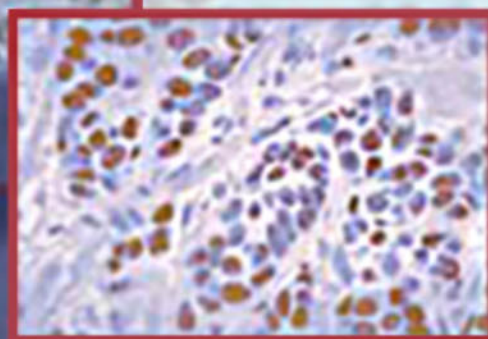
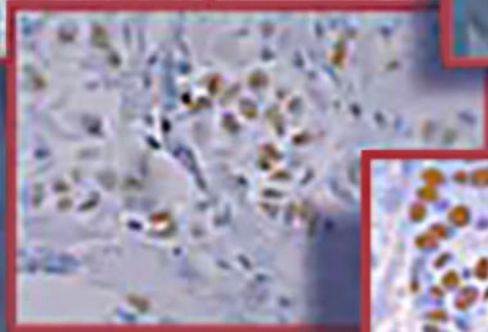
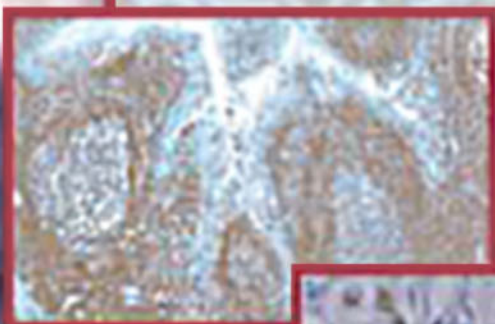


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O U R P L E D G E



At Innovex Biosciences we strive daily to bring you the most advanced technologies and products with unsurpassed quality and innovation. Our commitment to provide our customers with products that simplify and shorten staining time and require no troubleshooting or pre-treatment has been proven. Innovex has remained true to its original promise of innovation and quality and it is now serving the field with such revolutionary products such as STAT- Wash Free, Background-Free staining kits, Background-Free Animal IHC products, room temperature stain amplification technologies, Uni-Trieve, Fc Receptor Blocker and Background Buster technologies to name a few. We will continue to serve the field with the same dedication and enthusiasm as in the past 28 years and we greatly appreciate your continued support.

QUALITY GUARANTEE

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PRIMARY ANTIBODIES

GUARANTEED 2 YEARS OF SHELF LIFE (FROM DELIVERY)



**ALL INNOVEX PRIMARY ANTIBODIES
ARE SUITABLE FOR PARAFFIN
SECTION STAINING**



PRIMARY ANTIBODIES

2 YEARS OF SHELF LIFE

INNOVEX offers an extensive line of BACKGROUND FREE, SHORT INCUBATION (10 minute) PRIMARY ANTIBODIES with 2 years of shelf life from delivery

**Suitable for paraffin and frozen tissue stainings,
no serum blocking required.**

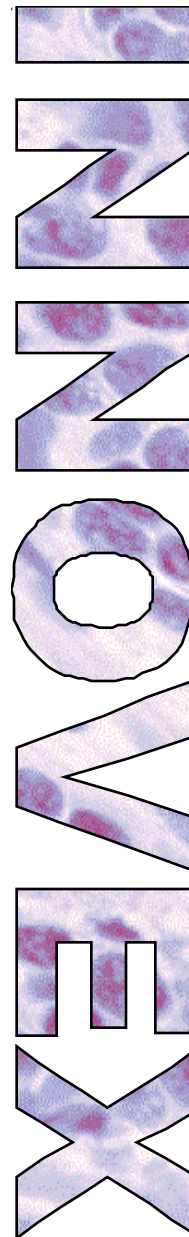
All Innovex primary antibodies are suitable for paraffin section staining and do not require long incubation, high heat antigen recovery or enzyme digestion when stained with Innovex Staining systems.

Advanced Features

- Background free
- No serum blocks or other blocking step required
- Wash free
- Guaranteed 2 years of shelf life from delivery
- Fixation independent: Antibodies perform with all histological fixatives
- Short incubation time, 10-20 minutes with Innovex staining systems
- 7 ml size for Ready-To-Use antibodies
- No-humidified chamber required for hours to overnight incubation
- All antibodies are affinity purified
- Automation compatible
- Compatible with all other staining kits, 30 minutes incubation
- Inexpensive



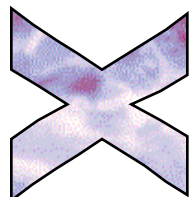
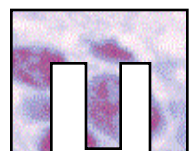
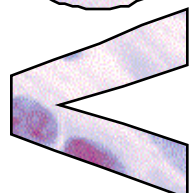
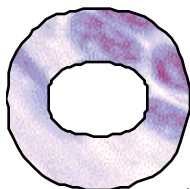
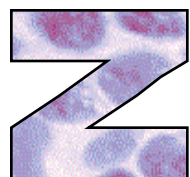
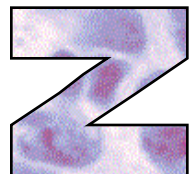
Innovex Progesterone receptor antibody, one hour of total staining time with Innovex STAT Staining System and with no heat retrieval



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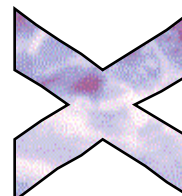
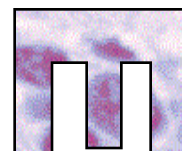
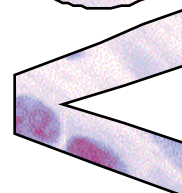
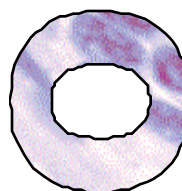
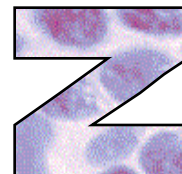
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ANTIBODY	SOURCE	PRE-TITERED (Ready-To-Use)	CONCENTRATE	POSITIVE CONTROL SLIDES (Set of 5/ Set of 25)
ACTH (Adrenocorticotrophic Hormone)	Rabbit	PAB395P 7 ml	PAB395C 0.5 ml	Pituitary gland TS395/TS395-25
Actin, Smooth Muscle Specific 1A4	Mouse	MAB343P 7 ml	MAB343C 0.5 ml	Colon, smooth muscle TS343/TS343-25
Actin, Muscle-Specific HHF35	Mouse	MAB342P 7 ml	MAB342C 0.5 ml	Striated (skeletal) muscle TS342/TS342-25
Actinin, alpha	Mouse	MAB552P 5 ml	MAB552C 0.5 ml	Muscle TS552/TS552-25
Adhesion Molecules		(see CD markers)		
Albumin	Rabbit	PAB397P 7 ml	PAB397C 0.5 ml	Liver TS397/TS397-25
ALK-1	Mouse	-----	MAB663C 0.5 ml	Lymph Node/Appendix TS663/TS663-25
Alpha-1-Antichymotrypsin	Rabbit	PAB399P 7 ml	PAB399C 0.5 ml	Liver/Colon TS399/TS399-25
Alpha-1-Antitrypsin	Rabbit	PAB398P 7 ml	PAB398C 0.5 ml	Liver TS398/TS398-25
Alpha-Fetoprotein	Mouse	MAB425P 7 ml	MAB425C 0.5 ml	Fetal Liver TS425/TS425-25
Alpha-Fetoprotein	Rabbit	PAB324P 7 ml	PAB324C 0.5 ml	Fetal Liver TS324/TS324-25
Amylase, pancreatic	Mouse	-----	MAB719C 0.5 ml	Pancreas TS719/TS719-25
Amyloid-Beta		(see Beta Amyloid)		
Androgen Receptor	Mouse	-----	MAB520C 0.5 ml	Prostate carcinoma TS520/TS520-25
B cells (see CD markers)				
bcl-2 Oncoprotein	Mouse	MAB402P 5 ml	MAB402C 0.5 ml	Tonsil/Follicular lymphomas TS402/TS402-25

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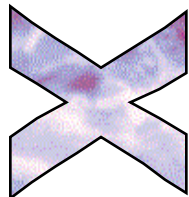
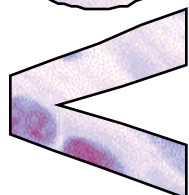
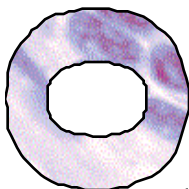
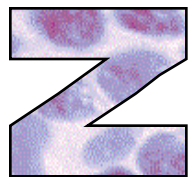
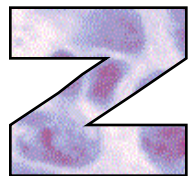
PRIMARY ANTIBODIES • SHORT INCUBATION (10 MINUTES)

ANTIBODY	SOURCE	PRE-TITERED (Ready-To-Use)	CONCENTRATE	POSITIVE CONTROL SLIDES (Set of 5/ Set of 25)
bcl-2 Oncoprotein	Rabbit	PAB508P 7 ml	PAB508C 0.5 ml	Tonsil/Follicular lymphomas TS508/TS508-25
bcl-6 Oncoprotein	Mouse	-----	MAB899C 0.5 ml	Tonsil/Follicular lymphomas TS899/TS899-25
bcl-10 Oncoprotein	Mouse	-----	MAB669C 0.5 ml	Breast/Lymphomas TS669/TS669-25
Beta-2-Microglobulin	Rabbit	-----	PAB757C 0.5 ml	Spleen TS757/TS757-25
Beta Amyloid	Mouse	-----	MAB721C 0.5 ml	Brain TS721/TS721-25
Bombesin	Rabbit	PAB403P 7 ml	PAB403C 0.5 ml	Pancreas/Intestine TS403/TS403-25
BRDU (Bromodeoxyuridine)	Mouse	-----	MAB330C 0.5 ml	BRDU incorporated tissue TS330/TS330-25
Breast Tumor Antigen (CA-15-3)	Mouse	MAB521P 5 ml	MAB521C 0.5 ml	Breast carcinoma TS521/TS521-25
Bromodeoxyuridine		(see BRDU)		
c-erb-2 Oncoprotein (Her-2/neu)	Mouse	MAB333P 7 ml	MAB333C 0.5 ml	Breast Cacinoma TS333/TS333-25
c-erb-2 Oncoprotein	Rabit	MAR544P 5 ml	MAR544C 0.5 ml	Breast Carcinoma TS544/TS544-25
c-erb-3 Oncoprotein	Mouse	MAB775P 5 ml	MAB775C 0.5 ml	Pancreatic tumor TS775/TS775-25
CA 15-3	See Breast Tumor Antigen			
CA19-9 (Sialyl Lewis a)	Mouse	-----	MAB381C 0.5 ml	Colon TS381/TS381-25
CA50 (Carcinoma Associated Mucin Antigen)	Mouse	MAB558P 5 ml	MAB558C 0.5 ml	Colon or rectal carcinoma TS558/TS558-25

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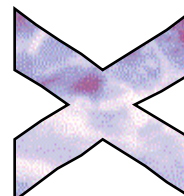
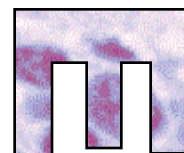
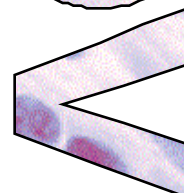
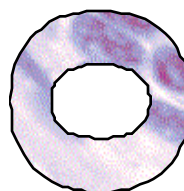
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ANTIBODY	SOURCE	PRE-TITERED (Ready-To-Use)	CONCENTRATE	POSITIVE CONTROL SLIDES (Set of 5/ Set of 25)
CA125 (Ovarian Cancer Antigen)	Mouse	MAB559P 5 ml	MAB559C 0.5 ml	Ovarian carcinoma TS559/TS559-25
CA242 (Tumor Associated Mucin Antigen)	Mouse	MAB560P 5 ml	MAB560C 0.5 ml	Colon carcinoma TS560/TS560-25
Calcitonin	Rabbit	PAB331P 7 ml	PAB331C 0.5 ml	Thyroid carcinoma/thyroid TS331/TS331-25
Carcinoma Associated Mucin Antigen (See CA50)				
Cathepsin B	Rabbit	-----	PAB860C 0.5 ml	Liver TS860/TS860-25
Cathepsin D	Mouse	-----	MAB316C 0.5 ml	Breast carcinoma TS316/TS316-25
Cathepsin G	Rabbit	-----	PAB405C 0.5 ml	Thymus/ Tonsil TS405/TS405-25
Cathepsin H	Rabbit	-----	PAB866C 0.5 ml	Liver TS866/TS866-25
CD1a, Thymocytes	Mouse	MAB418P 5 ml	MAB418C 0.5 ml	Thymus /Tonsil TS418/TS418-25
CD2	Mouse	-----	MAB853C 0.5 ml	T Cell Lymphoma TS853/TS853-25
CD3, Pan T cells	Mouse	MAB547P 5 ml	MAB547C 0.5 ml	Lymph node/Tonsil TS547/TS547-25
CD4, T Helper/Inducer	Mouse	MAB466P 5 ml	MAB466C 0.5 ml	Lymph node/Skin TS466/TS466-25
CD5, T Lymphocytes	Mouse	MAB509P 5 ml	MAB509C 0.5 ml	T cell lymphoma/ Tonsil TS509/TS509-25
CD7	Mouse	-----	MAB863C 0.5 ml	Tonsil TS863/TS863-25
CD8, Lymphocytes	Mouse	MAB470P 5 ml	MAB470C 0.5 ml	Lymph node/ Tonsil TS470/TS470-25

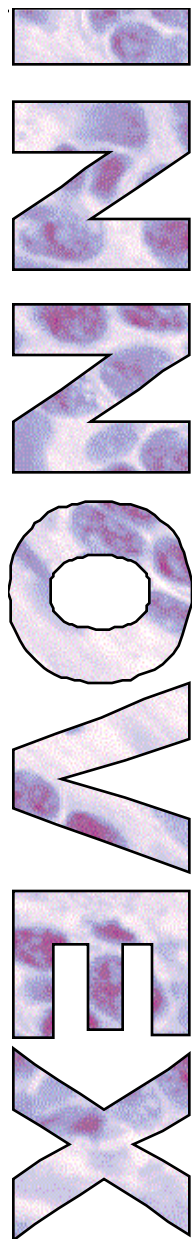
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ANTIBODY	SOURCE	PRE-TITERED (Ready-To-Use)	CONCENTRATE	POSITIVE CONTROL SLIDES (Set of 5/ Set of 25)
CD10 (CALLA)	Mouse	MAB320P 5 ml	MAB320C 0.5 ml	Burkitt's lymphoma TS320/TS320-25
CD11a, integrin α 1 (LFA-1)	Mouse	MAB554P 5 ml	MAB554C 0.5 ml	Spleen TS554/TS554-25
CD11b (Mac-1)	Mouse	MAB555P 5 ml	MAB555C 0.5 ml	Tonsil/ Lymph node TS555/TS555-25
CD11c	Mouse	-----	MAB896C 0.5 ml	Tonsil/ Lymph node TS896/TS896-25
CD13	Mouse	-----	MAB867C 0.5 ml	Liver TS867/TS867-25
CD14 (Monocytes/ Macrophages)	Mouse	MAB473P 5 ml	MAB473C 0.5 ml	Tonsil/ Lymph node TS473/TS473-25
CD15, Granulocytes (Reed Sternberg Cells)	Mouse	MAB326P 7 ml	MAB326C 0.5 ml	Hodgkin's lymphoma TS326/TS326-25
CD16, Natural Killer Cells	Mouse	MAB764P 5 ml	MAB764C 0.5 ml	Small intestine/Tonsil TS764/TS764-25
CD18 (Integrin β 2 Subunit)	Mouse	MAB432P 5 ml	MAB432C 0.5 ml	Bone marrow TS432/TS432-25
CD20 (L26), B Cells	Mouse	MAB327P 7 ml	MAB327C 0.5 ml	Tonsil TS327/TS327-25
CD 21	Mouse	-----	MAB661C 0.5 ml	Tonsil/Follicular lymphoma TS661/TS661-25
CD 22	Mouse	-----	MAB873C 0.5 ml	Tonsil TS873/TS873-25
CD23	Mouse	-----	MAB871C 0.5 ml	Tonsil TS871/TS871-25
CD25 (Interleukin-2 Receptor)	Mouse	MAB535P 5 ml	MAB535C 0.5 ml	Tonsil TS535/TS535-25

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ANTIBODY	SOURCE	PRE-TITERED (Ready-To-Use)	CONCENTRATE	POSITIVE CONTROL SLIDES (Set of 5/ Set of 25)
CD 27	Mouse	-----	MAB845C 0.5 ml	Tonsil TS845/TS845-25
CD 29	Mouse	-----	MAB849C 0.5 ml	Tonsil TS849/TS849-25
CD30, Ki-1 antigen (Reed Steinberg cells)	Mouse	MAB461P 5 ml	MAB461C 0.5 ml	Anaplastic lymphoma TS461/TS461-25
CD31 (PECAM) Adhesion Molecule	Mouse	MAB346P 5 ml	MAB346C 0.5 ml	Breast carcinoma/ Skin TS346/TS346-25
CD34 (Endothelial Cell Marker)	Mouse	MAB430P 5 ml	MAB430C 0.5 ml	Skin/ Placenta /Tonsil TS430/TS430-25
CD43	Mouse	-----	MAB893C 0.5 ml	Tonsil/ Mantle cell lymphoma TS893/TS893-25
CD44 (HCAM) (Homing Receptor, Adhesion Molecule)	Mouse	MAB348P 5 ml	MAB348C 0.5 ml	Breast carcinoma/ Tonsil TS348/TS348-25
CD45 (LCA)	Mouse	MAB321P 7 ml	MAB321C 0.5 ml	Tonsil TS321/TS321-25
CD45RA, B cell	Mouse	MAB870P 7 ml	MAB870C 0.5 ml	Lymph node TS870/TS870-25
CD45RO (UCHL-1)	Mouse	MAB328P 7 ml	MAB328C 0.5 ml	Tonsil TS328/TS328-25
CD 51	Mouse	-----	MAB837C 0.5 ml	Tonsil TS837/TS837-25
CD54 (ICAM-1) Adhesion Molecule	Mouse	MAB351P 5 ml	MAB351C 0.5 ml	Tonsil/Intestine TS351/TS351-25
CD56 (NCAM) (Neural Cell Adhesion Molecule)	Mouse	MAB352P 5 ml	MAB352C 0.5 ml	Neuroblastoma/Brain TS352/TS352-25
CD57, Pan Nk cell Marker (Natural Killer Cells, NK Cells)	Mouse	MAB353P 5 ml	MAB353C 0.5 ml	Lymph node/Tonsil TS353/TS353-25



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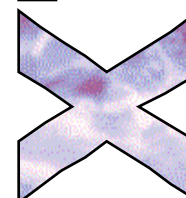
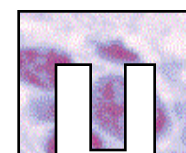
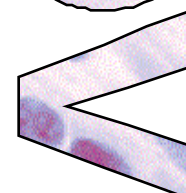
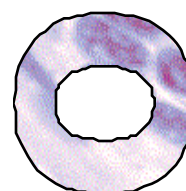
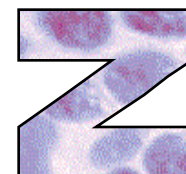
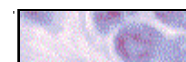
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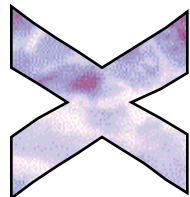
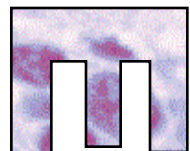
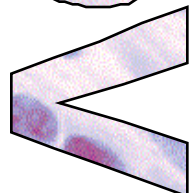
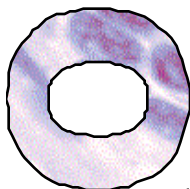
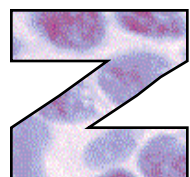
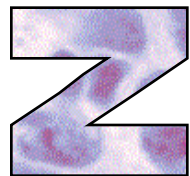
PRIMARY ANTIBODIES • SHORT INCUBATION (10 MINUTES)

ANTIBODY	SOURCE	PRE-TITERED (Ready-To-Use)	CONCENTRATE	POSITIVE CONTROL SLIDES (Set of 5/ Set of 25)
CD62E (ELAM-1) (Adhesion Molecule)	Mouse	MAB354P 5 ml	MAB354C 0.5 ml	Tonsil TS354/TS354-25
CD62L (L-selectin, LECAM-1)	Mouse	MAB573P 5 ml	MAB573C 0.5 ml	Tonsil TS573/TS573-25
CD62P (P-selectin)	Mouse	MAB574P 5 ml	MAB574C 0.5 ml	Reactive lymph node TS574/TS574-25
CD68, Macrophage	Mouse	MAB894P 7 ml	MAB894C 0.5 ml	Tonsil/ Small intestine/ Hodgkin's lymphoma TS894/TS894-25
CD71, Transferrin Receptor	Mouse	MAB770P 5 ml	MAB770C 0.5 ml	Tonsil TS770/TS770-25
CD79a, B cells	Mouse	-----	MAB865C 0.5 ml	T cell lymphoma/ Large cell lymphoma TS865/TS865-25
CD83	Mouse	-----	MAB880C 0.5 ml	Tonsil/Hodgkin's Lymphoma TS880/TS880-25
CD99, MIC Gene Product	Mouse	-----	MAB897C 0.5 ml	Ewing's Sarcoma TS897/TS897-25
CD103	Mouse	-----	MAB347C 0.5 ml	Intestinal Lymphocytes/ Intestine TS347/TS347-25
CD105 (Endoglin)	Mouse	MAB859P 5 ml	MAB859C 0.5 ml	Tonsil TS859/TS859-25
CD106 (VCAM) Adhesion Molecule	Mouse	MAB357P 5 ml	MAB357C 0.5 ml	Skin/Intestine TS357/TS357-25
CD 117	Mouse	-----	MAB892C 0.5 ml	Skin TS892/TS892-25
CD138	Mouse	-----	MAB798C 0.5 ml	Small Intestine TS798/TS798-25
CEA (Carcinoembryonic antigen)	Mouse	MAB318P 7 ml	MAB318C 0.5 ml	Colon carcinoma TS318/TS318-25

