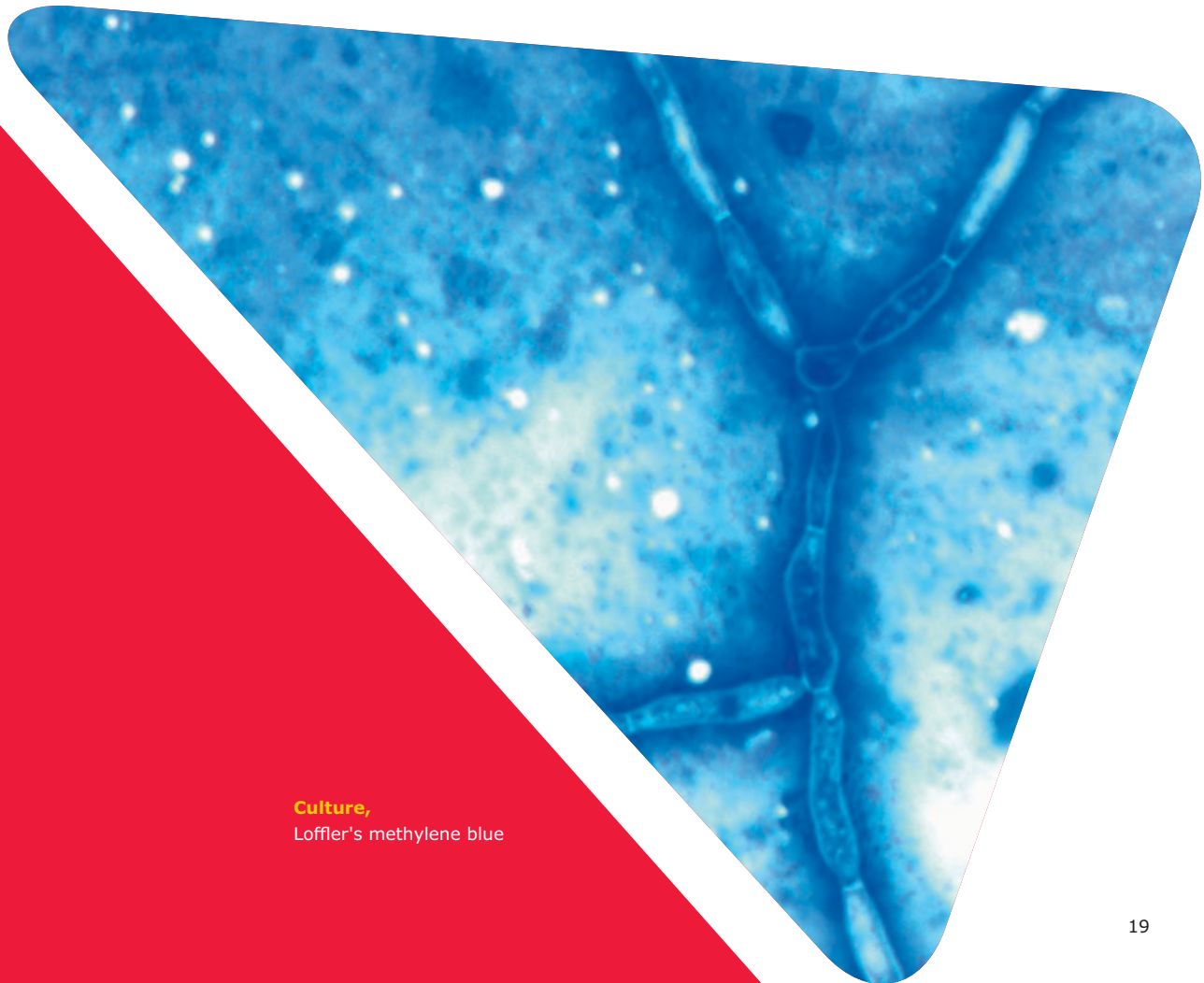
Histology control slides are essential in the support of formal quality assurance programs. MilliporeSigma TISSUE-TROL™ slides are comprised of paraffin embedded tissue sections containing known characteristics and are used for monitoring staining performance in pathology laboratories. There are 25 slides per package. One slide is stained with the appropriate procedure to demonstrate the expected result.

Product	Cat. No.
Acid Fast TISSUE-TROL™ Control Slides from mouse lung tissue containing *Mycobacterium gordonae*	**TTR001**
Amyloid TISSUE-TROL™ Control Slides from human heart tissue containing amyloid	**TTR002**
Elastic TISSUE-TROL™ Control Slides from human skin containing elastic fibers	**TTR003**
Fungi TISSUE-TROL™ Control Slides from mouse lung containing *Candida albicans*	**TTR004**
Gram Stain TISSUE-TROL™ Control Slides from mouse lung tissue containing *Staphylococcus aureus* and *Escherichia coli*	**TTR005**
Helicobacter TISSUE-TROL™ Control Slides from mouse intestine tissue containing *Helicobacter pylori*	**TTR006**
Iron TISSUE-TROL™ Control Slides from human liver containing intracellular or extracellular iron	**TTR007**
Mucin TISSUE-TROL™ Control Slides from human intestine tissue containing mucins	**TTR008**
PAS TISSUE-TROL™ Control Slides from human kidney	**TTR009**
Reticulum TISSUE-TROL™ Control Slides from human liver tissue containing reticular fibers	**TTR010**
Spirochetes TISSUE-TROL™ Control Slides from rabbit testicle tissue containing spirochetes (*Treponema pallidum*)	**TTR011**
Trichrome TISSUE-TROL™ Control Slides from human liver	**TTR012**
Argentaffin TISSUE-TROL™ Control Slides from human intestine tissue containing argentaffin granules	**TTR013**
Melanin TISSUE-TROL™ Control Slides from human skin	**TTR014**

Microbiology

Microbiology is a unique discipline within the scope of clinical diagnosis and industrial quality control. In microbiology, the principle goal is to find and identify bacteria and microorganisms in order to determine the correct course of action. Gram staining and the detection of mycobacteria are of particular importance as a preliminary evaluation, for sub-classification and identification of high risk strains. Subsequent stains and dyes can be used for further classification and as an aide for applicable microscopic analysis.

MilliporeSigma offers high-quality, high-capacity stains and ancillary reagents for microbiology. Our extensive microbiology portfolio includes ready-to-use staining kits and solutions that guarantee reliable and brilliant results. We offer the most commonly used microbiology stain products with individual reagents available as prepared solutions or in convenient kit form.

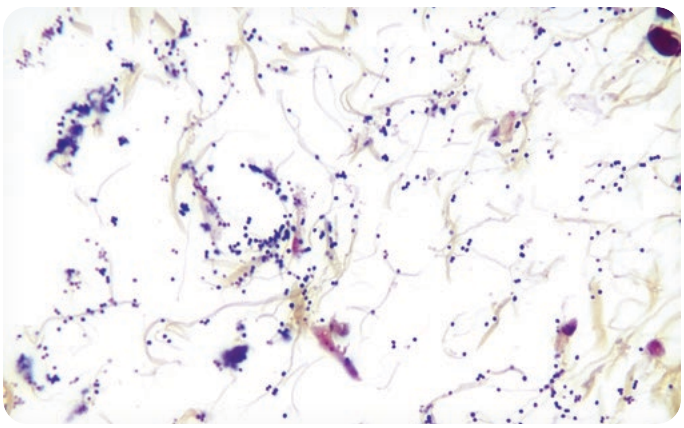


Culture,
Loffler's methylene blue

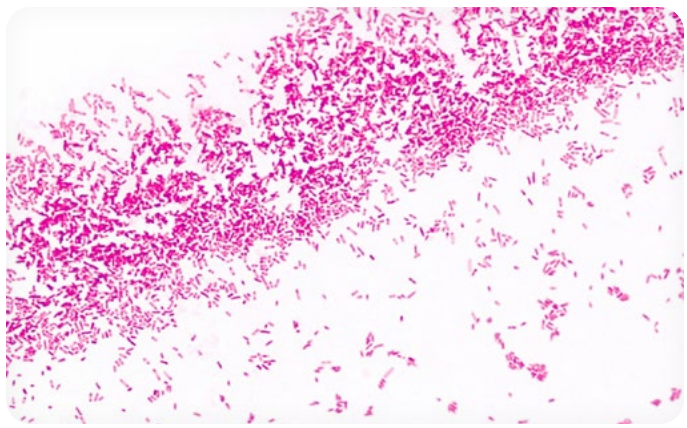
Microbiology Staining Solutions and Kits

Ordering Information: Microbiology Staining Solutions and Kits

Product	Cat. No.	Product Description	Package Size
Gram Stain for films	**HT90A**	Films are stained for Gram-positive organisms with crystal violet, mordanted in iodine, decolorized and then stained for Gram-negative organisms with safranin O. For delineating Gram-positive and Gram-negative organisms in films.	1 KT
Gram Stain for tissue	**HT90T**	Tissues are stained for Gram-positive organisms with crystal violet, mordanted in iodine, decolorized, stained for Gram-negative organisms with safranin O and then counterstained with tartrazine. For delineating Gram-positive and Gram-negative organisms in paraffin embedded tissues.	1 KT
Crystal violet solution	**HT901**	Crystal violet is used for Gram stains and is a kit component of Gram stain kits HT90A and HT90T (for staining of heat-fixed films and tissue, respectively).	8 oz
	HT90132		1 L
Gram's iodine solution	**HT902**	An iodine and potassium iodide soultion commonly added to form a large insoluble complex with crystal violet.	8 oz
	HT90232		1 L
Decolorizer Solution	**HT903**	A mixture of isopropyl alcohol and acetone used as a decolorizer in Gram staining	8 oz
Safranin O	**HT904**	Counterstain for Gram staining solution	8 oz
Safranin O solution	**HT90432**	Counterstain for Gram staining	1 L
Gram Color Modified	**101603**	(phenol-free) staining kit for Gram staining method on bacteriological smears	1 set
Giemsa's azure eosin methylene blue solution	**109204**	Used for the staining of blood and bone-marrow smears	100 mL, 500 mL, 1 L, 2.5 L, 25 L
Gram's decolorizing solution	**110218**	A mixture of ethanol and acetone	500 mL, 2.5 L
Gram's safranine solution	**109217**	Counterstain for Gram stain	500 mL, 2.5 L
Löffler's methylene blue solution	**101287**	Methylene blue staining is suitable for general bacteriological stainings, e.g. acid-fast mycobateria.	100 mL, 500 mL, 2.5 L
Lugol's solution	**100567**	Stabilized with PVP. Used in Gram stain.	1 L, 2.5 L
Lugol's solution (diluted iodine-potassium iodide solution)	**109261**	For Gram staining	1 L, 2.5 L