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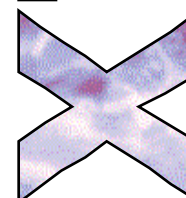
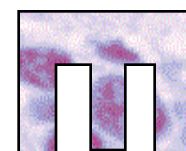
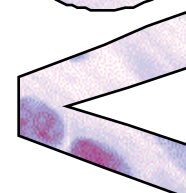
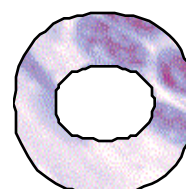
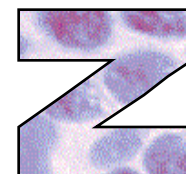
PRIMARY ANTIBODIES • SHORT INCUBATION (10 MINUTES)

ANTIBODY	SOURCE	PRE-TITERED (Ready-To-Use)	CONCENTRATE	POSITIVE CONTROL SLIDES (Set of 5/ Set of 25)
Chlamydia	Rabbit	PAB406P 7 ml	PAB406C 0.5 ml	Infected cell culture N/A
Chorionic Gonadotropin (hCG)	Rabbit	PAB778P 7 ml	PAB778C 0.5 ml	Placenta TS778/TS778-25
Chorionic Gonadotropin Alpha Subunit (alpha-hCG)	Rabbit	PAB407P 7 ml	PAB407C 0.5 ml	Placenta TS407/TS407-25
Chorionic Gonadotropin, Beta Subunit (Beta-hCG)	Rabbit	PAB408P 7 ml	PAB408C 0.5 ml	Placenta TS408/TS408-25
Chromogranin A	Mouse	MAB322P 7 ml	MAB322C 0.5 ml	Parathyroid gland/ Pancreas TS322/TS322-25
Chymase, Mast cell	Mouse	-----	MAB779C 0.5 ml	Intestine TS779/TS779-25
Chymotrypsin	Mouse	MAB860P 5 ml	MAB860C 0.5 ml	Pancreas TS860/TS860-25
CMV (Cytomegalovirus)	Mouse	MAB337P 7 ml	MAB337C 0.5 ml	Infected culture N/A
Collagen Type I	Mouse	MAB409P 5 ml	MAB409C 0.5 ml	Cartilage/skin TS409/TS409-25
Collagen Type II	Rabbit	PAB410P 5 ml	PAB410C 0.5 ml	Cartilage/skin TS410/TS410-25
Collagen Type III	Mouse	MAB411P 5 ml	MAB411C 0.5 ml	Cartilage/skin TS411/TS411-25
Collagen Type IV	Mouse	MAB412P 5 ml	MAB412C 0.5 ml	Skin TS412/TS412-25
Collagen Type V	Rabbit	PAB413P 7 ml	PAB413C 0.5 ml	Placenta TS413/TS413-25
Collagen Type VI	Mouse	MAB414P 5 ml	MAB414C 0.5 ml	Skin/ Cartilage TS414/TS414-25

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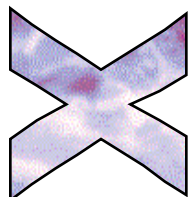
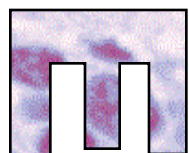
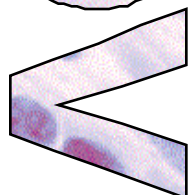
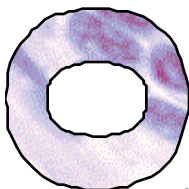
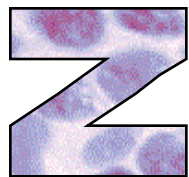
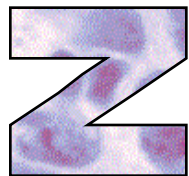
PRIMARY ANTIBODIES • SHORT INCUBATION (10 MINUTES)

ANTIBODY	SOURCE	PRE-TITERED (Ready-To-Use)	CONCENTRATE	POSITIVE CONTROL SLIDES (Set of 5/ Set of 25)
Collagen Type VII	Mouse	MAB415P 5 ml	MAB415C 0.5 ml	Skin/ Cartilage TS415/TS415-25
Colon Antigen, Lewis a (See CA19-9, Lewis a)				
Common Acute LymphoblasticLeukemia Antigen, CALLA (See CD10)				
Complement C1q	Rabbit	PAB419P 7 ml	PAB419C 0.5 ml	Lymphoma TS419/TS419-25
Complement C3	Rabbit	PAB420P 7 ml	PAB420C 0.5 ml	Lymphoma TS420/TS420-25
Complement C4	Rabbit	PAB421P 7 ml	PAB421C 0.5 ml	Lymphoma TS421/TS421-25
Cyclin A	Rabbit	-----	PAB781C 0.5 ml	Colon TS781/TS781-25
Cyclin B1	Rabbit	-----	PAB782C 0.5 ml	Mantla Zone lymphoma TS782/TS782-25
Cyclin D1	Mouse	MAB783P 5 ml	MAB783C 0.5 ml	Breast carcinoma TS783/TS783-25
Cytokeratin (Pan Cytokeratin)	Mouse	MAB785P 7 ml	-----	Breast carcinoma/Skin TS785/TS785-25
Cytokeratin, acidic Low MW (AE1)	Mouse	MAB450P 7 ml	MAB450C 0.5 ml	Skin TS450/TS450-25
Cytokeratin, basic High MW (AE3)	Mouse	MAB329P 7 ml	MAB329C 0.5 ml	Skin TS329/TS329-25
Cytokeratin (AE1/AE3) Blend	Mouse	MAB334P 7 ml	MAB334C 0.5 ml	Skin TS334/TS334-25
Cytokeratin 5	Mouse	-----	MAB898C 0.5 ml	Squamouse cell carcinoma/ Skin/Prostate TS898/TS898-25

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PRIMARY ANTIBODIES • SHORT INCUBATION (10 MINUTES)

ANTIBODY	SOURCE	PRE-TITERED (Ready-To-Use)	CONCENTRATE	POSITIVE CONTROL SLIDES (Set of 5/ Set of 25)
Cytokeratin 5/6	Mouse	MAB666P 5 ml	-----	Prostate/Tongue TS666/TS666-25
Cytokeratin 7	Mouse	MAB861P 7 ml	MAB861C 0.5 ml	Lung/Breast carcinoma TS861/TS861-25
Cytokeratin 8	Mouse	MAB427P 7ml	MAB427C 0.5 ml	Breast carcinoma TS427/TS427-25
Cytokeratin 10	Mouse	MAB428P 7 ml	MAB428C 0.5 ml	Skin TS428/TS428-25
Cytokeratin 14	Mouse	MAB387P 7 ml	MAB387C 0.5 ml	Breast carcinoma TS387/TS387-25
Cytokeratin 17	Mouse	MAB388P 7 ml	MAB388C 0.5 ml	Squamous cell carcinoma TS388/TS388-25
Cytokeratin 18	Mouse	MAB389P 7 ml	MAB389C 0.5 ml	Breast carcinoma TS389/TS389-25
Cytokeratin 19	Mouse	MAB336P 7 ml	MAB336C 0.5 ml	Adenocarcinoma TS336/TS336-25
Cytokeratin 20	Mouse	MAB424P 7 ml	-----	Adenocarcinoma of colon TS424/TS424-25
Cytokeratin 34bB4 (High MW, 68 kD)	Mouse	MAB440P 5 ml	-----	Squamous carcinoma TS440/TS440-25
Cytokeratin 34bE12 (High MW, 68, 58, 56.5, & 50 kD)	Mouse	MAB441P 5 ml	-----	Prostate carcinoma TS441/TS441-25
Cytomegalovirus (CMV) Early and late proteins (blend)	Mouse	MAB337P 7 ml	MAB337C 0.5 ml	Infected cell culture N/A
Desmin	Mouse	MAB344P 7 ml	MAB344C 0.5 ml	Tongue/Leiomyoma TS344/TS344-25
Dystrophin	Mouse	-----	MAB429C 0.5 ml	Muscle TS429/TS429-25

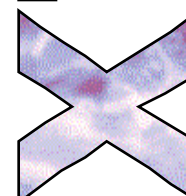
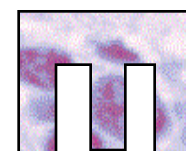
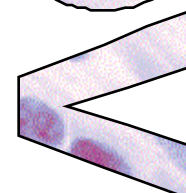
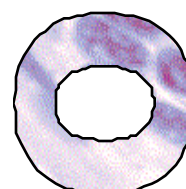
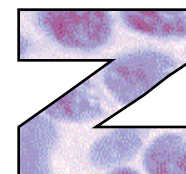
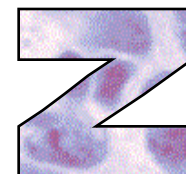
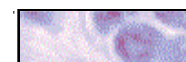


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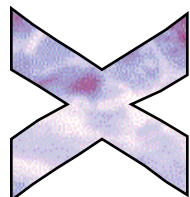
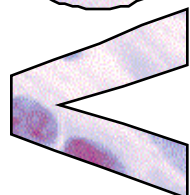
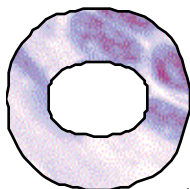
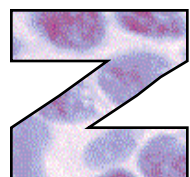
PRIMARY ANTIBODIES • SHORT INCUBATION (10 MINUTES)

ANTIBODY	SOURCE	PRE-TITERED (Ready-To-Use)	CONCENTRATE	POSITIVE CONTROL SLIDES (Set of 5/ Set of 25)
E-Cadherin	Mouse	MAB369P 5 ml	MAB369C 0.5 ml	Tonsil TS369/TS369-25
EBV		(see Epstein Barr Virus)		
ELAM-1		(see CD 62E)		
Endoglin		(see CD105)		
Endothelial Cells		(see CD34)		
Epidermal Growth Factor Receptor (EGFR)	Mouse	MAB325P 5 ml	MAB325C 0.5 ml	Lung/Breast carcinoma TS325/TS325-25
Epithelial Specific Antigen (ESA)	Mouse	MAB431P 7 ml	MAB431C 0.5 ml	Colon TS431/TS325-25
Epithelial Membrane Antigen (EMA)	Mouse	MAB338P 7 ml	MAB338C 0.5 ml	Breast carcinoma TS338/TS338-25
Epstein Barr Virus (EBV) Early and late protein	Mouse	-----	MAB875C 0.5 ml	Infected cell/Tissue N/A
Estradiol	Rabbit	PAB426P 7 ml	PAB426C 0.5 ml	Ovary TS426/TS426-25
Estrogen Receptor (ER1D5)	Mouse	MAB323P 5 ml	MAB323C 0.5 ml	Breast carcinoma TS323/TS323-25
Factor VIII (8) (von Willebrand Factor)	Mouse	MAB339P 7 ml	MAB339C 0.5 ml	muscle/Vascular tumors TS339/TS339-25
Factor XIII-a (13-a) (von Willebrand Factor)	Rabbit	PAB438P 7 ml	PAB438C 0.5 ml	Vascular tumors N/A
Ferritin	Rabbit	PAB439P 7 ml	PAB439C 0.5 ml	Liver TS439/TS439-25
Fibrinogen	Rabbit	PAB349P 7 ml	PAB349C 0.5 ml	Placenta TS349/TS349-25

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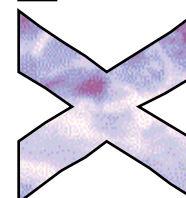
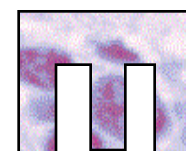
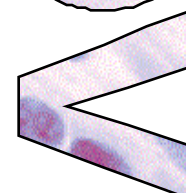
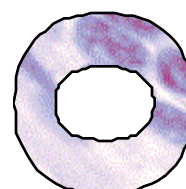
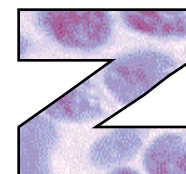
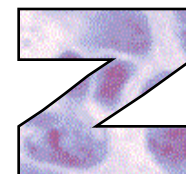
ANTIBODY	SOURCE	PRE-TITERED (Ready-To-Use)	CONCENTRATE	POSITIVE CONTROL SLIDES (Set of 5/ Set of 25)
Fibronectin	Rabbit	PAB350P 7 ml	PAB350C 0.5 ml	Intestine/Kidney TS350/TS350-25
Filamin	Mouse	MAB799P 5 ml	MAB799C 0.5 ml	Muscle TS799/TS799-25
Follicle Stimulating Hormone (FSH)	Rabbit	PAB443P 7 ml	PAB443C 0.5 ml	Anterior Pituitary TS443/TS443-25
Gastrin	Rabbit	PAB340P 7 ml	PAB340C 0.5 ml	Stomach TS340/TS340-25
GFAP (see Glial Fibrillary Acidic Protein)				
GI Tumor Marker (Sialy Lewis a)		See CA-19-9		
Glial Fibrillary Acidic Protein (GFAP)	Mouse	MAB341P 7 ml	MAB341C 0.5 ml	Brain TS341/TS341-25
Glucagon	Rabbit	PAB445P 7 ml	PAB445C 0.5 ml	Pancreas TS445/TS445-25
Granular Membrane Protein		(see CD62)		
Growth Hormone (hGH)	Rabbit	PAB358P 7 ml	PAB358C 0.5 ml	Pituitary gland TS358/TS358-25
HCAM (homing receptor)		(see CD44)		
hCG		(see Chorionic Gonadotropins)		
Heat Shock Protein (HSP70)	Mouse	MAB447P 5 ml	MAB447C 0.5 ml	Breast carcinoma TS447/TS447-25
Heat Shock Protein (HSP73)	Mouse	MAB812P 5 ml	MAB812C 0.5 ml	Breast carcinoma TS812/TS812-25
Heat Shock Protein (HSP27)	Mouse	MAB533P 5 ml	MAB533C 0.5 ml	Breast carcinoma TS533/TS533-25



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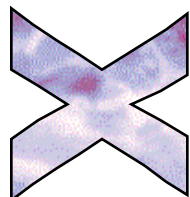
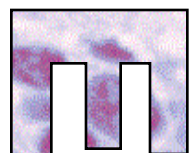
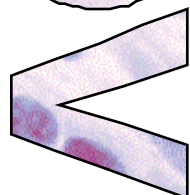
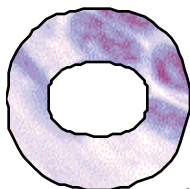
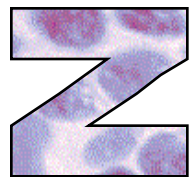
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Helicobacter Pylori	Rabbit	PAB852P 7 ml	PAB852C 0.5 ml	Infected gastrointestinal N/A
Hepatitis A	Mouse	-----	MAB814C 0.5 ml	Infected liver N/A
Hepatitis B, Core Antigen (HBcAg)	Rabbit	-----	PAB362C 0.5 ml	Infected Liver N/A
Hepatitis B, Surface Antigen (HbsAg)	Rabbit	-----	PAB361C 0.5 ml	Infected liver N/A
Hepatitis C	Mouse	-----	MAB731C 0.5 ml	Infected Liver N/A
Herpes Simplex Virus I & II (Blend)	Rabbit	PAB359P 7 ml	PAB359C 0.5 ml	Infected tissue TS359/TS359-25
HMB45, Melanoma	Mouse	MAB390P 7 ml	MAB390C 0.5 ml	Melanoma TS390/TS390-25
Homing Receptor		(see CD44)		
Human Milk Fat Globule	Mouse	MAB564P 7 ml	MAB564C 0.5 ml	Breast carcinoma TS564/TS564-25
Human Papilloma Virus (HPV)	Mouse	MAB482P 7 ml	MAB482C 0.5 ml	Infected cervix TS482/TS482-25
ICAM-1		(see CD54)		
IgA, Human	Mouse	MAB455P 7 ml	MAB455C 0.5 ml	Lymph node/Tonsil TS455/TS455-25
IgD, Human	Mouse	MAB453P 7 ml	MAB453C 0.5 ml	Lymph node/Tonsil TS453/TS453-25
IgE, Human	Mouse	MAB454P 7 ml	MAB454C 0.5 ml	Lymph node/Tonsil TS454/TS454-25
IgG, Human	Mouse	MAB456P 7 ml	MAB456C 0.5 ml	Lymph node/Tonsil TS456/TS456-25

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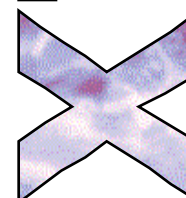
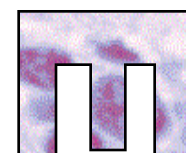
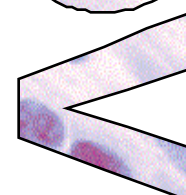
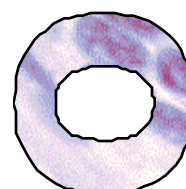
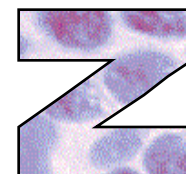
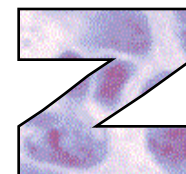
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IgM, Human	Mouse	MAB457P 7 ml	MAB457C 0.5 ml	Lymph node/Tonsil TS457/TS457-25
Insulin	Mouse	MAB391P 7 ml	MAB391C 0.5 ml	Pancreas TS391/TS391-25
Integrins		(See CD11a, CD18)		
Interleukin-2 Receptor		(See CD25)		
Kappa	Mouse	MAB363P 7 ml	MAB363C 0.5 ml	Reactive lymph node/ Tonsil TS363/TS363-25
Ki-1 Antigen (CD30)	Mouse	MAB461P 5 ml	MAB461C 0.5 ml	Lymphoma TS461/TS461-25
Ki-67	Mouse	MAB368P 5 ml	MAB368C 0.5 ml	Lymphoma TS368/TS368-25
Ki-67	Rabbit Monoclonal	MAB876P 5 ml	MAB876C 0.5 ml	Lymphoma TS876/TS876-25
L26		(see CD20)		
L-selectin, LECAM-1		(see CD 62L)		
Lambda	Mouse	MAB364P 7 ml	MAB364C 0.5 ml	Tonsil TS364/TS364-25
Laminin	Rabbit	PAB463P 7 ml	PAB463C 0.5 ml	Skin TS463/TS463-25
LCA		(see CD45)		
Leukocyte Common Antigen (LCA);		(see CD45)		
LN5		(see Macrophage marker)		
Lutenizing Hormone	Rabbit	PAB467P 7 ml	PAB467C 0.5 ml	Pituitary gland TS467/TS467-25

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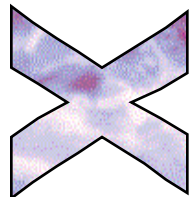
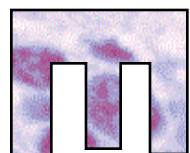
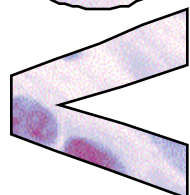
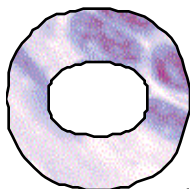
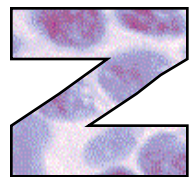
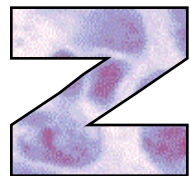
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Lysozyme	Rabbit	PAB367P 7 ml	PAB367C 0.5 ml	Tonsil TS367/TS367-25
Mac-1 (CD11b)	Mouse	MAB555P 5 ml	MAB555C 0.5 ml	Lymph node/Tonsil TS555/TS555-25
Macrophage Marker (LN5)	Mouse	MAB468P 7 ml	MAB468C 0.5 ml	Tonsil TS468/TS468-25
MAM-6, Human (Milk Fat Globular Protein)	Mouse	MAB356P 7 ml	MAB356C 0.5 ml	Breast carcinoma TS356/TS356-25
Mart-1	Mouse	MAB556P 7 ml	-----	Melanoma TS556/TS556-25
Melanoma (See HMB45)				
Milk Fat Globule		(see Human Milk Fat Globule)		
Monocytes		(see CD14)		
Myelin Basic Protein	Rabbit	PAB474P 7 ml	PAB474C 0.5 ml	Brain TS474/TS474-25
Myoglobin	Rabbit	PAB475P 7 ml	PAB475C 0.5 ml	Striated (skeletal muscle) TS475/TS475-25
Myosin, Skeletal Muscle	Mouse	MAB476P 7 ml	MAB476C 0.5 ml	Tongue/Striated TS476/TS476-25
Natural Killer Cells, NK cells		(see CD Markers)		
NCAM		(see CD56)		
Neuroblastoma	Mouse	MAB370P 7 ml	MAB370C 0.5 ml	Neuroblastoma TS370/TS370-25
Neurofilament Protein	Mouse	MAB471P 7 ml	MAB471C 0.5 ml	Normal Brain TS471/TS471-25
Neurophysin	Mouse	MAB530P 5 ml	MAB530C 0.5 ml	Pituitary Gland TS530/TS530-25

PRIMARY
ANTIBODIES

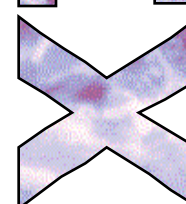
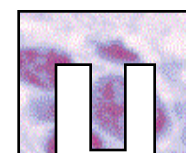
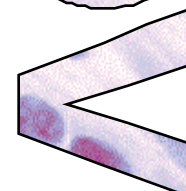
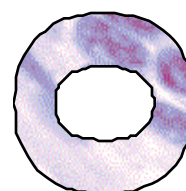
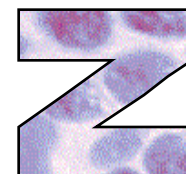
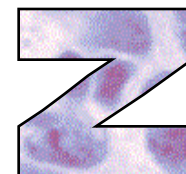
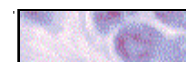
PRIMARY ANTIBODIES • SHORT INCUBATION (10 MINUTES)