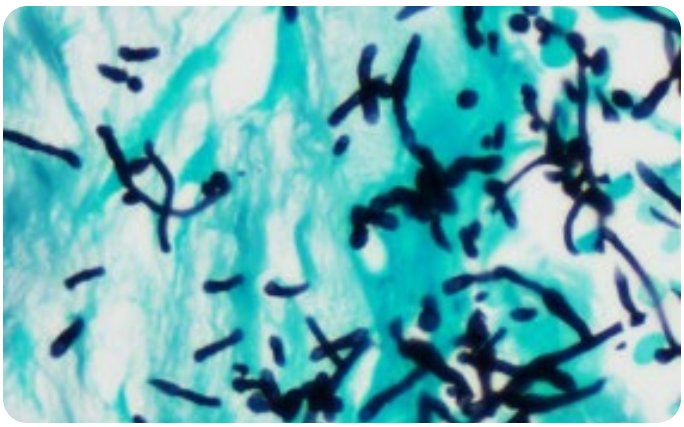
Gram Stain (Gram positive-tissue)

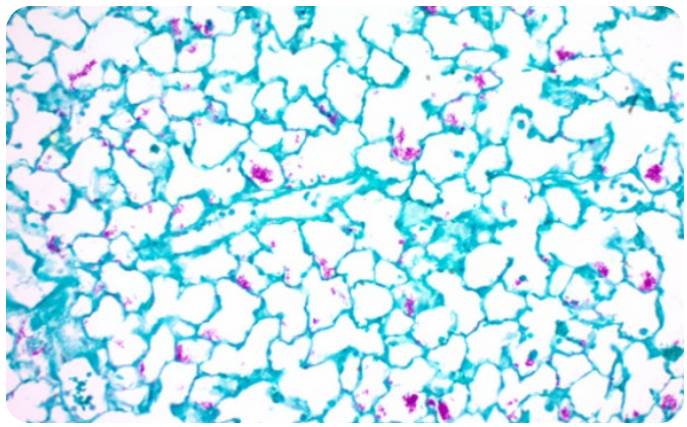


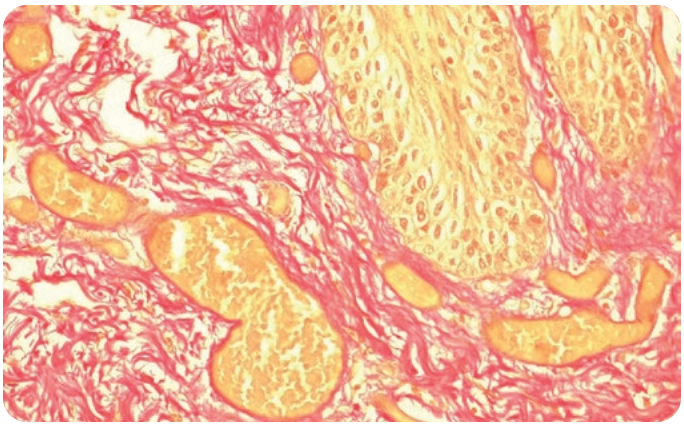
Gram Stain (Gram negative-film)

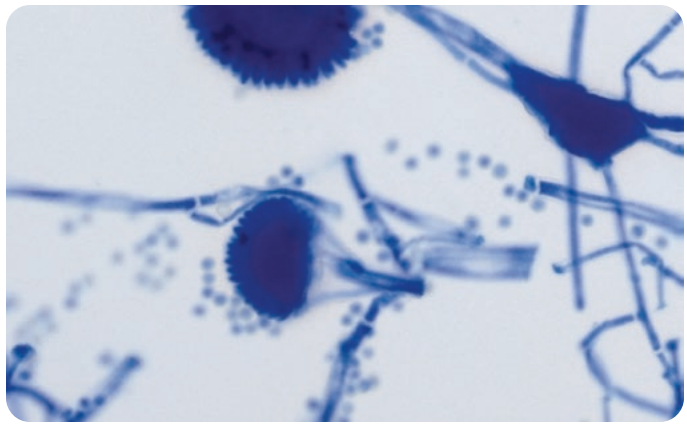
Ordering Information: Microbiology Staining Solutions and Kits (continued)

Product	Cat. No.	Product Description	Package Size
Silver Stain (Modified GMS) Kit	**HT100A**	Silver stain is an aid in distinguishing fungi, basement membrane and opportunistic organisms such as Pneumocystis jiroveci (carinii) in tissue sections or smears.	1 KT
Lactophenol blue solution	**113741**	Staining of fungi add 1 or 2 drops of lactophenol blue solution to the specimen; microscope after approx. 2 min	100 mL
Carbol-fuchsin solution	**HT8018**	Pararosaniline (certified), 0.85%; phenol, 2.5%; glycerol, 5%; DMSO, 5% and ethyl alcohol. Intended for use in the Acid Fast Stain, procedure HT80 with Malachite Green counterstain Catalog HT80-2.	250 mL
	HT80116		500 mL
Malachite Green solution	**HT8028**	Intended for use with Carbol-fuchsin (HT80-1) in Sigma-Aldrich® Acid Fast Stain, HT80. Acts as both a counterstain and a differentiator.	250 mL
	HT80216		500 mL
Tb-color Carbol fuchsin solution	**108512**	Cold staining of mycobacteria	500 mL, 2.5 L
Tb-color modified	**100497**	Staining kit for the detection of mycobacteria (AFB) by hot staining method. Result: acid-fast bacteria: red, background: blue	1 PAC
TB-Fluor phenol-free	**101597**	Fluorescence staining kit for the microscopic investigation of mycobacteria. Result: acid-fast bacteria: red-orange or yellow-green fluorescence, background: dark to black	1 PAC, 1 set
Hydrochloric acid in ethanol	**100327**	To be used in Ziehl-Neelsen staining	1 L, 5 L
Sputofluol® pre-treatement solution	**108000**	Pre-treatment of specimens in the detection of mycobacteria	1 L