ANTIBODY	SOURCE	PRE-TITERED (Ready-To-Use)	CONCENTRATE	POSITIVE CONTROL SLIDES (Set of 5/ Set of 25)
NSE (Neuron Specific Enolase)	Mouse	MAB372P 7 ml	MAB372C 0.5 ml	Ganglioma TS372/TS372-25
Ovarian Cancer Marker, CA125	Mouse	MAB559P 5 ml	MAB559C 0.5 ml	Ovarian carcinoma TS559/TS559-25
p21, Ras Oncoprotein	Mouse	-----	MAB373C 0.5 ml	Reactive lymph node TS373/TS373-25
p-53 Oncoprotein	Mouse	MAB379P 5 ml	MAB379C 0.5 ml	Colon carcinoma TS379P/TS379P-25
P-glycoprotein (Multi Drug Resistance Marker)	Mouse	MAB393P 5 ml	MAB393C 0.5 ml	Liver/Kidney TS393/TS393-25
P-Selectin (See CD62)				
Pan Cytokeratins	Mouse	MAB785P 7 ml	-----	Breast carcinoma TS785/TS785-25
Pancreatic Amylase	Mouse	-----	MAB719C 0.5 ml	Pancreas TS719/TS719-25
Pancreatic Polypeptide	Rabbit	-----	PAB720C 0.5 ml	Pancreas TS720/TS720-25
Papilloma Virus (HPV)	Mouse	MAB482P 7 ml	MAB482C 0.5 ml	Infected cervix TS482/TS482-25
Parathyroid Hormone	Rabbit	PAB488P 7 ml	PAB488C 0.5 ml	Parathyroid gland TS488/TS488-25
PCNA (Proliferating Cell Nuclear Antigen)	Mouse	MAB374P 5 ml	MAB374C 0.5 ml	Colon carcinoma TS374/TS374-25
PECAM (see CD31)				
PLAP	Mouse	MAB376P 7 ml	MAB376C 0.5 ml	Placenta TS376/TS376-25
Pneumocystis Carinii	Mouse	MAB375P 7 ml	MAB375C 0.5 ml	Infected lung tissue TS375/TS375-25

PRIMARY
ANTIBODIES

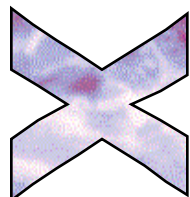
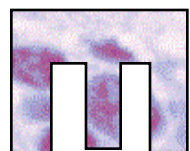
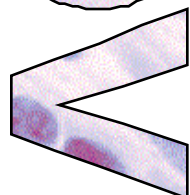
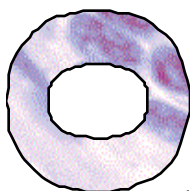
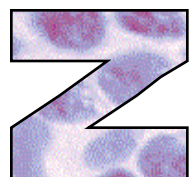
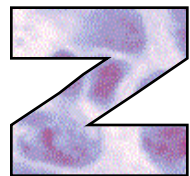
PRIMARY ANTIBODIES • SHORT INCUBATION (10 MINUTES)

ANTIBODY	SOURCE	PRE-TITERED (Ready-To-Use)	CONCENTRATE	POSITIVE CONTROL SLIDES (Set of 5/ Set of 25)
Progesterone	Mouse	MAB489P 7 ml	MAB489C 0.5 ml	Ovary TS489/TS489-25
Progesterone Receptor (PR)	Mouse	MAB380P 5 ml	MAB380C 0.5 ml	Breast carcinoma TS380/TS380-25
Prolactin	Rabbit	PAB485P 7 ml	PAB485C 0.5 ml	Pituitary gland TS485/TS485-25
Prostate Specific Antigen (PSA)	Rabbit	PAB377P 7 ml	PAB377C 0.5 ml	Prostate carcinoma TS377/TS377-25
Prostate Specific Acid- Phosphatase (PSAP)	Mouse	MAB378P 7 ml	MAB378C 0.5 ml	Prostate carcinoma TS378/TS378-25
Reed Sternberg Cells		(see CD15 & CD30)		
Rhabdomyosarcoma	Mouse	MAB566P 5 ml	MAB566C 0.5 ml	Rhabdomyosarcoma TS566/TS566-25
S-100 Protein	Mouse	MAB319P 7 ml	MAB319C 0.5 ml	Melanoma TS319/TS319-25
Secretin	Rabbit	-----	PAB492C 0.5 ml	Intestine TS492/TS492-25
Serotonin	Rabbit	-----	PAB493C 0.5 ml	Stomach/Intestine TS493/TS493-25
Sialyl Lewis a	Mouse	-----	MAB381C 0.5 ml	Colon TS381/TS381-25
Somatostatin	Rabbit	PAB531P 7ml	PAB531C 0.5 ml	Intestine/Pancreas TS531/TS531-25
Synaptophysin	Mouse	MAB382P 7ml	MAB382C 0.5 ml	Pancreas/Phaechromocytoma TS382/TS382-25
Talin	Mouse	-----	MAB739C 0.5 ml	Alzheimer's brain N/A
TDT (Terminal Deoxynucleotidyl Transferase)	Mouse	MAB791P 7 ml	MAB791C 0.5 ml	Thymus TS791/TS791-25

PRIMARY
ANTIBODIES

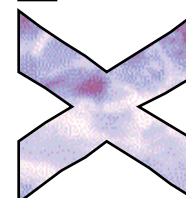
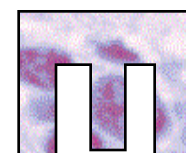
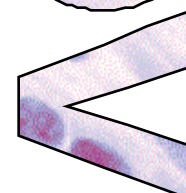
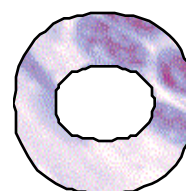
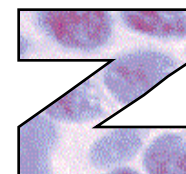
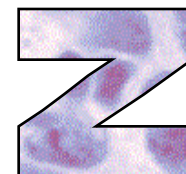
PRIMARY ANTIBODIES • SHORT INCUBATION (10 MINUTES)

ANTIBODY	SOURCE	PRE-TITERED (Ready-To-Use)	CONCENTRATE	POSITIVE CONTROL SLIDES (Set of 5/ Set of 25)
Tenascin	Mouse	-----	MAB740C 0.5 ml	Breast/Lung carcinoma TS740/TS740-25
Testosterone	Mouse	MAB741P 7 ml	MAB741C 0.5 ml	Testes TS741/TS741-25
Thyroglobulin	Mouse	MAB384P 7 ml	MAB384C 0.5 ml	Thyroid carcinoma TS384/TS384-25
Toxoplasma Gondii	Mouse	MAB385P 7 ml	MAB385C 0.5 ml	Infected tissue TS385/TS385-25
Transferrin	Rabbit	PAB498P 7 ml	PAB498C 0.5 ml	Liver TS498/TS498-25
Transferrin Receptor (see CD71)				
Tubulin, alpha subunit	Mouse	MAB494P 7 ml	MAB494C 0.5 ml	Lung TS494/TS494-25
Tubulin, beta subunit	Mouse	MAB495P 7 ml	MAB495C 0.5 ml	Lung TS495/TS495-25
Tubulin, alpha & beta (Blend)	Mouse	MAB496P 7 ml	MAB496C 0.5 ml	Lung TS496/TS496-25
Tumor Associated Mucin Antigen (CA242)	Mouse	MAB560P 5 ml	MAB560C 0.5 ml	Colon carcinoma TS560/TS560-25
Tumor Necrosis Factor (alpha subunit)	Rabbit	-----	PAB744C 0.5 ml	N/A
Tumor Necrosis Factor (Beta subunit)	Rabbit	-----	PAB745C 0.5 ml	N/A
Ubiquitin	Rabbit	-----	PAB749C 0.5 ml	Alzheimer's brain N/A
UCHL-1 (See CD45RO)				
Ulex europaeus	Rabbit	PAB750P 7 ml	PAB750C 0.5 ml	N/A

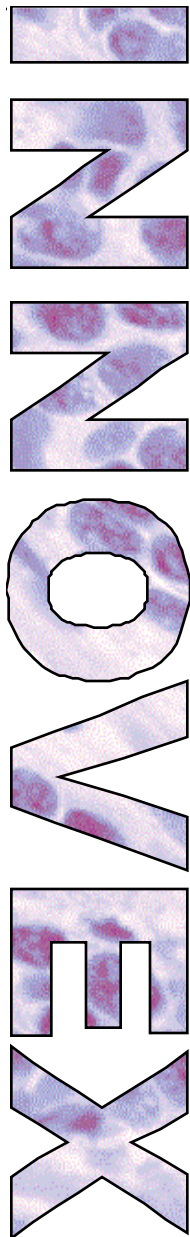
PRIMARY
ANTIBODIES

PRIMARY ANTIBODIES • SHORT INCUBATION (10 MINUTES)

ANTIBODY	SOURCE	PRE-TITERED (Ready-To-Use)	CONCENTRATE	POSITIVE CONTROL SLIDES (Set of 5/ Set of 25)
Urokinase	Rabbit	-----	PAB751C 0.5 ml	N/A
Vasoactive Intestinal Polypeptide (VIP)	Rabbit	PAB532P 7ml	PAB532C 0.5 ml	Gastrointestinal tissue TS532/TS532-25
Vasopressin	Rabbit	-----	PAB795C 0.5 ml	Pituitary gland TS795/TS795-25
VCAM (See CD106)				
Villin	Mouse	MAB504P 7 ml	MAB504C 0.5 ml	Intestine/Kidney TS504/TS504-25
Vimentin	Mouse	MAB386P 7 ml	MAB386C 0.5 ml	Tonsil TS386/TS386-25
Vinculin	Mouse	MAB506P 7 ml	MAB506C 0.5 ml	Colon TS506/TS506-25
Vitamin D Receptor	Mouse	-----	MAB507C 0.5 ml	Breast Carcinoma TS507/TS507-25
Vitronectin	Rabbit	-----	PAB753C 0.5 ml	Tonsil TS753/TS753-25
Von Willebrand Factor (See Factor 8)				
.....				

PRIMARY
ANTIBODIES

MULTI-TUMOR CONTROL SLIDES



Multi-Tumor Control Slides

A single slide serves as both a positive and a negative control slide. All slides are fixed in formalin and embedded in paraffin. Sections are mounted on positively charged glass slides and sections are 5 microns thick.

Breast Panel Multi-Tumor Control Slides.

Each set consists of five breast tumor tissues positive for ER, PR, KI-67, BRST-2, E-Cadherin and Cytokeratin for sentinel nodes.

Set of 5: Product # TS901

Set of 25: Product # TS01-25

CD Marker Multi-Tumor Control Slides.

Each set contains non-hodgkins lymphoma, mantle cell lymphoma and tonsil. Positive for 11 CD Markers: CD3, CD5, CD10, CD15, CD20, CD23, CD45, CD45A, CD45RO and Cyclin D1.

Set of 5: Product # TS902

Set of 25: Product # TS902-25

Core Panel Multi-Tumor Control Slides.

Each set includes brain, thyroid, lung, muscle, stomach, bowel (small and large), prostate, kidney, uterus, liver, pancreas, breast and skin.

Set of 5: Product # TS900

Set of 25: Product #TS900-25



UNI-TRIEVE, UNIVERSAL RETRIEVAL REAGENT

UNI-TRIEVE, A Gentle Retrieval Solution applicable to all Primary Antibodies

- Powerful and simple retrieval at 60°C
- One Solution retrieves all antibodies and tissues
- pH independent
- Soak slides in 60°C Uni-Trieve for 30 minutes or 75°C for 15 minutes
- No cooling period required
- Heat device: A simple water bath
- No tissue damage
- No morphology damage
- No Background
- Retrieves delicate tissues, bone marrow, CD markers, brain, etc
- Replaces high heat retrieval (HIER) and enzyme digestion



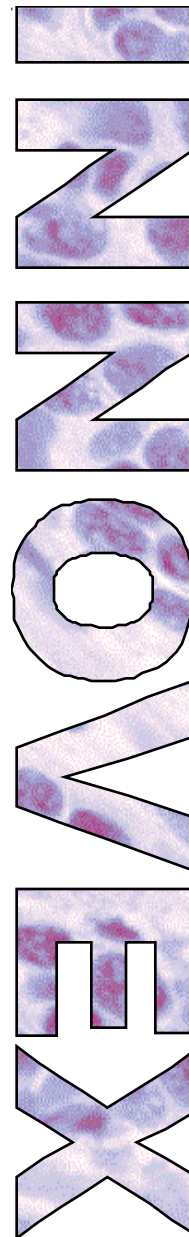
Use a Water Bath



No More Citrate or High pH Buffers

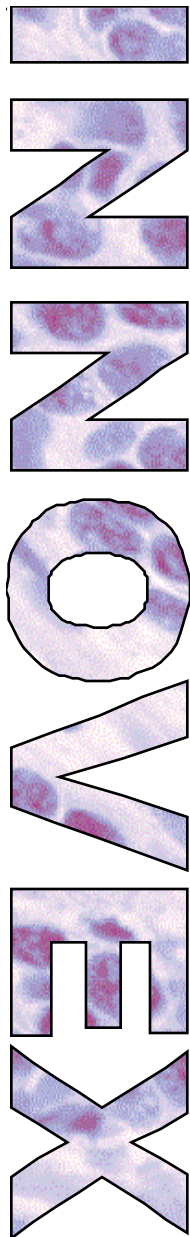
PRODUCT ORDERING INFORMATION

Product	Number	Size
Uni-Trieve	NB325	1 Liter



UNI-TRIEVE

FOR NEGATIVE CONTROL SLIDE STAINING



Negative control sera and isotype controls are employed in place of primary antibody for staining negative control slides. Negative control slides void of staining verifies the staining specificity of the primary antibody for the target antigen as stained in positive control and case slides.

Negative Control Sera

Rabbit negative control sera; For use in parallel with rabbit primary antibodies

Ready-To-Use (7 ml): # NCP801R

Mouse negative control sera (ascites fluid); For use in parallel with mouse monoclonal antibodies

Ready-To-Use (7 ml): # NCM802M

Sheep negative control sera; For use in parallel with sheep primary antibodies

Ready-To-Use (7 ml): # NC909

Goat negative control sera; For use in parallel with goat primary antibodies

Ready-To-Use (7 ml): # NC912

Chicken negative control sera; For use in parallel with chicken primary antibodies

Ready-To-Use (7 ml): # NC914

Rat negative control sera; For use in parallel with rat primary antibodies

Ready-To-Use (7 ml): # NC915

Isotype Controls

Isotype controls are employed as the negative control reagent for staining negative control slides when monoclonal primary antibody of the same isotype is stained.

Mouse IgG isotype control; For use in parallel with mouse monoclonal IgG isotype primary antibodies

Ready-To-Use (7 ml): # NC903

Concentrate (0.5 ml): # NC903C

Mouse IgG1 isotype control; For use in parallel with mouse monoclonal IgG1 isotype primary antibodies

Ready-To-Use (7 ml): # NC904

Concentrate (0.5 ml): # NC904C

Mouse IgG2a isotype control; For use in parallel with mouse monoclonal IgG2a isotype primary antibodies

Ready-To-Use (7 ml): # NC905

Concentrate (0.5 ml): # NC905C

Mouse IgG2b isotype control; For use in parallel with mouse monoclonal IgG2b isotype primary antibodies

Ready-To-Use (7 ml): # NC907

Concentrate (0.5 ml): # NC907C

Mouse IgG3 isotype control; For use in parallel with mouse monoclonal IgG3 isotype primary antibodies

Ready-To-Use (7 ml): # NC908

Concentrate (0.5 ml): # NC908C

Mouse IgM isotype control; For use in parallel with mouse monoclonal IgM isotype primary antibodies

Ready-To-Use (7 ml): # NC906

Concentrate (0.5 ml): # NC906C

Rabbit IgG isotope control concentrate; For use in parallel with rabbit monoclonal IgG isotype primary antibodies

Concentrate (0.5 ml): # NC910C

Rabbit IgM isotype control concentrate; For use in parallel with rabbit monoclonal IgM isotype primary antibodies

Concentrate (0.5 ml): # NC911C



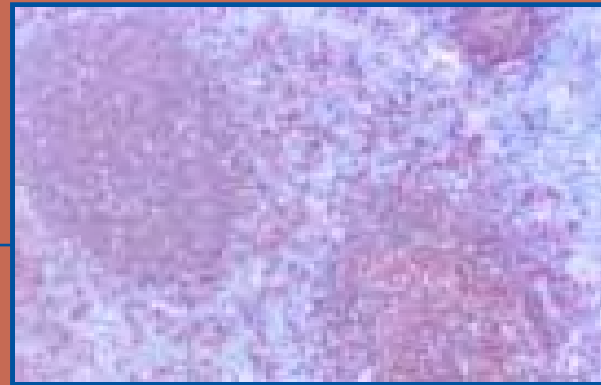
NEGATIVE
CONTROL SLIDE
STAINING

***INNOVEX**HISTO-STAT*

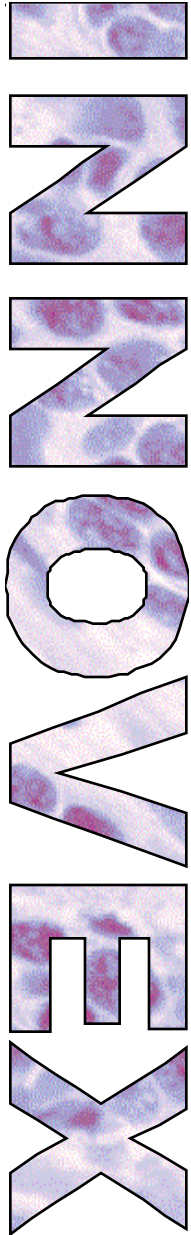
Background-Free Polymer Kits

SINGLE KIT FOR
STAT TISSUE STAINING

FOR 2-STEP NO WASH,
NO BACKGROUND STAINING
TOTAL STAINING TIME:
50 MINUTES FROM PRIMARY
ANTIBODY TO MOUNTED SLIDES



HISTO-STAT SYSTEM (2-STEP) BACKGROUND-FREE POLYMER KITS



For Wash free, Background free STAT (rapid) immunostaining
in 2 easy steps and **under one hour**
Free of avidin, biotin, and streptavidin

A single kit system for animal and human tissue staining

About HISTO-STAT

HISTO-STAT (2-step staining system), a Non-Biotin & Non-streptavidin system developed for Wash Free, Background Free, Pre-treatment Free immunostaining in 50 minutes.

This futuristic staining system involves only 2 staining steps post incubation with the primary antibody; an incubation with the **SECOND STEP REAGENT** and, a short incubation step (5 minutes) with the **SUBSTRATE/CHROMOGEN** of choice. **HISTO-STAT** system involves **ONE LESS REAGENT, ONE LESS INCUBATION STEP** and **ONE LESS RINSE STEP**.

UNIQUE FEATURES

- No Background or serum blocking step required
- Total staining time of only 50 minutes (from primary to mounted slides)
- Wash Free
- Background Free, no serum or protein blocking required
- Free of biotin; No avidin blocking required
- Short incubation steps
- Guaranteed 2 years of shelf life from delivery
- Highly amplified, equates the sensitivity of biotin-streptavidin system
- No re-titration of current primary antibodies required, simply switch to HISTO-STAT detection system

HISTO-STAT USER FRIENDLY PROTOCOL

TOTAL STAINING TIME: 50 MINUTES FOR PARAFFIN SECTION, 20 MINUTES FOR FROZEN SECTIONS

No protein blocking and no extensive rinse step are required when staining with Innovex staining systems.

Post Deparaffinization:

1. Incubate the section or smear for *20 minutes* with appropriate primary antibody, rinse once with PBS or Innovex "Signal Enhancing Wash Buffer" for *5 seconds*
2. Incubate with the Peroxidase (HRP) or alkaline phosphatase Second Step Reagent for 20 minutes, rinse once with PBS or Innovex "Signal Enhancing Wash Buffer" for *5 seconds*;
3. Incubate with INNOVEX substrate/chromogen of choice (AEC or DAB for HRP enzyme label) and Innovex Brown, Fast Red, or other substrate/chromogen available for alkaline phosphatase enzyme for *5-10 minutes*, rinse with water;
4. Counterstain and Mount.



Histo-STAT
System

HISTO-STAT SYSTEM (2-STEP)

For immunostaining in 50 minutes

**HISTO-STAT staining systems are available in
COMPLETE STAINING SYSTEMS and in Individual COMPONENTS**

HISTO-STAT, No-wash, No-background **Complete Staining Systems** include all staining components required including substrate/ chromogen of choice. **HISTO-STAT Complete Staining Systems** are available in:

HISTO-STAT Peroxidase Multivalent Complete System

(single staining kit for staining both mouse and rabbit primary antibodies)

Large volume system stains 600-800 slides and includes:

- 50 ml of Peroxidase Second Step Reagent for staining both mouse and rabbit primary antibodies
- 70 ml of stable AEC or DAB of choice.

Small volume system stains 200-250 slides and includes:

- 20 ml of Peroxidase Second Step Reagent
- 35 ml of stable AEC or DAB of choice.



HISTO-STAT ORDERING INFORMATION

TYPE	NUMBER
Multivalent-DAB (Large Volume)	NB312LD
Multivalent-AEC (Large Volume)	NB312 LC
Multivalent-DAB (Small Volume)	NB312LD-20
Multivalent-AEC (Small Volume)	NB312LC-20

HISTO-STAT Alkaline phosphatase Multivalent Complete System

(single kit for staining both mouse and rabbit primary antibodies)

Large volume system stains 600-800 slides and includes:

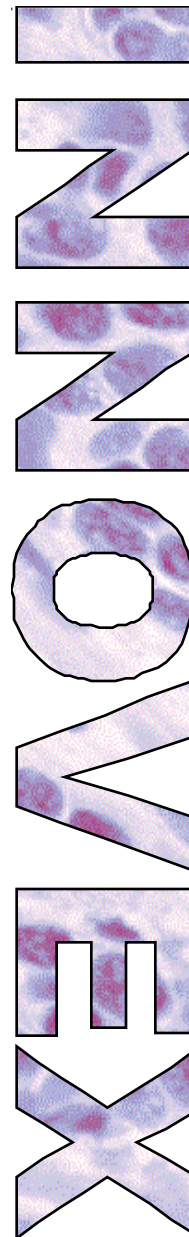
- 50ml of alkaline phosphatase Second Step Reagent for staining both mouse and rabbit primary antibodies
- Substrate/chromogen of choice, Fast Red (70ml) or Innovex Brown (30ml)

Small volume system stains 200-250 slides and includes:

- 20ml of alkaline phosphatase Second Step Reagent
- Substrate/chromogen of choice, Fast Red (35 ml) or Innovex Brown (15ml)

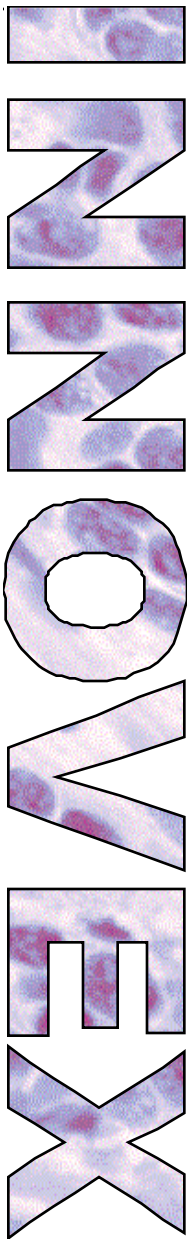
HISTO-STAT ORDERING INFORMATION

TYPE	NUMBER
Multivalent-Fast Red (Large Volume)	NB317LF
Multivalent-Innovex Brown (Large Volume)	NB317LB
Multivalent-Fast Red (Small Volume)	NB317LF-20
Multivalent-Innovex Brown (Small Volume)	NB317LB-20



HISTO-STAT
SYSTEM

HISTO-STAT SYSTEM (2-STEP)



HISTO-STAT
SYSTEM

For immunostaining in 50 minutes

COMPONENTS

HISTO-STAT staining system components are available in:

HISTO-STAT Multivalent Second Step Reagent (HRP) for staining both MOUSE & RABBIT primary antibodies,
Product # NB312L (50 ml) Product # NB312L-15 (15 ml)

HISTO-STAT Multivalent Second Step Reagent (Alkaline phosphatase) for staining both MOUSE & RABBIT primary antibodies,
Product # NB317L (50 ml) Product # NB317L-15 (15 ml)

HISTO-STAT Monovalent-Chicken Second Step Reagent (HRP) for staining CHICKEN primary antibodies,
Product # NB312C-15 (15 ml)

HISTO-STAT Monovalent-Mouse Second Step Reagent (HRP) for staining MOUSE primary antibodies,
Product # NB312M-15 (15 ml)

HISTO-STAT Monovalent-Rabbit Second Step Reagent (HRP) for staining RABBIT primary antibodies,
Product # NB312R-15 (15 ml)

HISTO-STAT Monovalent-Sheep Second Step Reagent (HRP) for staining SHEEP primary antibodies,
Product #NB312S-15 (15 ml)

HISTO-STAT Monovalent-Goat Second Step Reagent (HRP) for staining GOAT primary antibodies,
Product # NB312G-15 (15 ml)

HISTO-STAT Monovalent-Hamster Second Step Reagent (HRP) for staining HAMSTER primary antibodies,
Product # NB312H-15 (15 ml)

HISTO-STAT Monovalent-Rat Second Step Reagent (HRP) for staining Rat primary antibodies,
Product # NB312T-15 (15ml)

HISTO-STAT Monovalent-Rat Second Step Reagent (HRP) *MOUSE ADSORBED* for staining RAT primary antibodies in Mouse tissue.
Product # NB312MRA-15 (15ml)

HISTO-STAT Monovalent-Mouse Second Step Reagent (HRP) *RAT ADSORBED* for staining MOUSE primary antibodies in Rat tissue.
Product # NB312RMA-15 (15ml)

*INNOVEX***STAT-Q**

All-Species Kit

A SINGLE KIT FOR
QUICK STAINING OF HUMAN,
ANIMAL AND MOUSE-ON-MOUSE
TISSUES (FROZEN & PARAFIN)

FOR NO-WASH,
NO BACKGROUND STAINING
TOTAL STAINING TIME: 45 MINUTES FOR
HUMAN, 90 MINUTES FOR ANIMAL
FROM PRIMARY ANTIBODY TO
MOUNTED SLIDES



STAT-Q SYSTEM (3-STEP)

A single kit system for animal and human tissue staining
Stains both frozen and paraffin sections

About STAT-Q

STAT-Q is a 3-step, amplified biotin-streptavidin system developed for WASH FREE, BACKGROUND FREE, PRE-TREATMENT FREE immunostaining in **40 minutes**.

UNIQUE FEATURES

- No serum or protein blocking required
- Total staining time of only 40 minutes for paraffin sections (from primary to mounted slides).
- Total staining time of 15-20 minutes for frozen sections
- Wash Free, one 5 second rinse in between incubation steps
- No Avidin blocking required
- Short 10 minute incubation steps
- Highly amplified, cuts incubation time of 30 minute primaries to 10 minutes
- Allows at least 2 fold increase in dilutions of current primary antibodies at 10 minute incubation time
- No re-titration of current primary antibody titer is required, simply switch to STAT-Q staining system
- Economical: Average cost per slide 65 cents
- Guaranteed 2 years of shelf life from delivery



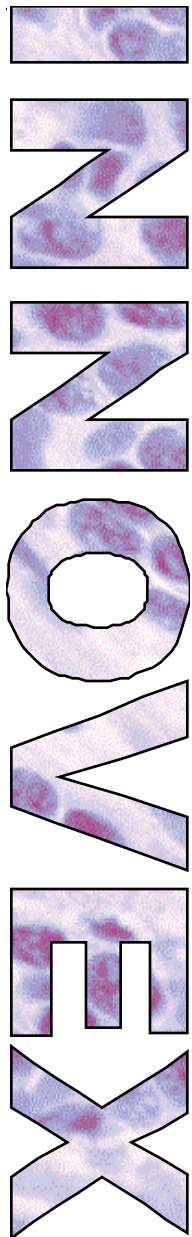
STAT-Q USER FRIENDLY PROTOCOL

TOTAL STAINING TIME: 35-40 minutes

No protein blocking step or extensive rinses are required when staining with Innovex staining systems.

1. Rinse once with PBS or Innovex "Signal Enhancing Wash Buffer" for *5 seconds* prior to the application of primary antibody;
2. Incubate the section or smear for *10 minutes* with appropriate primary antibody, rinse once with PBS or Innovex "Signal Enhancing Wash Buffer" for 5 seconds;
3. Incubate with secondary linking antibody for 10 minutes, rinse once with PBS or Innovex "Signal Enhancing Wash Buffer" for 5 seconds;
4. Incubate with enzyme-streptavidin label for *10 minutes*, rinse once with PBS or Innovex Signal Enhancing Wash Buffer" for *5 seconds*;
5. Incubate with INNOVEX substrate/chromogen of choice (AEC or DAB for HRP enzyme label) and Innovex Brown, Innovex Faster Red or other substrate/chromogen available for alkaline phosphatase enzyme for *5-10 minutes*;
6. Rinse with water, counterstain and mount.

For background free animal tissue staining, simply, incubate all species tissues with Innovex **Background Buster** (Product # NB306) for 20-30 minutes prior to application of the primary antibody and proceed to stain as protocol above.



STAT-Q
SYSTEM

STAT-Q SYSTEM (3-STEP)

3 YEARS OF SHELF LIFE

For immunostaining in 40 minutes

STAT-Q Formats are available in:
COMPLETE STAINING SYSTEMS and in Individual COMPONENTS

STAT-Q, No-wash, No-background **Complete Staining Systems** include all staining components required including substrate/ chromogen of choice.

STAT-Q Peroxidase Multivalent Complete systems (single staining system for staining both mouse and rabbit primary antibodies) is available in large and small volume sizes and includes (large/small):

- 60 ml/20 ml of amplified biotinylated linking antibody for staining both mouse and rabbit primary antibodies
- 60 ml/20 ml of stable and polymerized peroxidase (HRP) labeled streptavidin with no diminishing activity with time
- 70 ml/35 ml of stable AEC or DAB of choice.

Large volume kit stains 800-1000 slides. Small volume kit stains 200-300 slides.

STAT-Q Mouse Adsorbed

Kits for staining rat antibodies in mouse tissue and **STAT-Q Rat Adsorbed Kits** for staining mouse antibodies in rat tissue are also available. These kits include 15 ml of linking antibody, 20 ml of peroxidase (HRP) labeled streptavidin, and 35 ml of stable AEC or DAB.

PRODUCT ORDERING INFORMATION STAT-Q PEROXIDASE COMPLETE SYSTEMS

TYPE	NUMBER
Multivalent-DAB (Large Volume)	NB314KLD
Multivalent-AEC (Large Volume)	NB314KLC
Multivalent-DAB (Small Volume)	NB314LD-20
Multivalent-AEC (Small Volume)	NB314KLC-20
Mouse Adsorbed-DAB (15 ml)	NB314MAK DAB
Mouse Adsorbed-AEC (15 ml)	NB314MAK-AEC
Rat Adsorbed-DAB (15 ml)	NB314RAK-DAB
Rat Adsorbed-AEC (15 ml)	NB314RAK-AEC

STAT-Q-Alkaline phosphatase Multivalent Complete systems

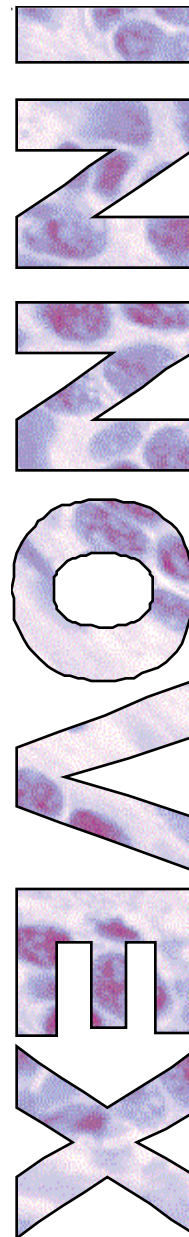
(single system for staining both mouse and rabbit primary antibodies) is available in large and small volume sizes and includes (large/small):

- 60 ml/20 ml of amplified biotinylated linking antibody
- 60 ml/20 ml of stable and amplified alkaline phosphatase labeled streptavidin
- Substrate/chromogen of choice, Innovex FAST RED or Innovex BROWN

Large Volume Kit stains 800-1000 slides. Small Volume Kit stains 200-300 slides

PRODUCT ORDERING INFORMATION STAT-Q ALK PHOS COMPLETE SYSTEMS

TYPE	NUMBER
Multivalent-Fast Red (Large Volume)	NB311KLF
Multivalent-Innovex Brown (Large Volume)	NB311 KLB
Multivalent-Fast Red (Small Volume)	NB311KLF-20
Multivalent-Innovex Brown (Small Volume)	B311KLB-20



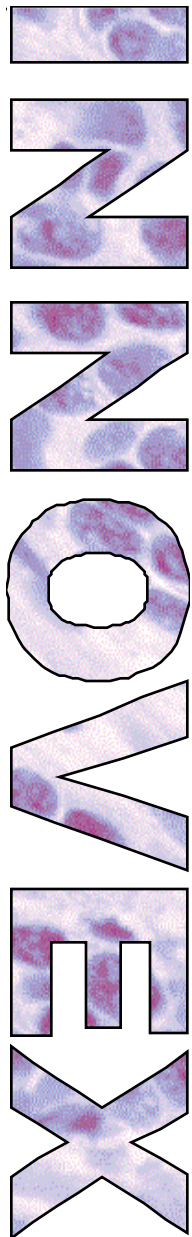
STAT-Q
SYSTEM

ORDER 24 hours a day, 7 days a week Phone: (510) 234-6600 Fax: (510) 234-4591

TOLL-FREE-1.800.622.7808 www.innvx.com • innvx@sbcglobal.net

STAT-Q SYSTEM (3-STEP)

3 YEARS OF SHELF LIFE



For immunostaining in 40 minutes

COMPONENTS

STAT-Q staining system components are available in:

STAT-Q Multivalent Linking antibody, for staining both MOUSE & RABBIT primary antibodies,
Product # NB314KL (60 ml) Product # NB314KL-20 (15 ml)

STAT-Q Monovalent-Mouse Linking antibody for staining MOUSE primary antibodies,
Product # NB314KM-20 (15 ml)

STAT-Q Monovalent-Rabbit Linking antibody for staining RABBIT primary antibodies,
Product # NB314KR-20 (15 ml)

STAT-Q Monovalent-Sheep Linking antibody for staining SHEEP primary antibodies,
Product # NB318LS-20 (15 ml)

STAT-Q Monovalent-Goat Linking antibody for staining GOAT primary antibodies,
Product # NB318LG-20 (15 ml)

STAT-Q Monovalent-Hamster Linking antibody for staining HAMSTER primary antibodies,
Product # NB318KH-20 (15 ml)

STAT-Q Monovalent-Chicken Linking antibody for staining CHICKEN primary antibodies,
Product # NB317LC-20 (15 ml)

STAT-Q Monovalent-Rat Linking antibody for staining RAT primary antibodies,
Product # NB318KR-20 (15 ml)

STAT-Q Monovalent-Rat Linking antibody MOUSE ADSORBED for staining
Rat primary antibodies in mouse tissue.
Product # NB619RK-20 (15ml)

STAT-Q Monovalent-Mouse Linking antibody RAT ADSORBED for staining
MOUSE primary antibodies in Rat tissue.
Product # NB318MR-20 (15ml)

STAT-Q ENZYME LABELED STREPAVIDIN ARE AVAILABLE IN :

- Peroxidase (HRP)-streptavidin label
Product # NB314L (60ml) Product # NB314L-20 (15 ml)
- Alkaline phosphatase-streptavidin label
Product # NB311L-20 (15 ml)

STAT-Q
System

STAT DOUBLE STAINING SYSTEMS



FOR SIMPLE DOUBLE STAINING OF
2 ANTIBODIES SIMULTANEOUSLY
IN 50 MINUTES



FOR STAT DOUBLE STAINING

For No-Wash, No-Background STAT (rapid) DOUBLE IMMUNOSTAINING

INNOVEX offers an innovative and peerless Double staining technology for quick, wash free, and background free DOUBLE IMMUNOSTAINING.

Innovex **STAT Double Staining Systems** are suitable for staining two antibodies simultaneously and in 3 easy steps:

1. Apply both antibodies at the same time and incubate for 30 minutes; rinse with PBS buffer for 5 seconds;
2. Apply Innovex Double ImmunoStain reagent and incubate for 30 minutes; rinse for 5 seconds;
3. Apply each recommended chromogen of choice (noted below) individually and rinse with water; counterstain and mount.

For the choice of counterstain and chromogens of choice, refer to the guideline below. For maximum contrasted viewing, Innovex recommends the following categories of chromogens, counterstains and chromogen Enhancing reagents.

For hematoxylin (blue nuclear counterstaining): The recommended chromogens for double staining are: Innovex Fast Red (red stain) and DAB (brown stain). The use of Innovex DAB Enhancer and Fast Red Enhancer for darker stains are recommended.

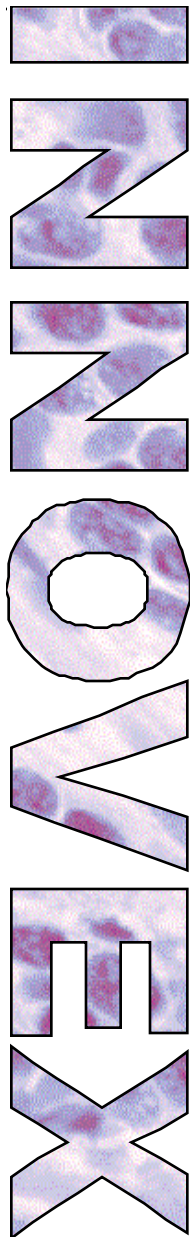
For methyl green, nuclear red or mathanil yellow counterstains, the recommended chromogens for double staining are: BCIP/NBT (blue stain) and AEC (red stain). The use of Innovex AEC Enhancer for obtaining darker and more intensified staining is highly recommended.

STAT Double Immunostaining Reagents are currently available for staining:

- Mouse-Rabbit, for double staining mouse and rabbit antibodies
- Mouse-Sheep, for double staining mouse and sheep antibodies
- Mouse-Goat, for double staining mouse and goat antibodies

PRODUCT ORDERING INFORMATION

Product	Product #	Size	# Slides	Shelf life
Mouse-Rabbit	NB326DB	25 ml	350-450	3 yrs
Mouse-Goat	NB327DB	25 ml	350-450	3 yrs
Mouse-Sheep	NB330DB	25 ml	350-450	3 yrs

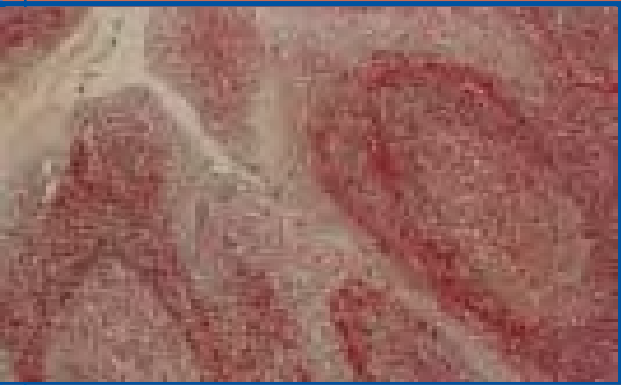


STAT Double Staining System

SUBSTRATE/CHROMOGENS

Rapid Development, No Background

PERMANENT STABLE LIQUID DAB •

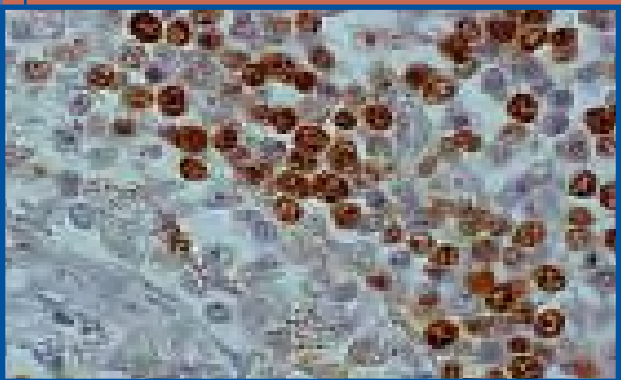


STABLE LIQUID AEC •

INNOVEX BROWN •

PERMANENT BACKGROUND FREE BCIP/NBT •

INNOVEX FAST RED •



TURBO ACTION STABLE Liquid DAB and AEC for PEROXIDASE (HRP) STAINING

ADVANCED FEATURES

- Good to the last drop, mixed left over AEC and DAB solution stable for up to 3 weeks
- Fast developing (1-5 minutes)
- Background free
- No fading with time
- Highly stable
- 2 components only
- Environmentally friendly, mixed substrate/chromogen solution reusable for up to 3 weeks
- No precipitants
- Vibrant and crisp staining, makes visualization of cell by cell possible
- Guaranteed 2 years of shelf life from delivery
- Economical



DAB staining of Pan cytokeratin antibody in 40 minutes
with Innovex STAT-Q staining system, no digestion
or heat treatment



SUBSTRATE/
CHROMOGENS

PRODUCT ORDERING INFORMATION

Product	Product #	Size	# of Slides	Shelf life
Liquid DAB/ Substrate system:	NB314SBD	70 ml	1200	3 yrs
Liquid AEC/ Substrate system :	NB314SCS	70 ml	1200	3 yrs

FOR IMMUNO-ALKALINE PHOSPHATASE STAINING

ADVANCED FEATURES

- Fast developing (5-10 minutes)
- Background free
- No fading with time
- Highly stable
- Duo component Innovex Fast Red
- Single solution Permanent Innovex Brown (DAB like color for alkaline phosphatase staining)
- Single solution Permanent BCIP/NBT with no background or leeching out
- No precipitants
- Vibrant and sharp staining, makes visualization of cell by cell possible.
- Guaranteed 2 years of shelf life from delivery
- Economical



Innovex Fast Red staining of PSA antibody in 50 minutes
with Innovex HISTO-STAT Polymer alk-phos kit

PRODUCT ORDERING INFORMATION

Product	Product #	Size	# of Slide	Shelf life
Innovex FAST RED	NB317SBF	70 ml	1000	3 yrs
Innovex Brown (single solution)	NB317B	30ml	500	3 yrs
Permanent, Background free BCIP/NBT (single solution)	NB321NBT	10 ml	180	3 yrs

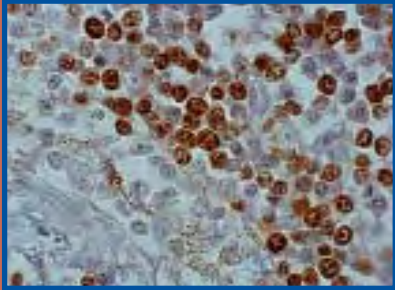
INNOVEX



SUBSTRATE/
CHROMOGENS

ANIMAL IHC STAINING

90 Minute, Background-Free

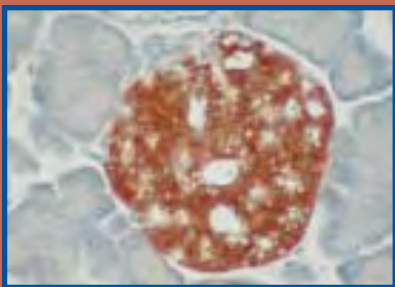
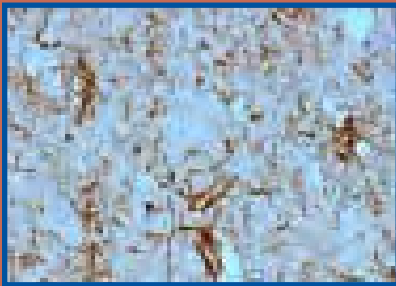


NO BACKGROUND

HIGH SPEED IHC

UNIVERSAL STAINING

USE ONLY 4 PRODUCTS



FOR ANIMAL TISSUE IHC STAINING

Rapid Animal IHC Staining using only 4 Products

Step

1

UNI-TRIEVE

**Universal 60°C Retrieval
Technology using a 60°C
Waterbath**

- Gentle and Easy, No Boiling
- Standardizes Retrieval
- One solution retrieves all antibodies/tissues
- Use a Water Bath
- Warm up slides for 60-70°C Uni-Trieve Solution for 30 Minutes



Step

2

BACKGROUND BUSTER

**Synthetic Peptide Blocker
Technology for Removal of
All Background Staining**

- No serum or other blocker needed
- No avidin biotin block required
- Apply for 30 minutes prior to primary antibody



Step

3a

STAT-Q KIT

**All Species Kit for Staining all
Animal Tissues including
Mouse-on-Mouse and also
stains Human Tissue without
blocking**

- Minimizes need for heat retrieval
- Reduces primary antibody incubation to 30 minutes
- No more overnight incubation of primaries

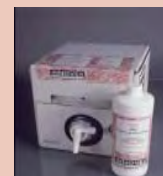


Step

3b

ENHANCING WASH BUFFER

- 3-5X increase in staining
- Room temperature technology
- Minimizes the need for high heat retrieval or enzyme digestion between incubation steps
- Use in place of PBS or tris buffer
- Produces high resolution staining



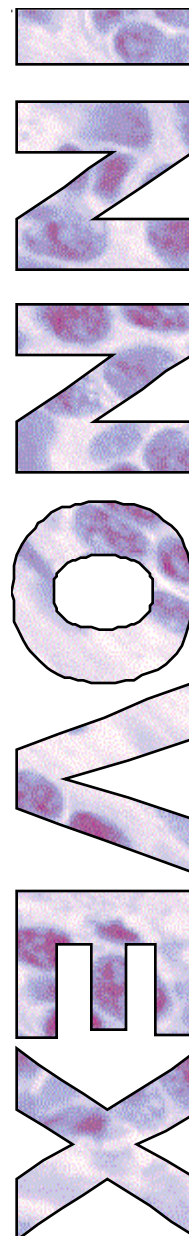
PRODUCT ORDERING INFORMATION

Product	Number	Size
Background Buster	NB306	125 ml
	NB306-50	50 ml
STAT-Q DAB Kit	NB314LD	1000 slides
	NB314LD-20	300 slides
STAT-Q AEC Kit	NB314KLC	1000 slides
	NB314KLC-20	300 slides
Enhancing Wash Buffer	NB301	4 Liters
	NB301S	1 Liter
Uni-Trieve	NB325	1 Liter
Fc Receptor Block	NB309	60 ml
	NB309-15	15 ml



**Optional
Product:
Fc
Receptor
Block**

May be required when staining CD Markers, melanomas, lymphoid tissues, brain tissue or trans-species graft work.