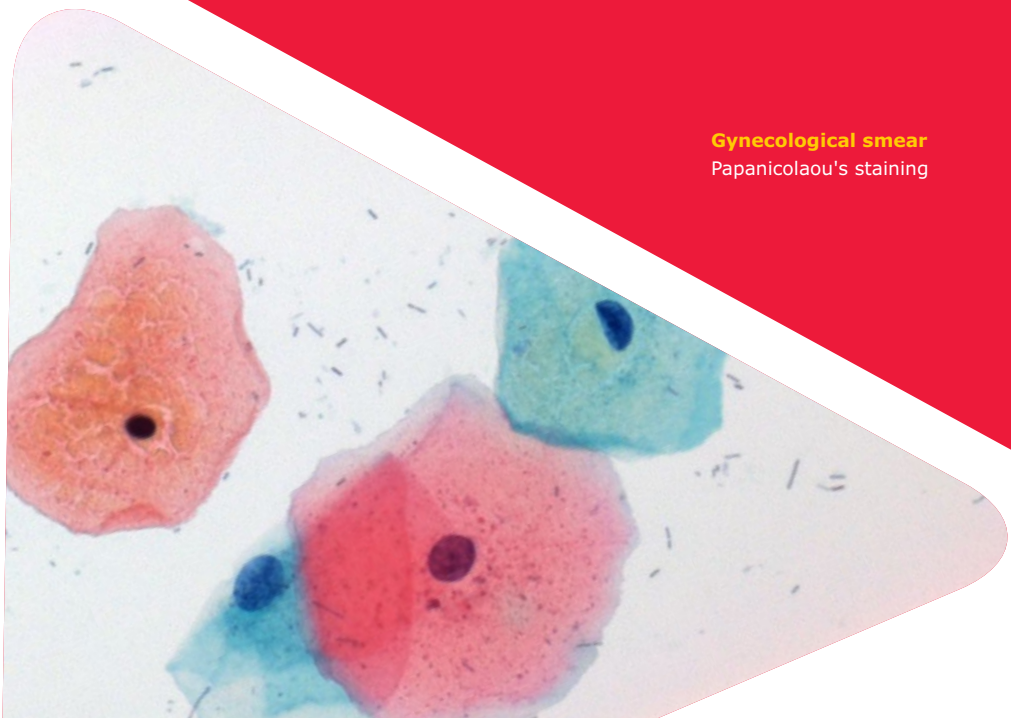
Top Left: Modified Grocott's Methenamine Silver (GMS)
Bottom Left: Fuchsin stain, tongue

Top Right: Acid Fast Stain (Ziehl-Neelson/ Modified Ziehl-Neelson)
Bottom Right: Culture, smear, Lactophenol blue staining

Cytology

Cytology is a technique used to differentiate tumors from other inflammatory or degenerative diseases. The advantages of the method are the ease of obtaining material and the relative ease of processing it. Cytology is highly specific and accurate. These advantages make it suitable for screening purposes and have in fact led to a significant reduction in the incidence of cervical cancer. The acceptance of gynecological cytology as a valuable discipline in cancer screening is principally due to the work of Dr. George N. Papanicolaou (1883 – 1962), the “Father of modern cytology.”

MilliporeSigma provides stains and reagents needed to discern cytological samples to better understand inflammatory degenerative and neoplastic processes. Starting from the initial work of Dr. George Papanicolaou, for decades MilliporeSigma has improved staining quality and simplified procedures to ensure accurate gynecological cytology.