STAIN AMPLIFICATION **REAGENTS**

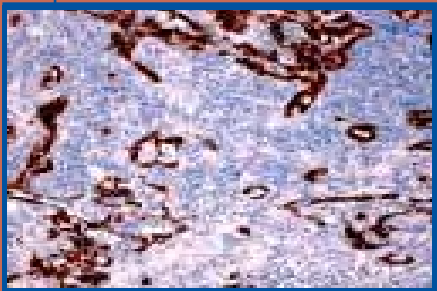


PAGES
43-45

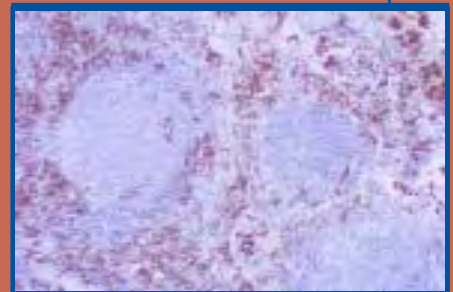


STAIN ENHANCING WASH BUFFERS

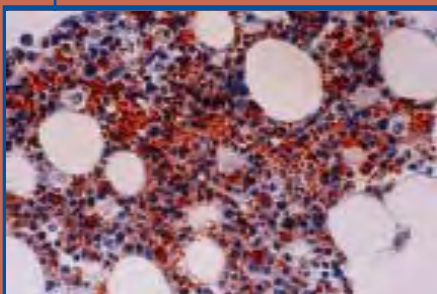
CHROMOGEN ENHANCERS



- AEC ENHANCER



- FAST RED ENHANCER



- DAB ENHANCER



STAIN ENHANCING WASH BUFFERS

A breakthrough technology for room temperature stain amplification without additional steps

ADVANCED FEATURES

- Simple to use, employ as the rinse buffer in place of PBS for rinsing in between incubation steps
- Amplify staining signal by 2-4 folds with no additional steps added to the immunostaining procedure
- Cost effective: Allows 2-4 folds increase for primary antibody dilution
- Time Saver : Allows for decrease in primary antibody incubation time
- Allows for decrease in chromogen/substrate incubation time
- Fixation independent; Amplifies staining regardless of the type of fixative employed
- Eliminates enzyme pre-digestion
- Minimizes the need for high heat antigen recovery when used with INNOVEX Staining Systems
- Minimizes false negative staining
- Automation compatible
- Applicable to ELISA and flow cytometric procedures

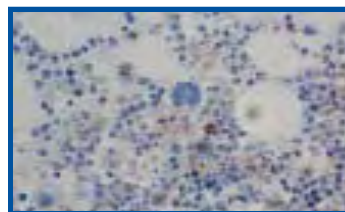
USER FRIENDLY PROTOCOL

Innovex Enhancing Wash Buffers only require 5 seconds rinse in between incubation steps when used with Innovex STAT-Q and HISTO-STAT (2-step) staining systems. Innovex **Enhancing Wash Buffers** may be employed with other systems, observe the manufacturer's instruction for the required time and number of washes recommended for the system.

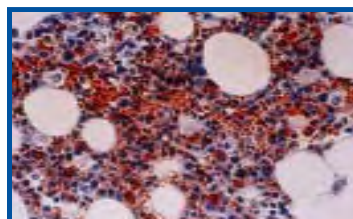
1. Rinse specimens with Innovex **Enhancing Wash Buffer** prior to applying primary antibody;
2. Incubate with primary antibody per manufacturer's instructions;
3. Rinse with Innovex **Enhancing Wash Buffer**;
4. Incubate with secondary antibody;
5. Rinse with Innovex **Enhancing Wash Buffer**;
6. Incubate with Enzyme label;
7. Rinse with Innovex **Enhancing Wash Buffer**;
8. Incubate with substrate/chromogen of choice;
9. Rinse with water;
10. Counterstain and mount.

For ELISA assays

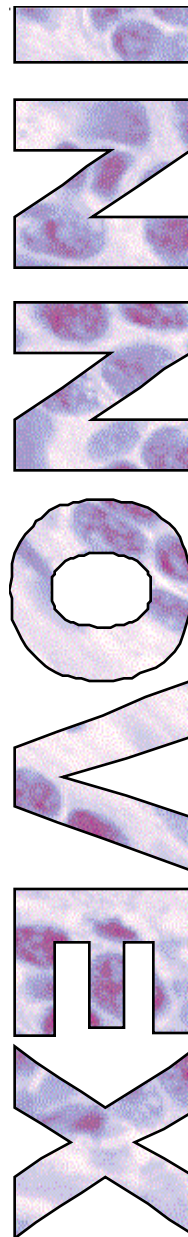
Innovex **Enhancing Wash Buffers** can be used for washing ELISA plates, however, some non-ionic detergent should be added to the solution.



AEC staining of UCHL-1 (T cell)
antibody of bone marrow, paraffin
section rinsed with PBS



Same section amplified when simply
rinsed with Innovex
Enhancing Wash Buffer
No heat treatment



SIGNAL
ENHANCERS

STAIN ENHANCING WASH BUFFERS

A breakthrough technology for room temperature stain amplification without additional steps

SIGNAL ENHANCER WASH BUFFERS ARE AVAILABLE IN:



HRP-Enhancing Wash Buffer
for amplifying AEC and DAB stains

PRODUCT ORDERING INFORMATION

Product #	Size
NB301S	1 liter
NB301	4 liters
NB301-5C	1 liter (5X concentrate)
Shelf Life: 2 Years	

Alkaline Phosphatase-Enhancing Wash Buffer
for amplifying Fast-Red, BCIP/ NBT, Innovex Brown and other substrate chromogens for alkaline phosphatase enzyme staining

PRODUCT ORDERING INFORMATION

Product #	Size
NB302S	1 liter
NB302	4 liters
NB302-5C	1 liter (5X Concentrate)

Shelf Life: 2 Years



INNOVEX



SIGNAL
ENHANCERS

CHROMOGEN ENHANCERS

Peerless technologies for amplifying immunostains post completion of staining

Innovex Biosciences **Chromogen Enhancers** are peerless technologies developed for intensifying chromogenic stains. These Chromogen Enhancers provide an opportunity to intensify and amplify IHC stains post completion of the staining run, therefore, minimizing the need for repetitive procedures to obtain optimal staining. Chromogen Enhancers produce brilliant and intense staining in a short 5 to 10 minute incubation step. Innovex Chromogen Enhancers amplify staining signals and minimize false negative staining. The use of chromogen Enhancers also allow for reduction of primary antibody and substrate/chromogen incubation time.

Chromogen Enhancers are available in AEC ENHANCER, FAST RED ENHANCER and DAB ENHANCER.

USER FRIENDLY PROTOCOL

Incubate with the substrate /chromogen of choice;

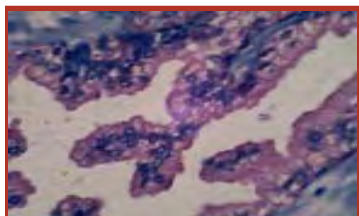
Rinse with water;

Apply the appropriate Innovex Chromogen Enhancer and incubate for 5-10 minutes to intensify staining;

Rinse with water;

Counterstain and mount.

CHROMOGEN ENHANCERS MAY BE APPLIED AFTER COUNTERSTAINING.



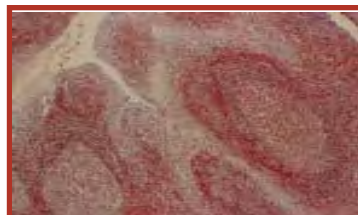
Fast Red staining of PSA antibody



Same section when intensified with Innovex Fast Red Chromogen Enhancer



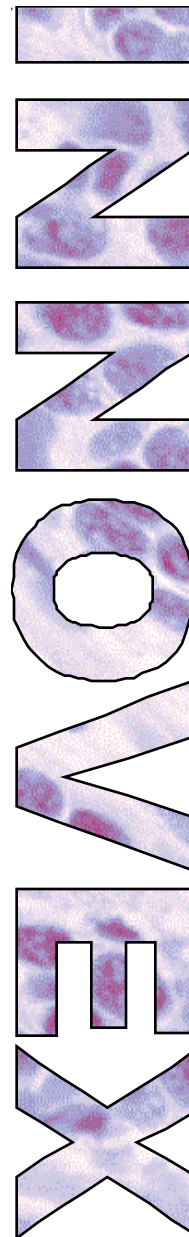
AEC staining of CD45 (LCA) antibody



Same section when enhanced with Innovex AEC Enhancer

PRODUCT ORDERING INFORMATION

Product	Product #	Size	Shelf life
AEC Enhancer	NB319	15ml	3 yrs
Fast Red Enhancer	NB322	15ml	3 yrs
Quick DAB Enhancer	NB308	60ml	3 yrs
Quick DAB Enhancer	NB308-30	30ml	3 yrs



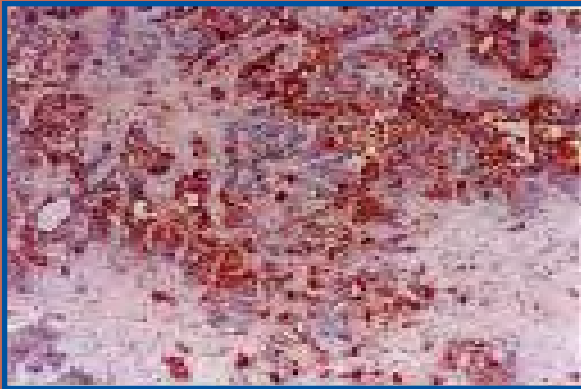
SIGNAL
ENHANCERS

BACKGROUND ERADICATORS



BACKGROUND BUSTER

Human Colon, Negative Control Section

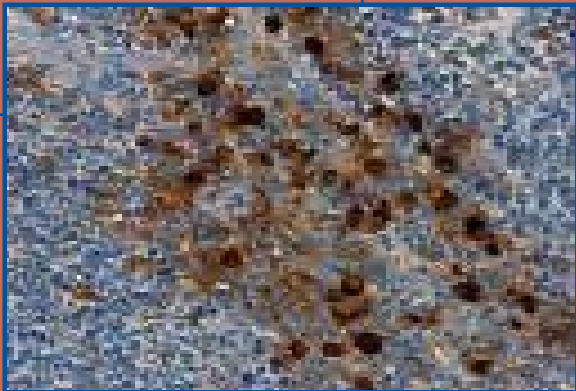


Before Background Buster



After Background Buster

Mouse Spleen, Negative Control Section



Before Fc Receptor Block



After Fc Receptor Block



Fc RECEPTOR BLOCK



BACKGROUND BUSTER

NO MORE BACKGROUND

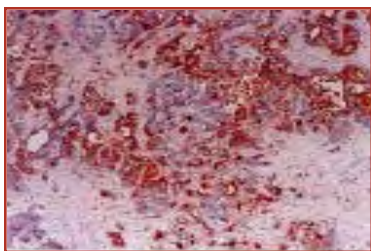
Background or non-specific staining is often observed in a variety of immunoassays, in IHC and other immunoassay types such as immunofluorescence and flow cytometry, background staining can be prevented by the use of INNOVEX Peptide Technology, **Background Buster**.

Innovex **Background Buster** is a diverse and powerful PEPTIDE TECHNOLOGY for eliminating general background staining in tissues and cell preparations stained with antibodies especially for IHC, fluorescence, and DNA or RNA probes for *in-situ* procedures. It also makes possible the staining of mouse antibodies on mouse tissues (Mouse-on-Mouse).

Background Buster is a must for animal tissue IHC and fluorescence staining.

ADVANCED & UNIQUE FEATURES:

- Allows staining of identical species antibodies and tissues (e.g., mouse antibody on mouse tissue, rat-on-rat, rabbit-on-rabbit, etc.).
- Short 10 minute incubation step prior to applying primary antibody or *in-situ* probes at room temperature
- Delivers complete eradication of general background staining
- Replaces the use of normal serum, powdered milk, casein, and other blocking agents that do not render complete success
- Excellent for both frozen and paraffin sections
- Excellent for *in situ* application
- A must for animal tissue staining by IHC and fluorescence



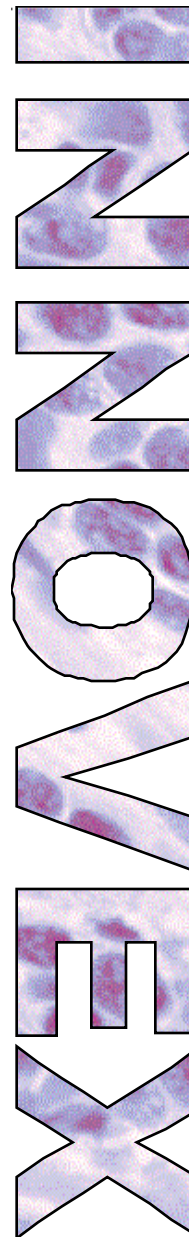
Negative control, human colon section with excessive background staining



Same section treated with **BACKGROUND BUSTER** for 10 minutes

PRODUCT AND ORDERING INFORMATION

Product #	Size	# of Slides	Shelf life
NB306	125 ml	1400- 2000	3 yrs
NB306-50	50 ml	700-1000	3 yrs



BACKGROUND
ERADICATORS

FC RECEPTOR BLOCK

BLOCK FC RECEPTOR IN HUMAN & ANIMAL TISSUES Most tumors express Fc Receptors (recent literature)

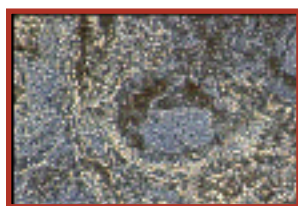
Peptide based--contains no antibody or immunoglobulin fragments.

Innovex **Fc Receptor Block** is a peerless technology designed to block Fc Receptors present on all leukocytes (white blood cells), lymphomas, and melanomas. Fc receptors are also expressed on a majority of tumors. Blocking Fc receptors is essential for accurate typing of lymphoid and tumor tissues and cells. Fc receptor staining occurs by the binding of Fc receptors present on cells to the Fc region of the primary and/or secondary antibody. Fc Receptor Block can be used for IHC (frozen and paraffin) flow cytometry, immunofluorescence and *in-situ* hybridization.

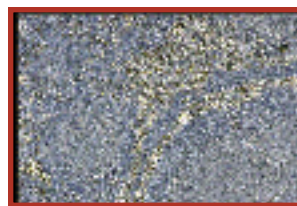
Fc Receptor Block is a must for accurate lymphoma, leukemia and melanoma typing. Most tumors also express Fc Receptors.

ADVANCED and UNIQUE FEATURES:

- 30 minute incubation step at room temperature
- Eliminates false positive staining of white blood cells, lymphoid tissues, cytopins, blood & bone marrow, melanomas and other tumors
- Eliminates background in brain tissue (human and animal)
- Eliminates false positive staining for Kappa and Lambda staining
- Eliminates false positive staining of Reed Sternberg cells
- A must for CD markers staining in IHC, immunofluorescence
- A must for CD phenotyping via flow cytometry
- A must for Immunoglobulins (Igs) staining via IHC, flow cytometry and immunofluorescence



Fc receptor stainings in Human lymphoma negative control paraffin section (false positive)



Same section treated with Innovex Fc Receptor Block for 30 minutes



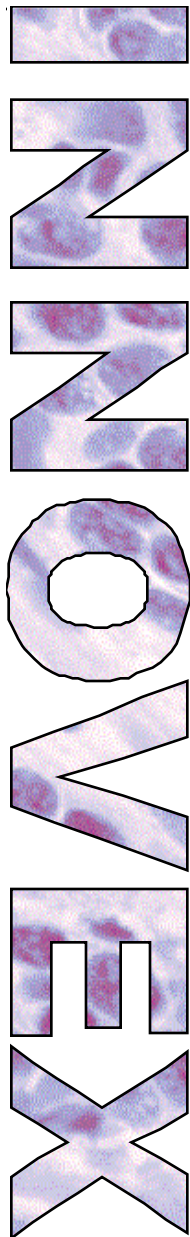
Fc receptor stainings in Mouse spleen negative control (false positive)



Same section treated with Innovex Fc Receptor Block for one hour

PRODUCT ORDERING INFORMATION

Product #	Size	# of Slides	Shelf life
NB309	60 ml	700-1000	3 yrs
NB309-15	15 ml	150-250	3 yrs



FC RECEPTOR
BLOCK

CYTO-Q IMMUNO DILUENT and BLOCK

An Advanced antibody Diluting, Storage and
Blocking Buffer **ALL IN ONE**

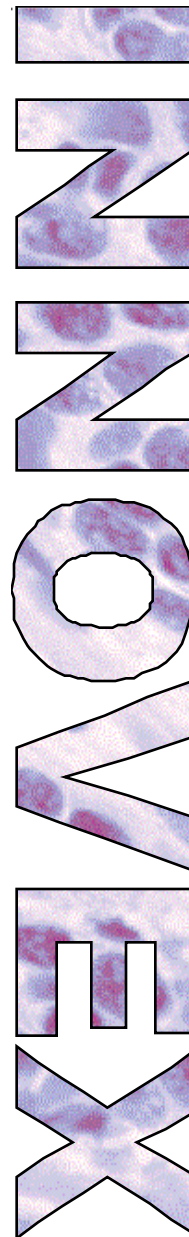
ADVANCED FEATURES

- Prolongs antibody shelf life to 4 years in refrigerator
- Stabilizes antibodies in refrigerator
- No need to freeze antibodies, simply dilute and refrigerate
- Antibodies diluted in Cyto-Q, simply dilute and refrigerate
- Increases antibody binding, higher antibody dilution are obtained for Immunoassays
- Simultaneously blocks non specific sites while the antibody binds to specific antigens
- Decreases and eradicates background
- Eliminates the use of humidified chamber; Antibodies diluted in Innovex Immuno Diluent and Block remain wet on tissue for up to 36 hours



PRODUCT ORDERING INFORMATION

Product #	Size	Shelf life
NB307	125 ml	3 yrs



SUPPORT
REAGENTS

PERMANENT MOUNTING MEDIA

Coverslipping Fluids

FOR PERMANENT
MOUNTING FROM WATER



ADVANTAGE



H & E MOUNT FOR
MOUNTING H & E STAINS



PROBE MOUNT
FOR MOUNTING
IMMUNOFLUORESCENCE
SLIDES AND *IN-SITU* SLIDES



FOR PERMANENT MOUNTING OF IMMUNOSTAINS & SPECIAL STAINS FROM WATER

ADVANTAGE Mounting Media

No alcohol or xylene clearing pre-steps required

ADVANCED FEATURES

- Mount permanently and directly from water
- Mount Special stains from water
- Permanently preserves AEC, DAB, Fast Red and other immuno stains
- No alcohol dehydration or xylene clearing steps required prior to mounting
- No fading of chromogens or dyes
- User friendly
- Fluid at room temperature, no warming is necessary
- No fume hood needed to mount
- Makes bench top mounting possible (no alcohol or xylene is involved)
- Sets in 5 minutes at room temperature, ready for microscopic examination
- Quick drying, to expedite drying, place slides at 37-40°C oven for 10-30 minutes.
- Permanently preserves IHC stains and special stains
- Excellent optical clarity & resolution
- Ideal for photography
- Simple soaking in water removes cover-slip when required
- Saves time, mounting time of less than 10 seconds per slide
- Provides quick, clean, non sticky, mounted slides
- Cost effective, no purchase or discard of alcohol or xylene for mounting required
- Available in 60 ml and 125 ml size

ADVANTAGE MOUNTING MEDIA IS IMPROVED TO BE FREE OF BUBBLES



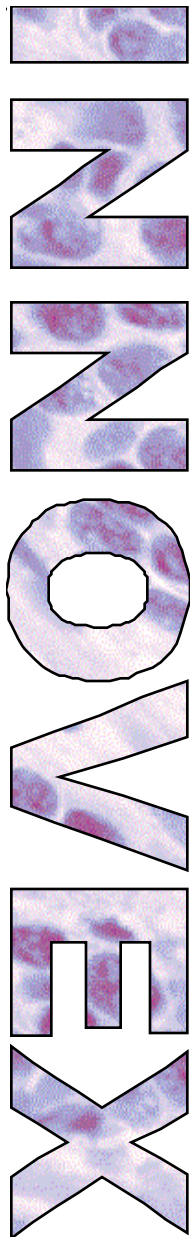
PRODUCT ORDERING INFORMATION

Product #	Size	# of Slides	Shelf life
NB300	60 ml	1000	3 yrs
NB300A	125 ml	2000	3 yrs



PERMANENT
MOUNTING
MEDIA

FOR PERMANENT MOUNTING OF *H&E* STAINS FROM WATER OR ALCOHOL



H&E Mount

No alcohol or xylene clearing pre-steps required

"H&E Mount" is a unique, permanent mounting media designed for coverslipping H&E stains from water or alcohol.

"H&E Mount" hardens quickly and mounted slides are ready for microscopic examination in 10 minutes.

H&E stained slides mounted with "H&E Mount" do not display any loss of eosin or hematoxylin staining that is often observed when H&E slides are mounted from xylene. Therefore, when mounting with "H&E Mount", less number of dips (5-10) in eosin is recommended.