Gynecological smear
Papanicolaou's staining

Staining Solutions

Ordering Information: Staining Solutions

Product	Cat. No.	Product Description	Package Size
Giemsa's azure eosin methylene blue solution	**109204**	Staining of non-gynecological specimens.	100 mL, 500 mL, 1 L, 2.5 L, 25 L
Hematoxylin Solution, Gill No. 1	**GHS116**	Certified hematoxylin. Gill No. 1 formulation is used as a progressive cytology stain. Used with hematoxylin and eosin staining.	500 mL
	GHS132		1 L
	GHS1128		4 L
Hematoxylin Solution, Gill No. 2	**GHS216**	Certified hematoxylin. Gill formulation No. 2 may be used for cytology and/or histology as a progressive or regressive stain depending on length of staining time.	500 mL
	GHS232		1 L
	GHS280		2.5 L
	GHS2128		4 L
Hematoxylin Solution, Harris Modified	**HHS16**	Certified hematoxylin. General purpose nuclear stain, regressive type. Used with hematoxylin and eosin staining.	500 mL
	HHS32		1 L
	HHS80		2.5 L
	HHS128		4 L
Papanicolaou Stain	**HT40316**	Certified eosin Y, 0.23% w/v, certified fast green FCF, 0.08% w/v, certified bismarck brown, 0.05%, phosphotungstic acid, 0.2% w/v, in denatured alcohol. Papanicolaou stain imparts a characteristic range of coloration to exfoliative cells of vaginal, cervical, prostatic and other body secretions, allowing critical examination of nuclei and cytoplasmic components.	500 mL (50 EA)
	HT40332		1 L (50 EA)
	HT40432		1 L (65 EA)
	HT40380		2.5 L (50 EA)
	HT403128		4 L (50 EA)
Papanicolaou Stain, Modified EA	**HT40232**	Certified eosin Y, 0.25% w/v, certified fast green FCF, 0.004% w/v, phosphotungstic acid, 0.4% w/v, in denatured alcohol with stabilizer	1 L
Papanicolaou Stain, OG-6	**HT40116**	Certified orange G, 0.3% w/v, phosphotungstic acid, 0.015% w/v, in denatured alcohol	500 mL
	HT40132		1 L
	HT40180		2.5 L
	HT401128		4 L
Papanicolaou's solution 1a Harris' hematoxylin solution	**109253**	Nuclear staining	500 mL, 1 L, 2.5 L
Papanicolaou's solution 1b Hematoxylin solution S	**109254**	Nuclear staining	500 mL, 2.5 L
Papanicolaou's solution 2a Orange G solution (OG 6)	**106888**	Cytoplasm staining of mature and keratinized cells	500 mL, 1 L, 2.5 L
Papanicolaou's solution 2b Orange II solution	**106887**	Cytoplasm staining of mature and keratinized cells	500 mL, 2.5 L
Papanicolaou's solution 3a polychromatic solution EA 31	**109271**	Cytoplasm staining	500 mL, 2.5 L
Papanicolaou's solution 3b polychromatic solution EA 50	**109272**	Cytoplasm staining	500 mL, 1 L, 2.5 L
Papanicolaou's solution 3c polychromatic solution EA 65	**109270**	Cytoplasm staining esp. for non-gynecological specimen, color effect light brown to red	100 mL
Papanicolaou's solution 3d polychromatic solution EA 65	**109269**	Cytoplasm staining esp. for non-gynecological specimens, color effect pale blue-green-pink	100 mL, 2.5 L
Shorr staining solution	**109275**	Diagnosis of hormonal disorders	500 mL

Midas® III-Plus

The Midas® III-Plus Automated Stainer offers automation for hematology, histology, and microbiology staining applications. Its full programmability allows duplication of existing staining techniques, ensuring consistent results for tissue, peripheral blood, and bone marrow smears, as well as microbiological smears. The unit is backed by a one-year warranty and comprehensive technical and customer service support. Explore our full line of stains tailored for use with the Midas® III-Plus Automated Stainer.

Midas® III-Plus Automated Stainer

Midas® III-Plus Automated Stainer: The Cornerstone of Your Laboratory

The Midas® III-Plus Automated Stainer is a fully automated, benchtop stainer with a small footprint. It is designed to perform routine hematology, histology, and microbiology staining effortlessly. It utilizes the dip slide staining technique which ensures uniform staining for every sample. This reduces stain consumption up to 50%.

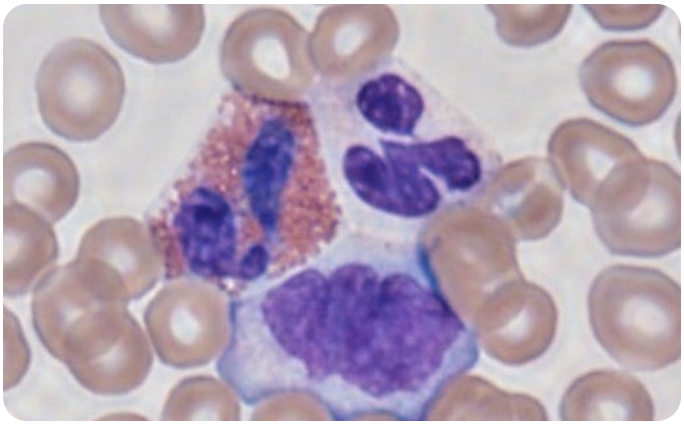
This versatile automated stainer combines reliable electronics and mechanics with an optional plastic hood enclosure to make your laboratory a safer environment. Ideally suited for staining up to ~900 slides per day*, this stainer will become the new workhorse of your lab.

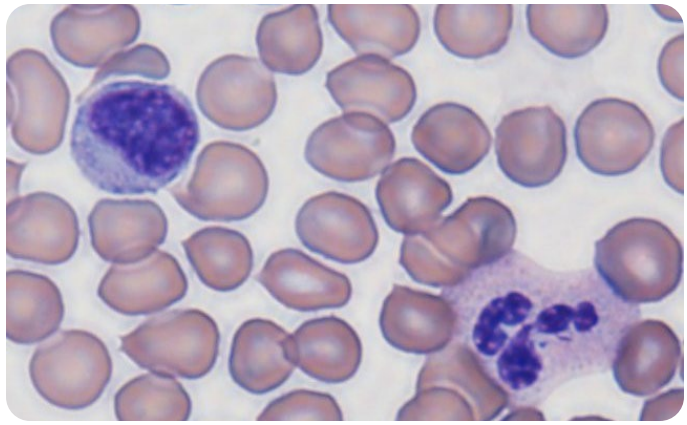
*Exact throughput is dependent on protocol and slide carrier.

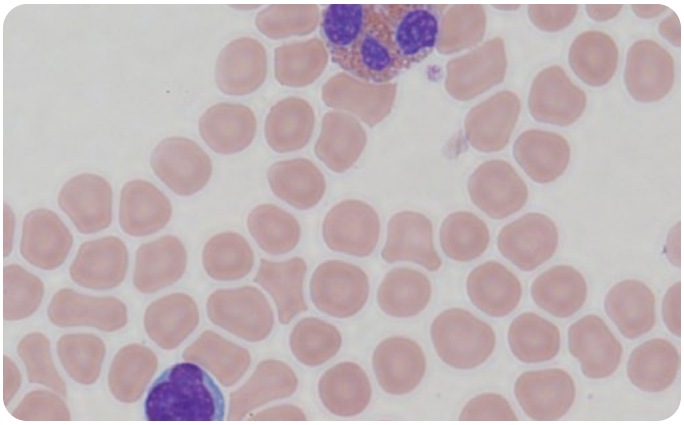
Ordering Information: Midas® III-Plus Automated Stainer

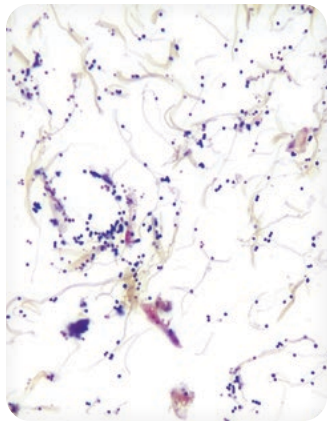
Product	Cat. No.	Package Size
Midas® III-Plus Automated Stainer	**64000H**	1 Each
Midas® Slide Carrier (20 slides)	**64052**	1 Each
Midas® Slide Carrier (30 slides)	**64052E**	1 Each
Midas® Operator's Manual	**5.06115.0001**	1 Each
Midas® Vessels and Lids, White 8/pk	**64054W**	1 Each
Midas® Water Bath	**64000WB**	1 Each
Midas® Water Bath Filters 2/pk	**64000WBF**	1 Each
Midas® Plastic hood enclosure	**5.06117.0001**	1 Each

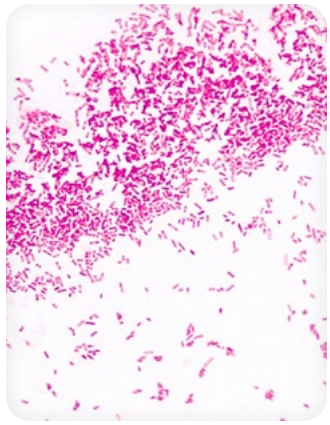
To learn more visit: **SigmaAldrich.com/midas**











Top Left: Wright Stain, blood smear
Bottom Left: Wright-Giemsa, blood smear

Top Right: Blood smear
Bottom Right: Gram Stain (Gram positive-tissue and Gram negative-film)

Stains and Dyes

Enhancing Visualizations

- **Essential for Identification:** Used in hematology, histology, cytology, and microbiology to visualize cell and tissue components.
- **Types of Dyes:**
  - Acid and basic dyes
  - Synthetic and natural dyes
- **Key Milestone:** Paul Ehrlich's method using mixtures of acid and basic components revolutionized staining techniques.
- **Resulting Image Quality:** Color intensity and contrast depend on solution quality and technical procedure.

MilliporeSigma's Offerings:

- **Certistain® Dyes:** Chemically analyzed and tested for consistent performance batch to batch.
- **Biological Stain Commission Certified Stains:** Ensures quality through independent testing according to rigorous criteria.
- **Additional Offerings:**
  - Dry dyes and dye mixtures
  - Natural dyes
  - Dyes for indicators, standards, environmental testing, and analytical purposes
  - Fluorescent stains and dyes

Explore Our Products: One of the world's largest selections of stains and dyes, available as ready-to-use reagents or for preparations with dry dyes.

Cell Marque™ Tissue Diagnostics

Our Cell Marque™ product line includes a comprehensive portfolio of primary antibodies suitable for immunohistochemistry (IHC) on formalin-fixed paraffin embedded tissue samples. We focus primarily on developing and manufacturing novel and well-established primary antibodies for *in vitro* diagnostic use (IVD) in histopathology laboratories. We also offer a range of detection systems and ancillary reagents to support IHC testing.

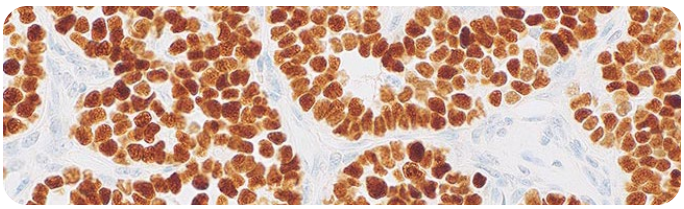
With a medical team on staff, we can guarantee the performance and high quality of our antibodies, in order to supply you with the best care for your patients.

Cell Marque™ IHC antibodies are available for a wide range of Pathology subspecialities including breast/gynecological pathology, dermatopathology, hematopathology, pediatric pathology, gastrointestinal (GI) pathology, cytopathology, neuropathology, pulmonary pathology, head & neck pathology, and other key areas.