ADVANCED FEATURES

- Mount directly from water or alcohol
- No dehydration or xylene clearing steps required prior to mounting
- Alcohol differentiation of eosin may be performed prior to mounting
- Permanent
- No fading of eosin or hematoxylin
- User friendly
- Environmentally friendly
- Makes bench top mounting possible (no alcohol or xylene is involved)
- Fluid at room temperature, no warming required
- Sets in 10 minutes, ready for microscopic examination
- Excellent optical clarity and resolution
- Excellent for photography
- Simple soaking in water removes coverslip
- Saves time, mounting time of less than 10 seconds per slide
- Cost effective, eliminates the cost of purchase or discard of xylene
- Available in 125 ml size
- Economical



PRODUCT ORDERING INFORMATION

Product #	Size	#of Slides	Shelf life
NB315	125 ml	2000	3 yrs

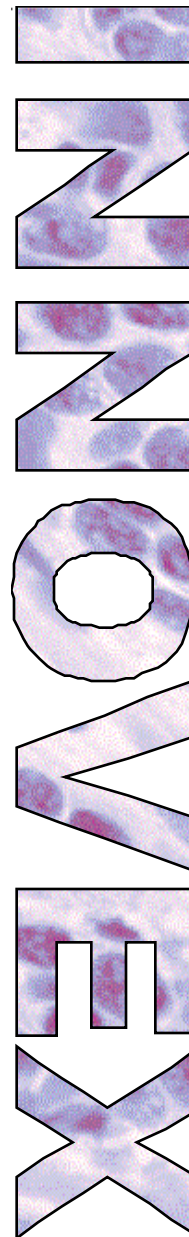
FOR PERMANENT MOUNTING OF *IN SITU* STAINS
AND IMMUNOFLOUORESCENCE STAINS FROM WATER**PROBE Mount**

Probe Mount is a permanent mounting media formulated for mounting and preserving immunofluorescence and *in-situ* stains counterstained with Nuclear Fast Red and also for Special Stain. No dehydration in alcohol or clearing in xylene required, simply coverslip from water.

Nuclear Red dyes such as Nuclear-Fast Red are often used to counterstain specimens or to stain the nuclei in histological and cytological preparations. Counterstaining with Nuclear-Fast Red is commonly practiced when staining for DNA or RNA probes for contrasted viewing of BCIP/NBT and other blue chromogens. Nuclear Fast Red is also used in counterstaining of special stains such as Muller-Mowry Colloidal Iron stain. Mounting of specimens counterstained or stained with Nuclear Fast Red require mounting with **PROBE MOUNT**. Nuclear Fast Red stained specimens can be permanently mounted with Innovex Probe Mount.

ADVANCED FEATURES

- Mount immunofluorescence slides from water
- Mount specimens counterstained with nuclear red dyes directly from water
- User friendly
- No fading
- Permanent
- No fume hood needed for mounting
- Makes bench top mounting possible (no alcohol or xylene is involved)
- Environmentally friendly
- Fluid at room temperature, no warming required
- Sets in 5 minutes, ready for microscopic examination
- Excellent optical clarity & resolution
- Excellent for photography
- Simple soaking in water removes coverslip
- Saves time, mounting time of less than 10 seconds per slide
- Cost effective, no purchase or discard of alcohol or xylene for mounting is required
- Available in 60 ml size
- Economical

**PRODUCT ORDERING INFORMATION**

Product #	Size	# of Slides	Shelf life
NB316	60ml	1000	3 yrs

INNOVATIVE SUPPORT REAGENTS

TISSUE RECOVERY SOLUTION WITH
BUILT-IN pH
STABILIZER
FOR GENTLE HIGH HEAT
ANTIGEN UNMASKING



IMMUNODILUENT
& BLOCK



TISSUE RECOVERY SOLUTION *WITH* BUILT-IN pH STABILIZER FOR HIGH HEAT RETRIEVAL

Innovex unique non-citrate formulation with built-in pH stabilizer for optimal and gentle unmasking of antigens by high heat method.

ADVANCED FEATURES

- Non-citrate formulation for gentle antigen extraction of formalin fixed sections
- An optimal solution for antigen recovery by varied heat source
- Optimal pH remains constant regardless of temperature (citrate buffer drops to very acidic pH 2 at 90 ½ C)
- Non-damaging to tissue matrix and tissue morphology
- Does not create background
- Tissue does not slough off the slide



PRODUCT ORDERING INFORMATION

<u>Product #</u>	<u>Size</u>	<u>Shelf life</u>
NB304	1 liter	3 yrs

INNOVEX



SUPPORT
REAGENTS

CYTO-Q IMMUNO DILUENT and BLOCK



An Advanced antibody Diluting, Storage and Blocking Buffer **ALL IN ONE**

ADVANCED FEATURES

- Prolongs antibody shelf life to 4 years in refrigerator
- Stabilizes antibodies in refrigerator
- No need to freeze antibodies, simply dilute and refrigerate
- Antibodies diluted in Cyto-Q, simply dilute and refrigerate
- Increases antibody binding, higher antibody dilution are obtained for Immunoassays
- Simultaneously blocks non specific sites while the antibody binds to specific antigens
- Decreases and eradicates background
- Eliminates the use of humidified chamber; Antibodies diluted in Innovex Immuno Diluent and Block remain wet on tissue for up to 36 hours



PRODUCT ORDERING INFORMATION

<u>Product #</u>	<u>Size</u>	<u>Shelf life</u>
NB307	125 ml	3 yrs

BUFFERS

ISOTONIC BUFFERED SALINE (PBS)

- An all purpose PBS for laboratory use
- Does not contain azide or any other preservative
- Offered at 20X concentrate, store at room temperature
- Dilute 1 : 20 (1 volume PBS with 19 volumes of distilled water) prior to use. Store as 1x working solution in refrigerator

PRODUCT ORDERING INFORMATION

<u>Product #</u>	<u>Size</u>	<u>Shelf life</u>
NB303	1 liter of 20X concentrate	3 yrs

Cyto-Q IMMUNODILUENT & BLOCK

An advanced antibody diluting and blocking reagent in one (for details see page 52).

PRODUCT ORDERING INFORMATION

<u>Product #</u>	<u>Size</u>	<u>Shelf life</u>
NB307	125 ml	3 yrs

ENHANCING WASH BUFFERS

A quick and simple rinse in between incubation steps of IHC staining amplifies and intensifies staining (for details see pages 39-40).

FOR HRP (AEC, DAB) staining

PRODUCT ORDERING INFORMATION

<u>Product #</u>	<u>Size</u>
NB301S	1 liter
NB301	4 liters
NB301-5	1 liter (5X concentrate)

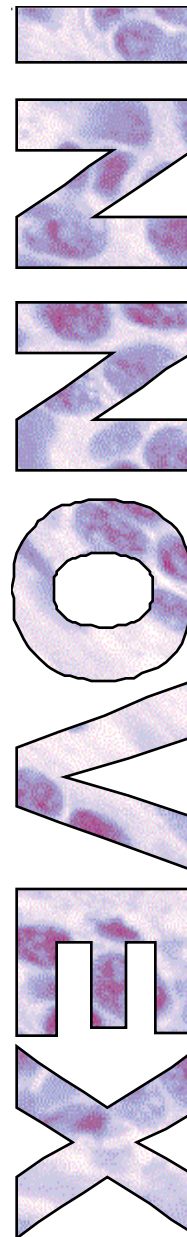
Shelf Life: 1 Year from Delivery

FOR ALKALINE PHOSPHATASE (Fast Red, BCIP / NBT and other alkphos chromogens staining.)

PRODUCT ORDERING INFORMATION

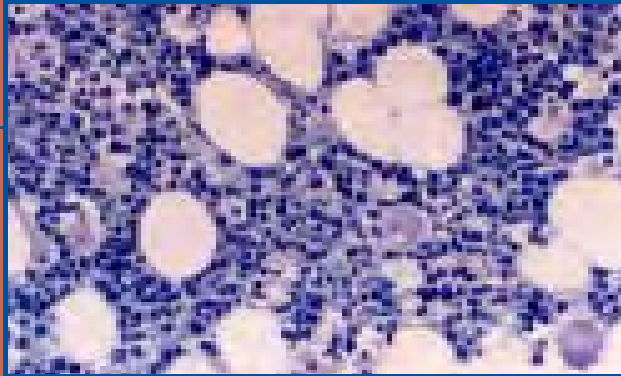
<u>Product #</u>	<u>Size</u>
NB302S	1 liter
NB302	4 liters
NB302-5C	1 liter (5X concentrate)

Shelf Life: 3 Years



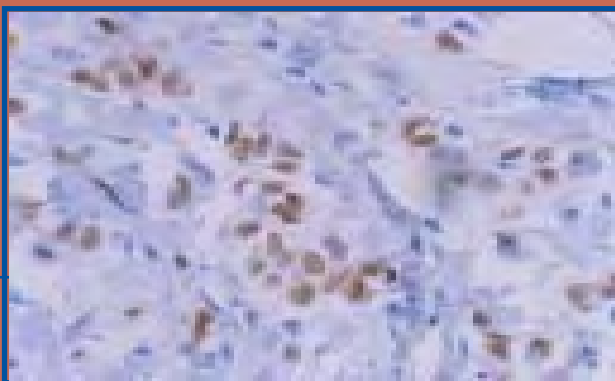
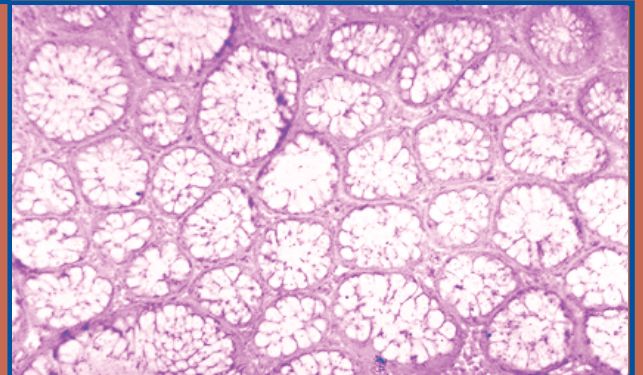
BUFFERS

STAT COUNTERSTAINS



STAT AQUA
HEMATOXYLIN

INNOVEX NUCLEAR
RED



INNOVEX
CYTO-BLUE



FOR STAT STAINING & COUNTERSTAINING

NUCLEAR COUNTERSTAINS

STAT AQUA HEMATOXYLIN

Innovex own unique formulation allows for Stat H&E staining, counterstaining and special staining in 10 seconds.

ADVANCED & UNIQUE FEATURES

- Produces the most superior nuclear staining in seconds
- Mountable with xylene based and aqueous based mounting media
- No fading with time
- Applicable to H&E staining (60 seconds), IHC counterstaining (10-20 seconds) and special staining
- Turns blue with a quick water rinse, no ammonia water rinse required
- No precipitants
- No filtration required
- No disposal or throwaways
- No loss of activity with time, usable to the last drop
- Economical



PRODUCT ORDERING INFORMATION

Product	Product #	Size	Shelf life
STAT Aqua Hematoxylin (Permanent)	NB305	125 ml	4 yrs
STAT Aqua Hematoxylin	NB305A	1 liter	4 yrs

INNOVEX NUCLEAR RED for red color counterstaining of BCIP/NBT stained *in-situ* probes, for counterstaining IHC stains stained with blue chromogens and for special stains.

- Mountable with xylene based mounting media
- Mountable with Innovex Probe Mount
- Highly stable, no fading with time

PRODUCT ORDERING INFORMATION

Product	Product #	Size	Shelf life
Innovex Nuclear Red (Permanent)	NB326	10 ml	3 yrs

CYTOPLASMIC COUNTERSTAINS

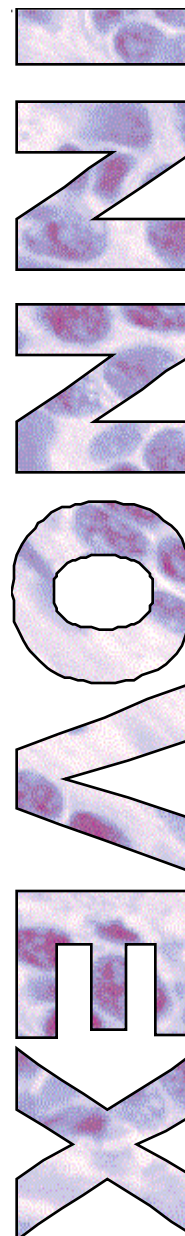
INNOVEXCYTO-BLUE

A cytoplasmic counterstain developed for blue staining or counterstaining of cytoplasm, especially useful for counterstaining IHC nuclear stains of ER, PR, P53, PCNA, etc.

- Does not bind to nucleus; No masking or overlap staining of AEC or DAB stained nuclei occurs
- Ideal for counterstaining DAB (brown) or AEC (red) stained *in situ* probes
- Mountable with Innovex Probe Mount or xylene based mounting media

PRODUCT ORDERING INFORMATION

Product	Product #	Size	Shelf life
Innovex Cyto-Blue (Permanent)	NB310	10 ml	3 yrs
Innovex Cyto-Blue (Permanent)	NB354	100 ml	3 yrs



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COUNTER-
STAINS

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CHEMICAL ENHANCEMENT OF IHC STAINING

Chemical Enhancement of IHC Staining

By Zahra Naser

Due to the rising costs of health care and medical research, the implementation of novel staining reagents that provide staining signal enhancement and free the immunohistochemist from troubleshooting is now essential.

Novel staining signal enhancement reagents are up-to-date solutions for standardized and troubleshooting-free immunohistochemical (IHC) staining; they are applicable to optimum staining of all primary antibodies in a single staining run. The basic IHC staining technique commonly employed is a costly and labor-intensive technique and bears staining result uncertainty. This cumbersome procedure often requires the IHC practitioner to establish a staining protocol for each individual primary antibody stained. Several repetitions of a staining run and modifying parameters of each staining step are usual practice among practitioners that still employ this technique.

A standardized immunohistochemical staining technique applicable to all histological sections with any primary antibody is now a fully realized practice.

IHC Application

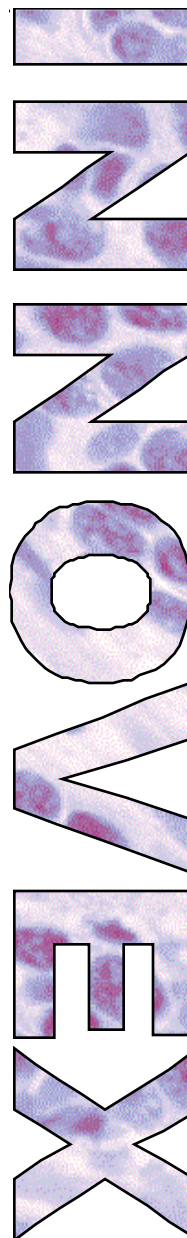
IHC staining is now a widely used technique for visualization of cellular antigens and cellular morphology by simple white light microscopy. The popularity of IHC technique is increasingly growing due to its relative inexpensiveness and simplicity. IHC stains render cellular morphology unmatched by any other type of immunoassays.

In addition, IHC staining can be performed on a variety of cell or tissue preparations such as fixed tissues, frozen (cryostat) tissue sections, cytospin cell preparations and cell monolayer. However, the majority of IHC staining is performed in formalin-fixed, paraffin-embedded tissues. This type of tissue preparation is most popular for its preservation of cellular morphology and permanency (easy room temperature storage.) Fixed tissues can be processed and stored as paraffin blocks for months to years prior to micro sectioning and staining.

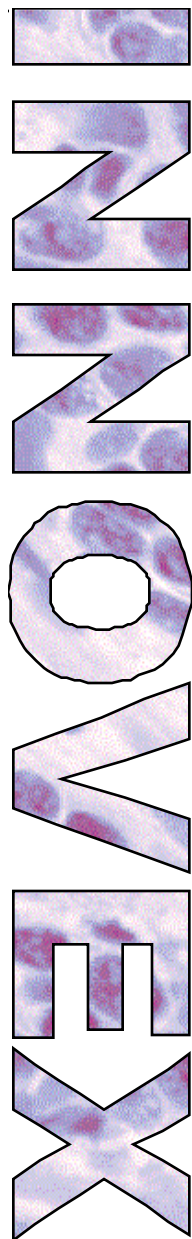
Unlike frozen sections or cell monolayer, paraffin-embedded sections contain altered and modified cellular antigenic sites (epitopes). Cellular epitopes are highly susceptible to alteration and destruction by formalin fixation, processing and paraffin embedding. IHC staining of paraffin section often requires mild procedural alterations to intense troubleshooting to achieve optimum staining.

Basic Technique

The principal of IHC staining is based on direct or indirect enzyme-IHC technique. This entails incubation of fixed or unfixed cells/tissue with a series of immunochemical and biochemical reagents.



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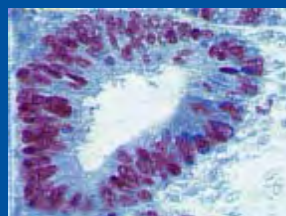


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Estrogen receptor (ER) nuclear antibody stained with Innovex Stat-Q-DAB and HRP and DAB Enhancers in one hour and no heat.



P53 nuclear antibody stained with Innovex Stat-Q-DAB and HRP and DAB Enhancers in one hour and no heat.

photos/courtesy Zahra Naser

The indirect IHC staining techniques most commonly practiced include the incubation of the primary antibody with binding specificity for the target epitope(s) in the tissue. Post incubation, the primary antibody is rinsed with PBS buffer and captured by the application of a secondary antibody specific for the primary antibody known as the linking antibody.

In the indirect method, the secondary antibody is labeled with biotin and after its subsequent incubation and rinse, the third reagent consisting of streptavidin labeled with the enzyme of choice such as horseradish peroxidase (HRP) or alkaline phosphatase is applied and incubated.

After the subsequent rinse and the fourth and final reagent, the substrate/chromogen is applied. The biotin present on the secondary linking antibody binds tightly to streptavidin where the enzyme resides. This composite is then reacted with the appropriate substrate and a color-producing chromogen of choice, which leads to production of a colored stain at the antigenic sites in the tissue.

The substrate/chromogen specific for the horseradish peroxidase enzyme is hydrogen peroxide and AEC (rust-red color) or hydrogen peroxide and DAB (brown color). The substrate for alkaline phosphatase enzyme is naphthol phosphate and the chromogenic substance includes a variety of permanent and non-permanent chromogens. The most widely commercialized is permanent Innovex Brown (brown color) and non-permanent Fast red.

After production of the stain, the slides are rinsed with water and counterstained with nuclear dyes such as hematoxylin for contrasted viewing. The slides are mounted by coverslipping for microscopic examination.

Paraffin Sections

Below are key issues regarding staining of paraffin sections.

- *Required troubleshooting*

The basic IHC staining technique is applicable to all frozen sections and cell smears but is not always adequate for staining paraffin sections. IHC staining of paraffin sections often requires procedural modification and insertion of extra steps, which are costly and time consuming.

CHEMICAL ENHANCEMENT OF IHC STAINING

- *False negative staining*

This is common with paraffin sections; no staining and weak staining are the most commonly encountered problems in IHC staining of paraffin sections. When staining paraffin sections, IHC practitioners are often required to isolate the cause of false negative staining by conducting extensive troubleshooting steps.

False negative IHC staining is largely caused by:

- use of non-specific primary antibodies;
- use of low affinity primary antibodies;
- use of weak and/or chemically imbalanced secondary staining reagents (detection systems);
- use of inadequate primary antibody titer and incubation time;
- prozone staining (no staining due to excess antibody titer); and
- post zone staining (no staining due to lack of antibody titer).

Common Remedies for Stain Enhancement

Without applying chemical enhancement reagents, the tools available for enhancing IHC stains are limited and require the laboratorian to vary the titer and incubation time of each of the primary antibodies and the individual staining reagents. These alterations in titer and incubation time do not always produce favorable staining results and may also produce background staining. Some of the most common practices employed are:

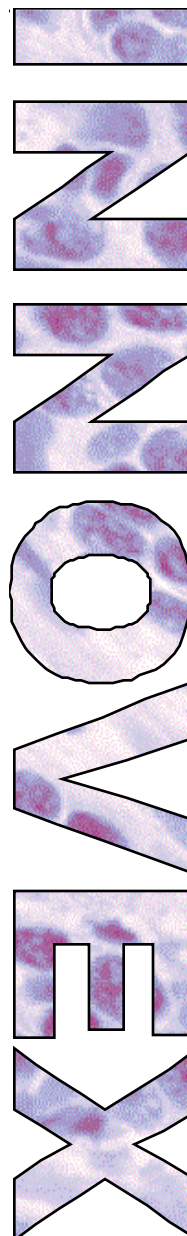
- Increasing primary antibody incubation time;
- Increasing primary antibody titer (concentration);
- Increasing incubation time of each of the secondary staining reagents (secondary antibody, enzyme and substrate/chromogen); and
- Switching the source for primary antibody and/or staining reagents.

The IHC practitioner may also perform a high heat-treatment step that involves boiling the tissue in a buffer. This is somewhat effective but creates background. Additionally, it is a lengthy procedure and the high heat causes tissue loss and morphology damage.

To avoid false negative staining adequately, chemical enhancers are required. The key to obtaining adequate IHC staining is careful selection of primary antibodies, staining system and signal enhancing reagents. Select primary antibodies that work in paraffin sections. Any antibody that stains paraffin sections will stain frozen sections and cell smears, but not all primary antibodies work in paraffin sections.

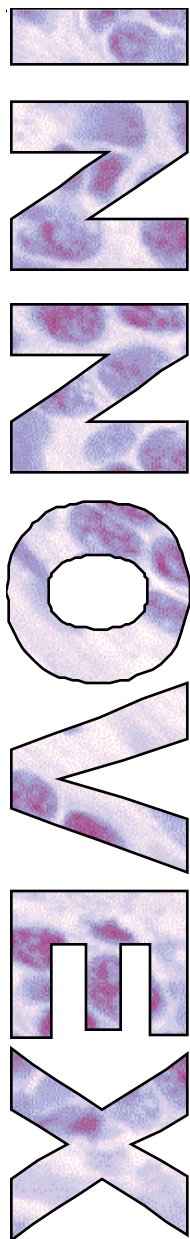
Also, select a staining system (detection system) that stains primary antibodies in paraffin sections and are non-fixative dependent, meaning that they stain all tissues regardless of the fixative employed.

Employ intra-step signal enhancing buffers to rinse in between incubation steps; with no additional steps, stains are amplified by at least three to five-fold. Employ chromogen enhancers to further amplify staining.