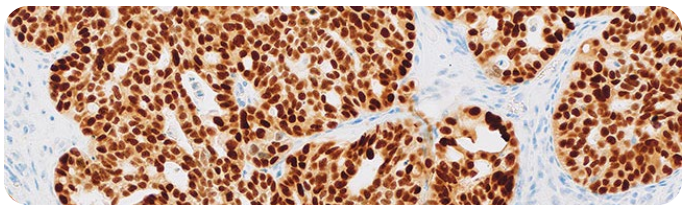
Browse our full IHC Antibody Portfolio:

Featured Cell Marque™ IHC Specialty Antibodies

Anatomic Pathology

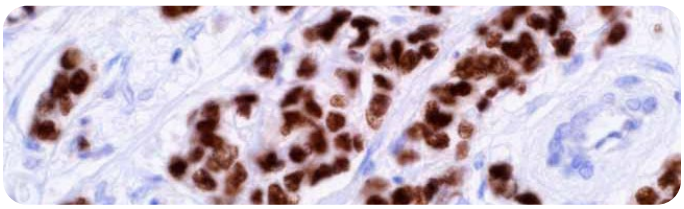


INSM1 (MRQ-70) **475R-9**

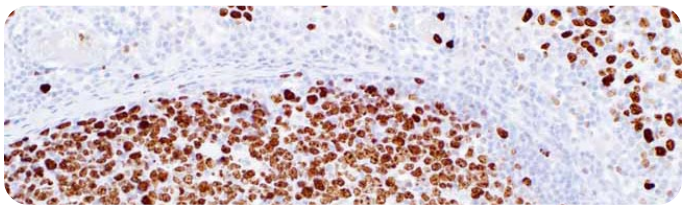


PAX-8 (SP348) **363R-3**

Breast/Gyn pathology

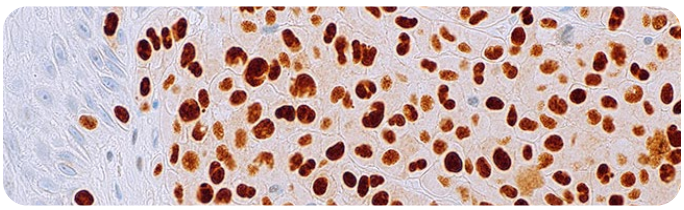


GATA-3 (L50-823) **390M-1**

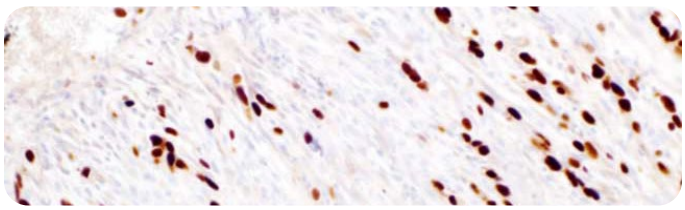


Ki-67 (SP6) **275R-1**

Dermatopathology

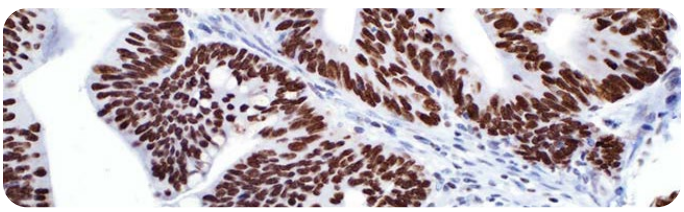


PRAME (EP461) **484R-1**

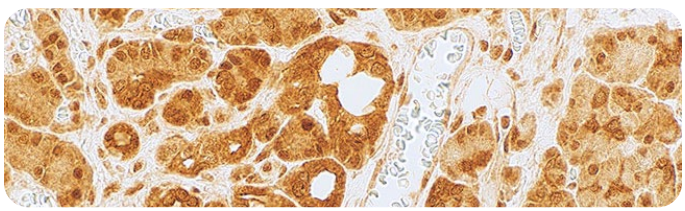


SOX-10 (EP268) **383R-1**

Gastrointestinal (GI) pathology

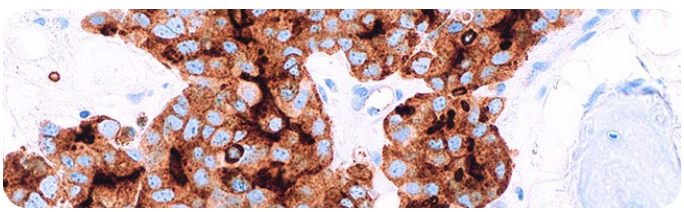


SATB2 (EP281) **384R-1**

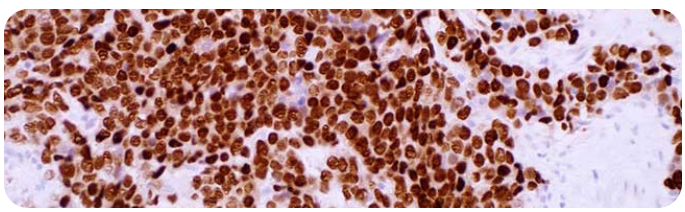


SMAD4 (MRQ-72) **487R-9**

Genitourinary (GU) pathology

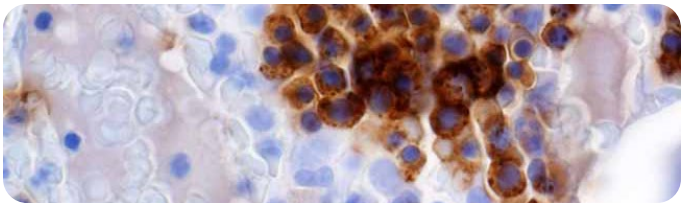


PSMA (EP192) **327R-1**

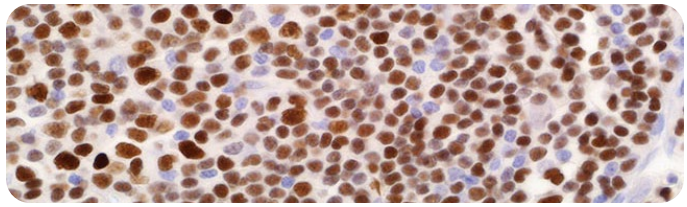


NKX3.1 (EP356) **441R-1**

Hematopathology

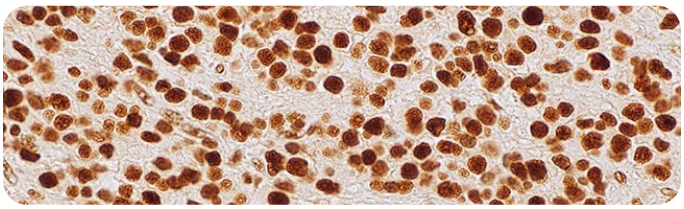


CD71 (MRQ-48) **171M-9**

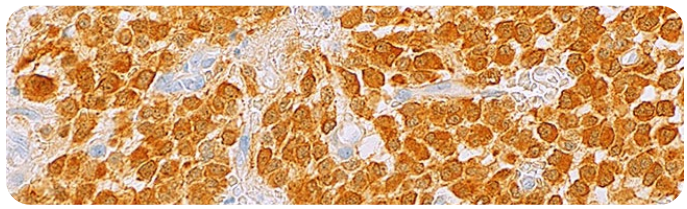


LEF1 (EP310) **442R-1**

Neuropathology

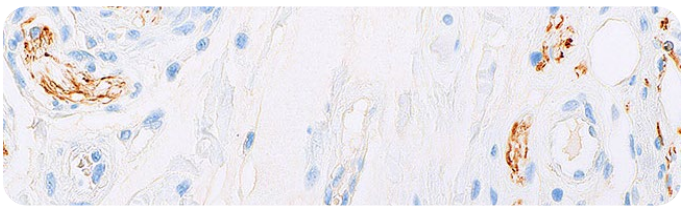


ATRX (Polyclonal) **485A-1**

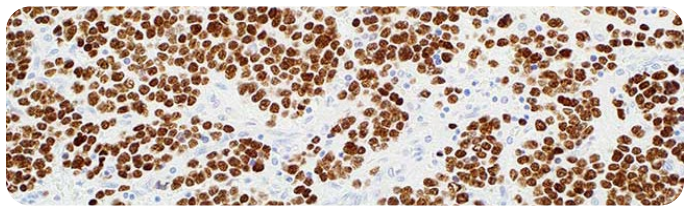


IDH1 R132H (MRQ-67) **456R-3**

Pediatric pathology

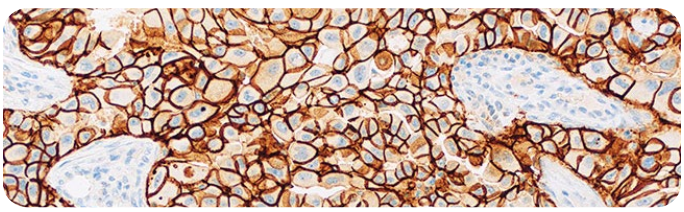


Peripherin (8G2) **476M-1**

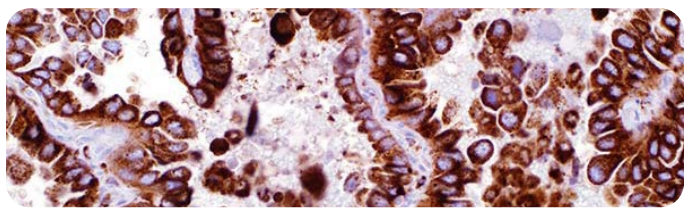


PHOX2B (EP312) **422R-1**

Pulmonary pathology

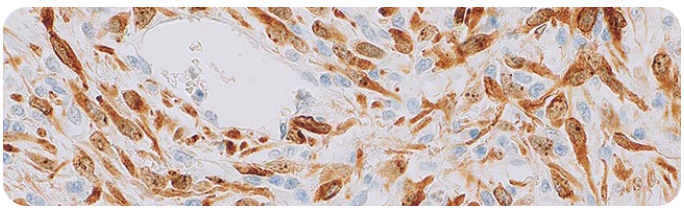


Claudin-4 (EP417) **468R-1**

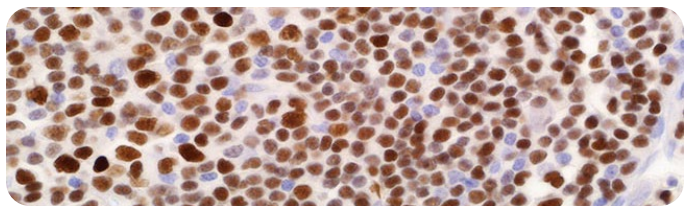


Napsin A (MRQ-60) **352M-9**

Soft Tissue pathology



MDM2 (IF2) **479M-9**



TLE1 (1F5) **401M-1**

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