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CHEMICAL ENHANCEMENT OF IHC STAINING



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Chemical Enhancement

Chemical enhancers belong to a new generation of staining reagents that cut down on troubleshooting and staining time. The use of these enhancing reagents ensures IHC staining in a single run and in standardized manner without the need for modified and repetitive staining procedures. To standardize staining in the IHC lab, an enhanced secondary detection system in concert with a signal enhancing wash buffer and a chromogen enhancer must be employed. No incubation time modification is required with enhanced staining (detection) systems.

Corrective Properties of Enhanced STAT-Q

The strength and presence of adequate and novel chemistry within the staining system will allow for:

- Consistent staining of paraffin sections with any primary antibody;
- Paraffin staining of all antibodies, including frozen section antibodies;
- Lower primary antibody titer and lower incubation time requirement;
- No background staining; and
- Human and animal tissue staining.

Corrective Properties of Enhancing Wash Buffers

The signal enhancing buffer is a gentle intra-step standardization reagent that amplifies staining signals. It is simple to use and replaces PBS or other assay buffers for rinsing in between the incubation steps. It can be used as the staining wash buffer in between the incubation steps.

Corrective properties compensate for a number of variables present in staining reagents. For example, it:

- Creates staining clarity,
- Reduces background staining,
- Corrects for low affinity primary antibodies and
- Corrects for lot-to-lot variation of primary antibodies, to name a few.

Chromogen Enhancers

Chromogen enhancers are novel stain-enhancing reagents that provide a final opportunity to amplify staining signals without repeating a full staining run. Chromogen enhancers include DAB, AEC, and Fast red.

Zahra Naser is president, Research and Development Director, Innovex Biosciences Inc., Richmond, CA.

References

1. Naser Z. Immunohistochemical staining advances. *ADVANCE for Administrators of the Laboratory* 1998; 7(9): 28-38
2. Naser Z. Immunostaining made easy. *ADVANCE for Administrators of the Laboratory* 1996; 5(10): 32-43.

Immunohistochemical STAINING ADVANCES

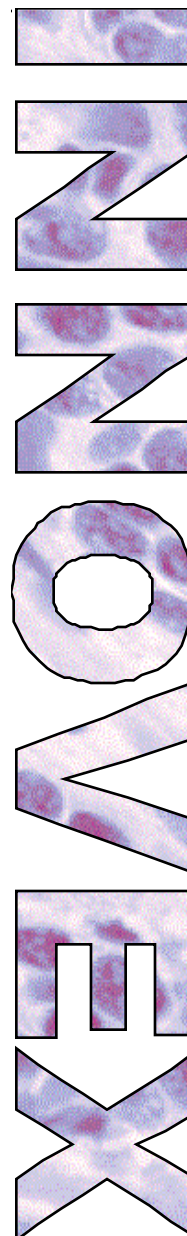
Immunohistochemical staining (IHC) is now widely practiced immunoassay in both research and clinical settings. Immunohistochemistry is an advantageous type of immunoassay to other types, such as ELISA and flow cytometry assays, due to its versatility of applications to a variety of specimens.

Immunohistochemical Staining Advances

By Zahra Naser

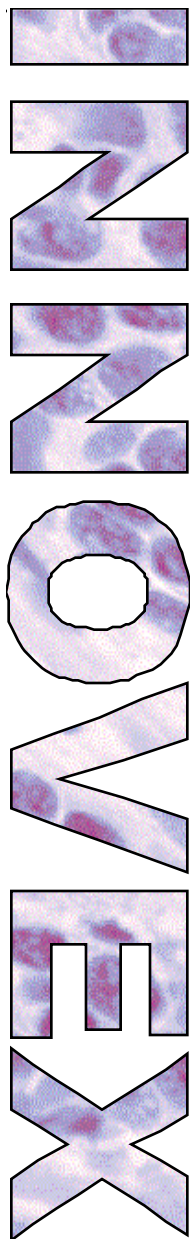
New developments in this rapidly growing field are sure to continue, making the specimens prepared by histotechnologists even more valuable to the clinician.

IHC staining, for example, may be performed on fixed, paraffin or plastic embedded tissue sections, fixed or non-fixed fresh or frozen tissue sections and cell preparations such as cell monolayer (cytospins), cell smears and cytology smears. In addition, IHC has the capacity to deliver multiple pathological and cellular information within a single stained slide and with the use of simple white light microscopy.



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Immunohistochemical STAINING ADVANCES



Unique to immunohistochemistry is its capacity to render gross cellular morphology and cellular details within a single stained slide and with microscopic examination. Cellular details furnished by IHC staining includes:

- the presence and site of target antigen within the cell(s),
- the degree of antigenic expression or
- antigen density of the cell type.

All of this information is extractable within a single stained slide that can be simply and inexpensively performed in a short time utilizing some advanced technologies.

Principles of IHC

IHC staining is based on the enzyme immunochemistry technique, a multi-component and multi-step procedure performed in a sequential manner to obtain antigenic staining in tissues or cell smears.¹ These immunochemical reagents (components) and their sequential implementation are traditionally performed post tissue fixation, embedding and sectioning (overlaying of a thin micro-section of tissue onto a microscope slide). The specimen slide is then incubated with a properly titrated (appropriate antibody concentration) monoclonal or polyclonal antibody known as the primary antibody. The primary antibody is an antibody that is raised against the target antigens contained in the tissue/cells.

The incubation step with the primary antibody is often preceded by one or several pre-treatment steps to minimize background or non-specific staining. These pre-treatment steps, their validity and performance—including the varied reagent types employed—have been fully examined.¹

Following incubation with primary antibody and the subsequent wash steps with the assay wash buffer (phosphate buffered saline [PBS]), a staining (detection) system is then employed to achieve a colored stain at the site of the binding of the primary antibody to the cellular antigen of interest. Traditionally, a biotin streptavidin or biotin-avidin detection system, along with a substrate/chromogen (color developer), is employed. The component of this type of detection system consists of a polyclonal biotinylated secondary antibody produced against the primary antibody as the antigen source.

This secondary antibody, known as the linking antibody, is produced in a different species than that of the primary antibody. Post incubation with the linking antibody and subsequent wash steps, the specimen slide is subjected to an incubation step with the second component of the detection system, mainly the enzyme coupled to streptavidin or avidin.

The two most popular enzymes employed for IHC staining are horseradish peroxidase or alkaline phosphatase. Following the incubation with enzyme-streptavidin and the wash steps, the slide is incubated with the third component of the detection system - substrate/chromogenic substance specific for the enzyme employed. Upon completion of this incubation step, a colored stain such as red AEC or brown DAB (for peroxidase enzyme) and Fast Red or Innovex Brown (for alkaline phosphatase enzyme) is developed. The slide is then rinsed with water and counterstained with a dye of color contrast with the enzymatic stain for microscopic viewing. Finally, slides are cover slipped with a mounting media for microscopic examinations and storage.



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Immunohistochemical STAINING ADVANCES

Trouble with Troubleshooting

The traditional immunohistochemical staining procedure is not a simple and standardized act to perform; in fact, a run of staining may take between three and four hours to complete. This is primarily due to the long incubation periods, required extensive washes and the varied pre-treatment steps associated with IHC staining.

In addition, IHC staining often requires insertion of extra steps to troubleshoot and optimize the procedure for different antibodies to achieve accuracy and desired staining results. The insertion of troubleshooting steps are usually aimed to overcoming the adverse effect of the undesired reactivity or lack of reactivity of staining reagent(s) of the detection system or the primary antibody with tissue elements.¹

Among the chief causes that make troubleshooting an unavoidable task in traditional IHC staining are:

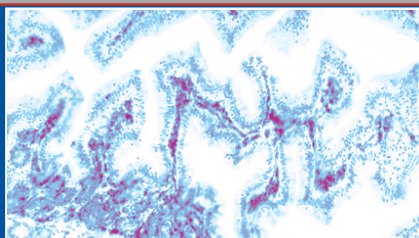
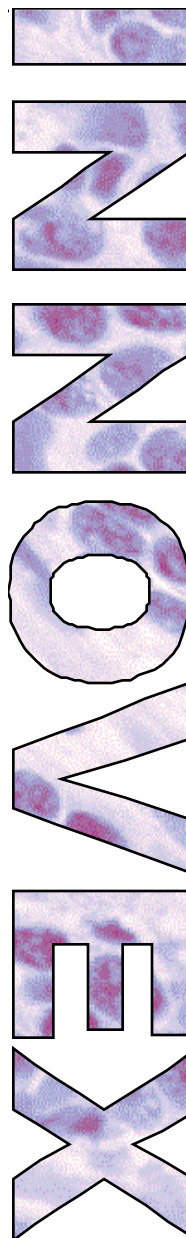
- Background staining
- False positive staining
- Negative control staining (also a form of false positive staining)
- Erratic staining
- Weak staining
- False negative staining

With novel and advanced technologies that have been developed in recent years, IHC staining can now be performed in under one hour free of pre-treatment and troubleshooting steps.

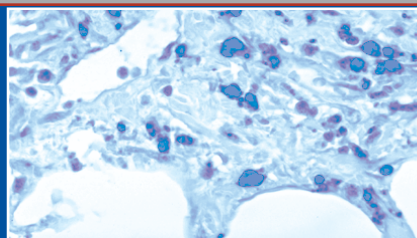
Fixation Independent Staining Advances

Selection of a well-bioengineered detection system for IHC staining is a key factor in achieving desired staining. A staining system is a cascade of several immunological and chemical components that perform interactively. These components' optimum reactivity and performance determine the quality of the staining.

Much of the troubleshooting and pre-treatment steps, background staining, long incubation periods and extensive wash steps associated with traditional IHC staining can be avoided by the use of wash free, background free stat detection systems that make IHC staining possible in under one hour. These advanced staining systems are engineered to perform independently of the histological fixative employed; they performed equally well with all commonly used histological fixatives. Their use can increase antibody dilution (a cost saving factor) and decrease primary antibody incubation time (a time saving factor).



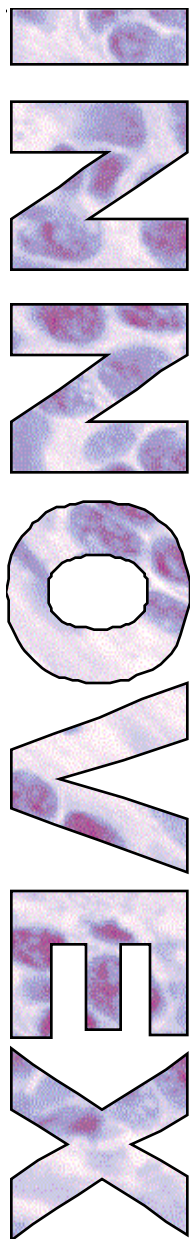
BRDU antibody stain with no heat pre-treatment, rinsed with Enhancing Wash Buffer and stained in 35 minutes



Cyclin B1 antibody stain with no heat pre-treatment, rinsed with Enhancing Wash Buffer and stained in 50 minutes

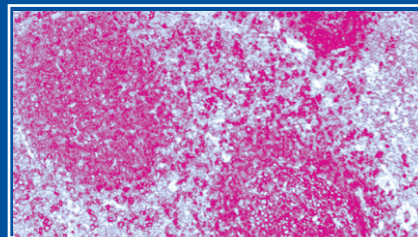
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Immunohistochemical STAINING ADVANCES



Another novel detection system that is becoming increasingly popular is the background-free, wash-free, 2-step detection system. Simple to use, the system is free of biotin and avidin and, unlike biotin-streptavidin system (which is 3 steps), it only requires two incubation steps post incubation with primary antibody. It is an incubation step with a second step reagent and a short incubation step with the substrate/chromogen of choice (AEC, DAB, Fast Red, etc.). The 2-Step detection systems are also engineered in background-free and wash-free formats.

The performance and sensitivity of 2-step detection systems equal that of biotin-streptavidin system while employing one less reagent, one less incubation step and one less wash step. Furthermore, these stat, 3-Step (biotin-streptavidin) and stat 2-Step detection systems don't require pre-treatment steps like background blocking reagents. They also have been shown to minimize the need for a pre-treatment step of high heat antigen recovery method, especially when used in conjunction with Signal-Enhancing Wash Buffers.



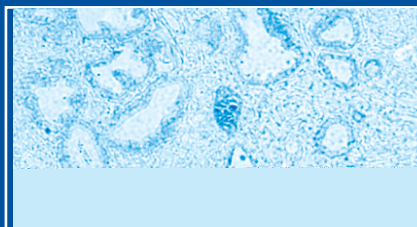
L26 (B cell) antibody stained with 2-step system, no pretreatments, in 50 minutes

Signal Enhancement Reagents

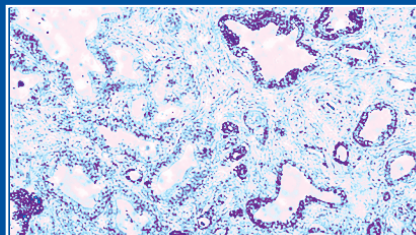
Due to the inherent nature of IHC staining, the quality of staining result will not be apparent until all staining steps are fully completed and slides are examined microscopically. Poor staining results such as weak, false-negative, no staining and inconsistent staining will demand the modification and repetition of the entire procedure. Prior to the advent of signal enhancement reagents, the options for enhancing staining signals were limited.

The most commonly practiced option entailed repeating the staining run while increasing primary antibody incubation time and/or concentration (higher titer). The method of signal enhancement did not always deliver satisfactory staining results since an increase in primary antibody incubation time or concentration may also produce prozone staining (no or weak staining). Prozone staining occurs from excess antibody for the available antigens for binding. In addition, such increases targeted at the primary antibody incubation time and /or concentration is not always effective—poor staining may be caused by lack of proper reactivity from other staining component reagents.

In the last few years, however, room temperature signal enhancement technologies have become available to provide a safety net against repetition of staining procedures and a viable solution for a more intense and amplified staining signal for antigenically weak tissues. Contributing to shorter incubation times with primary antibody and less requirements for primary antibody titer, these reagents include Enhancing Wash Buffer technology and Chromogen Enhancers.



False negative staining of PSA antibody when rinsed with PBS



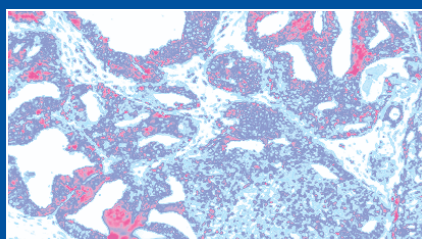
Same section when rinsed with Enhancing Wash Buffer

Immunohistochemical STAINING ADVANCES

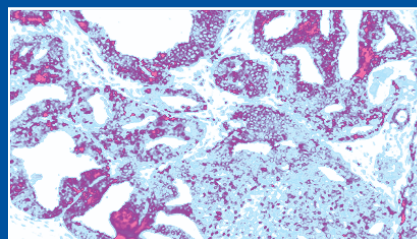
Signal Enhancing Wash Buffers are simple to use and do not add extra steps to the staining procedure. They are employed in place of PBS or TRIS buffers for rinsing steps in between all incubation steps in the staining procedure and increase staining signals by two to four-folds without creating background. Other advantages include a shorter incubation time (time saving factor) and/or a decrease in antibody concentration (cost saving factor).

Chromogen Enhancers are also novel reagents developed for enhancing staining signals. They were developed to be applied after the incubation step with the substrate/chromogen of choice and the subsequent water rinse. A few minutes' incubation with a Chromogen Enhancer intensifies staining signal, lights up weak staining areas and has been shown to eliminate false negative staining in some cases.

Chromogen Enhancers are produced for the three most popular chromogens used in IHC staining: AEC Enhancer for enhancing AEC stains, Fast Red Enhancer for enhancing Fast Red stains and DAB Enhancer for enhancing DAB stains. Chromogen Enhancers provide an opportunity to prevent a staining run to be repeated for weak or lack of staining. A few minutes of incubation with a Chromogen Enhancer may produce adequate staining signal and eliminate the need for repeating an entire staining run. Signal Enhancing Wash Buffers and Chromogen Enhancers are both fixation independent and applicable to formalin fixed tissues as well as all other commonly used histological fixatives.



Fast Red stain of PSA antibody



Same section enhanced with Fast Red chromogen enhancer

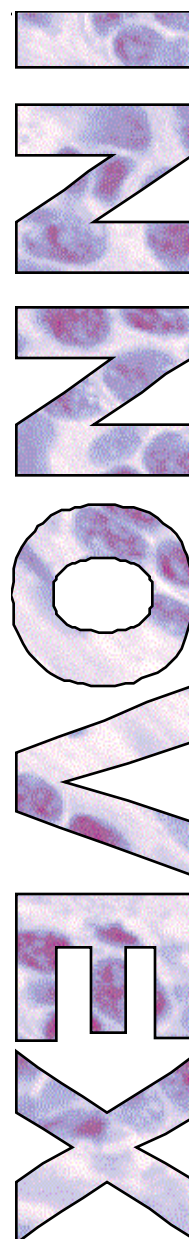
Background Elimination

Background staining has long been a persistent problem in IHC staining. Background staining can be caused by several factors, including:

- Presence of endogenous biotin in the tissue;
- Improperly employed concentration and incubation time for the primary antibody;
- The use of inferior detection systems with inherent background; and
- The use of chemically disproportionate substrate/chromogens systems.

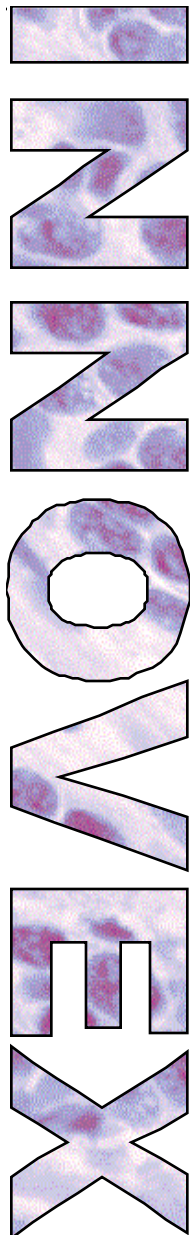
Other pre-treatment steps (such as boiling tissues by high heat antigen recovery method) have also been shown to give rise to background staining. In IHC staining, it is nearly impossible to isolate the source of background staining without extensive troubleshooting. This is due to the varied number of reagents employed in IHC staining.

Practitioners often troubleshoot background staining by implementing one or more steps with varied blocking reagents such as normal serum, avidin and casein to block non-specific sites and minimize background staining. However, all these reagent and blocking steps add time and cost to the IHC staining procedure, and results are not always



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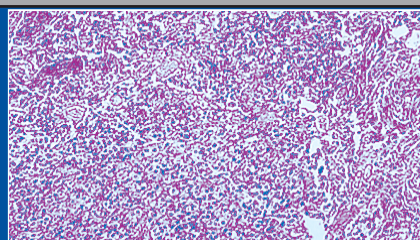
fully successful. This is largely due to the fact that each blocking reagent is directed toward reducing a single possible source of background staining.

For instance, normal serum blocking may only be effective when background staining is generated by the non-specific binding of the secondary linking antibody with inherent background. Furthermore, the serum protein concentration of normal serum sometimes contributes to further generation of background staining.

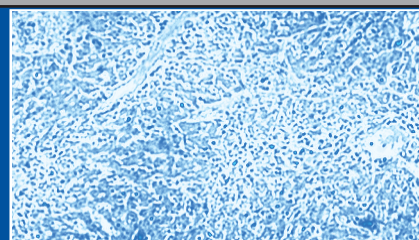
Casein blocking is also partially effective as a background reducer; casein blocks specific antigenic sites as well as non-specific sites, and its use as a background blocking reagent requires higher primary antibody concentration and longer incubation time to be employed. Such high titer or long incubation of primary antibody may also give rise to further background staining.

Advanced technologies such as a background free detection system and universal recombinant protein blocking reagents have become available for counteracting background staining. Their use eliminates the need for a background blocking step altogether. When not employing background-free detection systems, however, the use of recombinant protein technology is recommended. This universal blocker is made of varied recombinant proteins to eradicate all background staining, regardless of the source and cause.

Another advantage of background-free system application is associated with animal tissue staining. The system makes staining of same species antibodies on same species tissue section possible. So, for example, mouse antibodies may be stained on mouse tissue or rabbit antibodies on rabbit tissues with minimal cross reactivity.



Background staining in a prostate negative control section



Same negative control section treated with Background Buster for 10 minutes

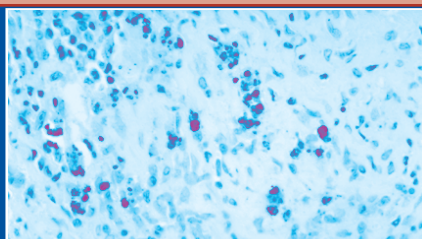
Fc Receptor Staining Elimination

Fc receptors are present on the majority of leukocytes. Fc receptors staining occurs on lymphoid and hemopoietic (blood derived) cells/tissues as a result of the non-specific binding of the Fc region of the primary and/or secondary antibody to the Fc receptors on lymphoid cells. Non-specific Fc receptors staining is troublesome—such staining interferes with the accurate interpretation and distinction of the specific staining from non-specific Fc receptor staining. Elimination of Fc receptor staining, therefore, is desirable when staining lymphoid tissues, bone marrow smears, lymphoma and leukemia specimens that contain leukocytes.

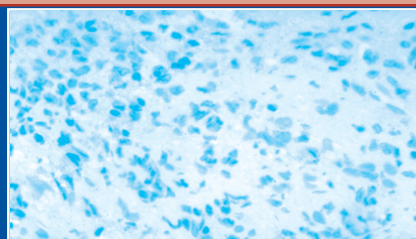


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Fc Receptor staining in a negative control Hodgkin's lymphoma paraffin section.



Same negative control section when blocked with Fc Receptor Block for 20 minutes.

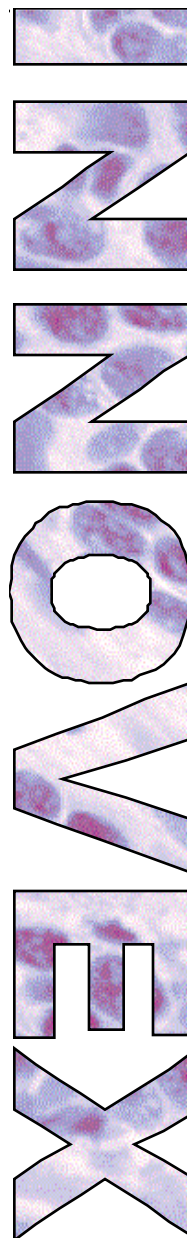
In addition, the use of Fc receptor blocker is useful in accurate and specific staining of kappa and lambda light chains and CD markers. The blocking of Fc receptors eliminates the false positive staining of lymphoid specimens.

Advances in immunohistochemical staining have been fierce in the last few years. Additional developments are sure to follow, making the specimens prepared by histotechnologists even more valuable to the clinician.

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Reference

Naser Z. Immunostaining made easy. *Advance for Administrators of the laboratory* 1998;5(10):32-34.

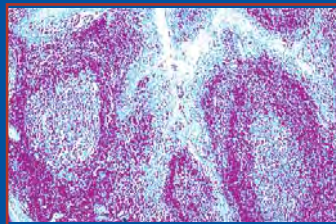


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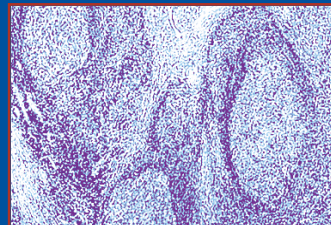
Immunostaining MADE EASY

Novel techniques for improved immunohistochemistry staining are revealed

Immunostaining Made Easy



▲ Tonsil paraffin section stained with LCA (CD45) antibody and Fast Red Chromogen and washed with PBS



Same section signal amplified by washing with Enhancer Buffer.

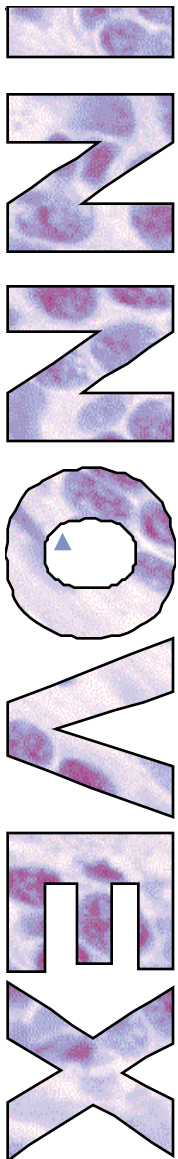
Immunohistochemical staining is a powerful immunoassay type widely practiced for studying and evaluating cellular antigens. Unlike other types of immunoassays such as ELISA and flow cytometry, immunohistochemical staining methods offer an advantage of visualization of stained cellular antigens and tissue morphology by the use of simple white light microscopy. In addition, immunohistochemical staining methodologies do not require sophisticated and expensive electronics or highly trained, experienced personnel.

Immunohistochemical stainings is based upon the enzyme immunochemistry technology. The enzyme immunochemical method is a multicomponent and multistep procedure that is sequentially performed to stain tissue and cellular antigens, a process often preceded by fixation.

The fixation process (and the type of fixative used), however, varies from lab to lab and is based on individual preference and experience. Enzyme immunochemical staining can also be applied to a variety of non-fixed specimens such as ficolled or whole blood cytopins or smears.

Other forms of fixed-tissue specimen types often subjected to immunohistochemical staining include fresh tissues that are snap frozen in liquid nitrogen and formalin - or alcohol-fixed tissues embedded in paraffin or plastic resins. By far, the most practiced form of tissue processing and fixation subjected to this type of staining is formalin-fixed, paraffin-embedded tissues.

While frozen tissue staining is not a highly practiced method due to the lack of longevity and permanency, frozen tissues are highly advantageous because of the high density of non-altered antigens and antigenic epitopes. Antigenic epitopes are highly susceptible to alteration and destruction by fixation, processing and paraffin embedding. Due to the lack of exposure of frozen sections to harsh fixatives, processing and paraffin embedding, almost all primary antibodies perform well on frozen sections at a fraction of the primary antibody titer required for paraffin sections.



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Although the method of choice for tissue processing and fixation is formalin fixation and paraffin-embedded tissues, the use of other non-formalin containing fixatives are also prevalent. Once the tissue is fixed, processed and embedded in paraffin, its stored as a paraffin block. This block is then micro-sectioned and mounted to the glass microscope slide, which is then deparaffinized before immunostaining.

Staining Techniques

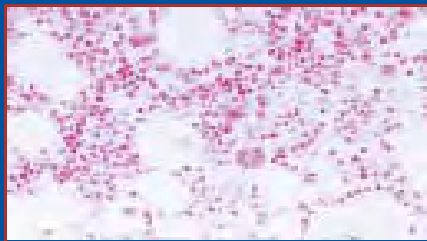
Traditional and basic techniques of enzyme immunochemical staining upon deparaffinization includes the application of primary antibody that has binding specificity for the target antigen contained in the tissue. The primary antibody is rinsed with the assay wash buffer and captured by the application of a secondary antibody specific for the primary antibody. Known as the linking or the bridging antibody, the secondary antibody is labeled with biotin (vitamin B12). After subsequent incubation and the rinse with biotinylated linking antibody, a third reagent (consisting of the enzyme of choice, such as horseradish peroxidase (HRP) or alkaline phosphatase labeled to avidin or streptavidin) is applied, incubated and rinsed.

Biotin present on the secondary linking antibody binds tightly to streptavidin or avidin on which the enzyme resides. The composite is then reacted with a substrate and a color-producing chromogenic substance specific for the enzyme is used to produce a color, or stain, on the antigen in the tissue.

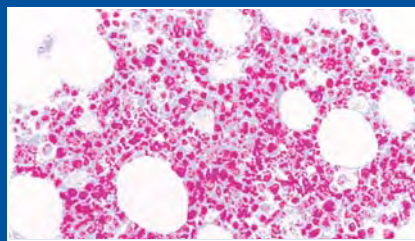
The substrate specific for peroxidase enzyme is hydrogen peroxide, and the chromogenic substance specific for this enzyme and its substrates are AEC (rust-red) and DAB (brown). The substrate for alkaline phosphatase enzyme is naphtol phosphate and the chromogenic substance includes a variety of diazonium salts varying in color. The most widely commercialized is Fast Red.

The biotin, avidin, or streptavidin-staining mechanisms are known as ABC or BSA staining systems. After production of the stain, the slides are rinsed with water and counterstained with nuclear dyes such as hematoxylin, for contrasted viewing. The slides are then mounted by coverslipping.

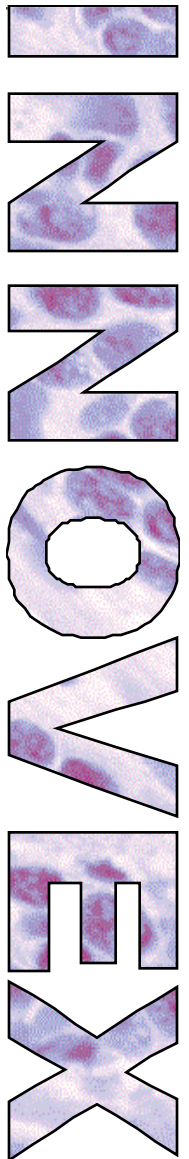
In addition to the applications of the primary antibody and the staining systems, tissue sections are often subject to a number of pre-treatment (or blocking) steps to reduce non-specific background staining and amplify staining signals lost by fixation, processing and paraffin embedding.



Bone marrow paraffin section stained with UCHL-1 (T cell) antibody and AEC chromogen washed

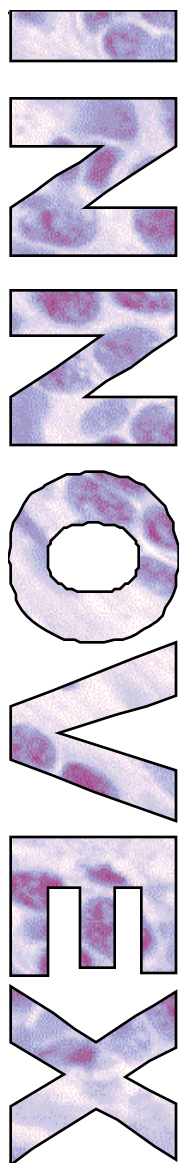


Same section signal amplified with Enhancer Buffer



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One required step when staining with peroxidase-AEC or peroxidase-DAB systems is peroxide blocking or quenching. Certain cells, such as red blood cells and tissues like liver and kidney, contain endogenous peroxidase enzyme. Upon reaction with substrate hydrogen peroxide and the chromogen AEC or DAB, the endogenous peroxidase enzyme gives rise to non-specific staining. To eliminate the interference of red blood cell staining that accompanies all tissue biopsies, deparaffinized tissue slides are immersed in an aqueous solution of 3 percent to 3.5 percent hydrogen peroxide for 10 minutes. This solution should be made weekly by making a 1: 10 dilution of stock solution of 30 percent to 35 percent solution.

Mixing the solution, however, should not involve shaking, vortexing or the use of magnetic stirrers. Instead, gentle inversions and mixing should be employed. The low concentration of hydrogen peroxide solution must then be refrigerated - it's susceptible to disassociation and is only stable for one to two weeks.

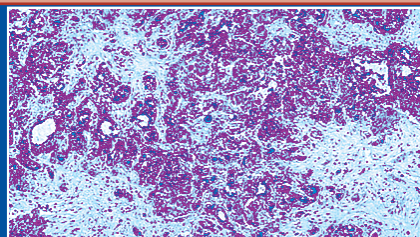
The lack of proper quenching of endogenous peroxidase activity with aqueous solutions of hydrogen peroxide improperly made or supplied in staining kits prompt some practitioners to stabilize dilute solution of hydrogen peroxide in methanol. Although this method of quenching has been reported effective, it's antigen - selective and not universally suitable for all antigens.

Methanol/peroxide solution destroys CD and other surface antigens. The aqueous hydrogen peroxide solution, however, is universally applicable for all antigens, inexpensive and an effective method for quenching peroxidase enzyme.

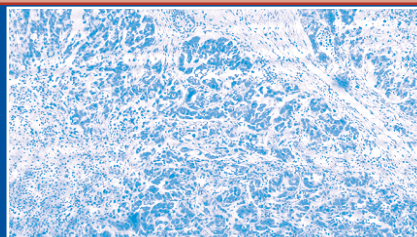
Another frequent cause of background staining is contributed to the binding of the primary and/or secondary antibody to non-target antigens and protein in the tissue. A method to avoid this: Apply and incubate recombinant protein antagonists for 10 minutes prior to application of primary antibody. Or, alter methodologies.

Altering Methods

First, the primary antibody of use (monoclonal or polyclonal), whether purchased or homegrown, should be affinity purified. This eliminates the interfering proteins and immunoglobulin that may bind to non-target proteins and antigens in the tissue. Second the incubation time of the primary should be kept as short as possible. (The shorter the incubation time, the lower the background). Antibodies with the highest concentration require very little time (about 10 minutes) to find and bind to their target antigen.



▲ Negative control colon tissue with excessive background.



▲ Same section signal amplified with Enhancer Buffer



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The same principle applies to the staining system; the lower the incubation time, the lower the background. However, lowering incubation times of some staining systems may also reduce the performance. When the background staining persists, block with recombinant protein antagonists.

A series of recombinant proteins of certain charges recently have been developed to neutralize the charges of well-researched elements in the tissue that give rise to background. These proteins may be applied in place of normal serum or casein blocking. Other causes of background staining may be due to endogenous biotin or Fe receptors staining.

Endogenous Biotin

The background staining from this occurs when endogenous biotin contained in the tissue binds to avidin or streptavidin introduced from component of the staining system. Certain tissues, such as liver and kidney, contain endogenous biotin. Traditionally, the endogenous biotin background staining has required an additional blocking step by avidin. The incubation with avidin has not proven to be completely successful; avidin is a highly charged protein and causes other types of background staining. Useful for staining both paraffin and frozen sections, newer staining system technologies have become available that don't include biotin, avidin or streptavidin.

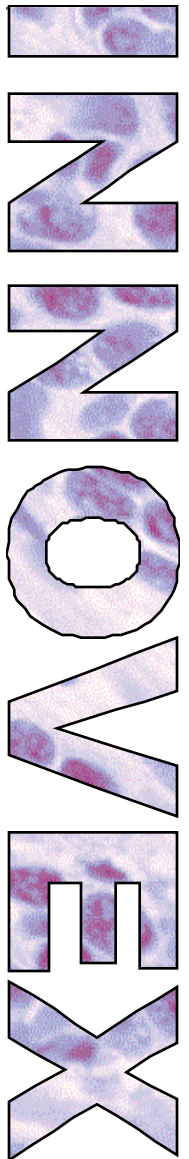
Fc Receptors Staining

Typical of hematopoietic (blood derived) tissues such as lymphoid tissues, bone marrow smears and blood smears, Fc receptors are present on granulocytes, monocytes, macrophages and some B and T cells. They have high affinity for binding to Fc region of the antibody molecule, giving rise to non-specific staining, and can cause background staining in both frozen and paraffin sections. Frozen sections, however, may display a greater background staining due to non-specific staining of Fc receptors.

(Fab')₂ fragment of the primary antibodies have been employed to eliminate the problem. (Fab')₂ fragments of an antibody molecule are obtained by enzymatic (pepsin or papain) cleavage of the Fc region, which is not involved in antigen binding. Because the use of (Fab)₂ fragments are cost-prohibitive, use an Fc receptor blocker when performing immunostaining on lymphoid or bone marrow smears, or when performing binding assays on fresh white blood cells for flow cytometric assays.

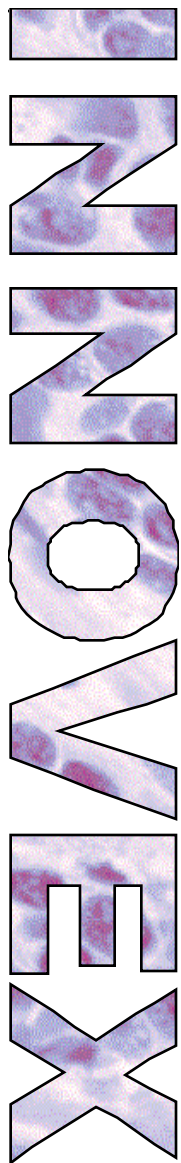
Immunohistochemical
staining
methodologies don't
require sophisticated
and expensive
electronics.

The background can also be contributed to the primary antibody component of the immunostaining cascade. The titer (concentration) of the primary antibody and the length of its incubation time are inversely related and empirically derived. An over-incubation of a high-titered antibody will re-



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sult in background staining. Therefore, the higher the titer of the primary antibody, the lower the required incubation time and vice versa.

Other variables that may contribute to non-adequate performance of primary antibodies may be due to:

- The source of the primary antibody (polyclonal or monoclonal type). Polyclonal antibodies generally yield higher titers than the monoclonals.
- The affinity of the antibody (the antibody binding strength.) This is not a controllable factor and it's primarily determined by the strength of the immune system of the animal species source.
- The mode of production (ascites or cultured supernatants) in the case of monoclonal type. Monoclonal-ascites antibodies yield a higher titer and affinity than monoclonal cultured supernatant antibodies.
- The strength and the presence of adequate chemistry within the staining system. A strong and well formulated staining system will require lower primary titer or lower incubation time to stain.

The variances may often require the practitioner to re-visit the titer and incubation time of familiar antibodies. To minimize the time, practitioners may employ a gentle signal enhancement method.

Primary Antibodies

Primary antibodies, when commercially obtained, are usually offered in pre-titered and concentrated formats. The time may vary from 10 minutes to two hours or overnight incubation. Pre-titered primary antibodies are popular for their time saving element.

The laboratorian should select an incubation time that is kept constant and vary the dilutions of the primary by performing a series of 10-fold dilutions, followed by a series of two-fold dilutions. A starting dilution may be obtained from the manufacturer. The staining should be evaluated for each of the dilutions, and the dilution with the lowest signal-to-noise ratio and the least background should be selected for staining.

The staining system employed may be a three-step biotin-streptavidin or a two-step technology free of avidin or streptavidin. In each case, the components are always applied and incubated sequentially following the incubation of tissue, with the primary antibody to produce the desired color stain.

System Selection

When selecting a staining system, several factors should be considered:

1) When a lab engages in both staining of monoclonal and polyclonal primary antibodies, a biotinylated secondary containing antibodies specific for both monoclonal and polyclonal types of primaries must be considered. Also known as multivalent secondary linking antibodies, they minimize the errors associated with matching the primary source with the secondary source.



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If a lab is solely engaged in monoclonal primary antibody staining, a secondary specific for mouse primaries will suffice.

2) A strong staining system with low incubation times also should be evaluated. Stronger staining systems will allow an increase in the dilution of primary antibodies generally by the two-fold, an incentive since primary antibodies are the most costly components of the immunohistochemistry. The staining system should be free of background.

3) The source of the background should be troubleshoot. To isolate the source, a simple negative control is run where the phosphate buffered saline (PBS) is incubated in place of the primary antibody. The rest of the staining system and procedure should be followed with no changes. Results showing no background indicates that the background is either generated by the primary antibody or by the fixation procedure. In this case, the practitioner should lower the incubation time of the primary antibody by half. If the background staining fades or appears lighter, it may indicate that the primary antibody requires re-titration for obtaining proper dilution factor.

If the same negative control persists with the same degree of background, it indicates that the background source may be due to fixation or the staining system. The process should be followed by running a fixation control by comparing the staining of tissues fixed in several commonly used histological fixatives.

Signal Enhancement

Second to background staining, lack or low staining is a frequent complaint among practitioners. Weak or false-negative staining may occur due to several factors:

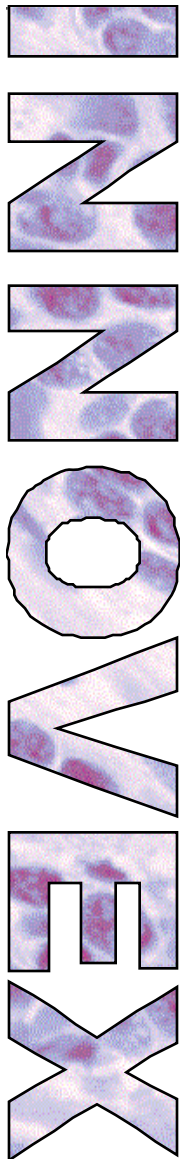
- use of sub-optimized primary antibody titers and/or associated incubation times;
- low affinity antibodies;
- inadequate processing methods;
- over or under fixation of the tissue; and
- use of weak or chemically unoptimized staining systems.

An increase in the titer and incubation time of the primary antibody and/or an increase in incubation time of the chromogen component of the staining system summarized all the tools to correct for weak staining in the past. However, more recent methods include high heat antigen recovery and Signal Enhancer Wash Buffers.

For antigen recovery by high heat, post deparaffinization, the tissue section is boiled in a buffer by varied heat sources. This works well with formalin fixed tissue only; the high temperature breaks the bond that formalin forms with tissue proteins and, therefore, exposes more antigenic sites for the primary antibody to bind to. Although effective, this method carries a few associated drawbacks:

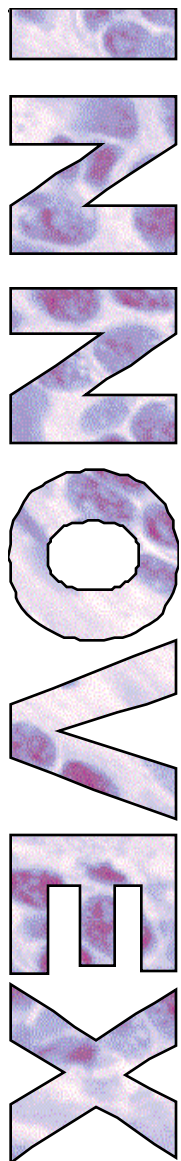
- it only works with formalin fixed tissues;
- it requires a lengthy pre step procedure; and
- the high heat treatment causes tissue loss and sometimes morphology damage.

The Signal Enhancing Wash Buffers method was developed to gently amplify signals without heat application or additional pre-steps. Not fixative-selective, the Enhancers are simple to use, replace PBS or other assay wash buffers for rinsing in between incubation steps and have corrective properties that



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compensate for variables. (Variables include lot-to-lot variation of the primary antibody titer and their affinity, fixation and fixative variations, as well as specimen variation).

Applicable to other immunoassays such as ELISA, immunofluorescence and flow cytometric assays, Enhancer Wash Buffers allow the user to employ higher dilution of the primary antibody or lower the incubation time.

Mounting and Preservation

By mounting slides, stained specimens are prepared for microscopic examination and long-term storage. The process is simple: a coverglass is applied to the microscope slide, covering the stained specimen with an adhesive agent, the mounting media.

Traditionally, two types of mounting media have been employed in the immunohistology lab: resinous and aqueous. Resinous mounting media are prepared by dissolving synthetic resins in xylene or toluene. Two pre-steps are required to achieve solvent compatibility in the tissue and mounting media: the alcohol dehydration step (to eliminate water) and the xylene or toluene immersion step (to replace alcohol).

The aqueous or water-based mounting media consist of simple sugars and gelatin dissolved in water. This type doesn't render permanency, and stains tend to be sticky. Also, the refractive index is high and tissue visibility and clarity is dampened.

However, a few advantages are offered. Aqueous media:

- are not stain selective;
- are universally applicable to all types of stains;
- don't require pre-steps; and
- slides can be mounted from water and on the bench top.

Another type of mounting media that don't require a coverslip. Rather, the media forms a protective film over the specimen once dried. Non-permanent and not suitable for high magnification microscopy, fading of stains will occur with this method.

Recently, a new mounting media chemistry has been developed and marketed that incorporates advantages of resinous and aqueous media. Universally applicable to all immunohistochemical stains, the method is permanent, contains no organic solvent, provides excellent tissue visibility and clarity and slides are mounted from water. No differentiation of stain type and mounting media is necessary.

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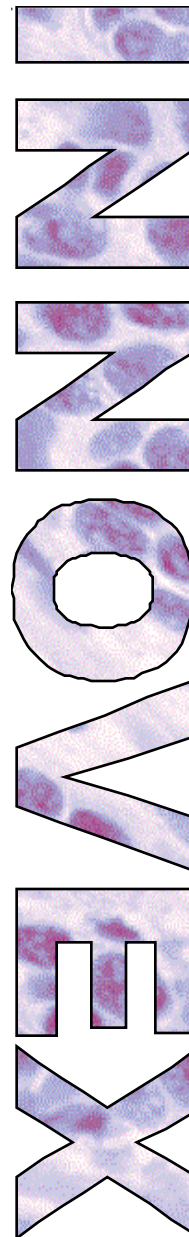


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