# PolyFacts Vol. 41 No. 1 BioSciences

News | Views | Insights from

Polysciences, Inc.

### IN THIS ISSUE. . .

NEW! Decalcification Products	. Page 1
The Papanicolaou Staining Procedure	. Page 2
New! Hematology Stains	. Page 3
Science Solutions: Fix Lymphoreticular Myeloid, Lymph Nodes & Bone Marrow Tissues	. Page 3
NEW! Dry Powder Stains & Dyes	. Page 4
Product Spotlight	. Page 4

# Save Time with New Decalcification Products!

### Four new decalcification products for use in IHC, cytochemistry and special stain procedures

Before bone or other calcified tissue can be processed and sectioned, the first step is to remove any calcium. Failure to properly decalcify can result in ragged or torn sections and cause damage to the microtome knife. Since decalcification can be a time consuming process, Polysciences proudly offers the following time saving solutions for all your decalcification needs; Super Decal I and Super Decal II for superior staining results in a minimum amount of time - as little as 3 hours! Bone specimens are gently demineralized to make them soft enough to section in paraffin and yield sharp, crisp nuclear staining. De-Calcify Decal Block Soaking Solution saves microtome knives and Deli-Cal Block Solution for Bone Marrow Biopsies and Clots enhances ribbon section cutting.

### Gold Standard Series: Super Decal I - Delicate Decal

Recommended for use with delicate specimens that require fast diagnostic work such as IHC, cytochemistry and special stain procedures. Gold Standard Series: Super Decal I - Delicate Decal is recommended for mildly calcified specimens such as bone marrow biopsies (core). The standard procedure should be to check the specimen every 1/2-1 hour for mildly calcified specimens and every 1-2 hours for compact bone to determine the endpoint of decal-cification. Super Decal I - Delicate Decal is recommended for immunohistochemistry (IHC) techniques.

### Gold Standard Series: Super Decal II – Heavy Duty Decal

Designed for safe, longer term decalcification of hard compact bone, femoral heads, above and below the knee amputations. Gold Standard Series: Super Decal II – Heavy Duty Decal is an extremely effective and versatile decalcifier that can be used in specific lab routines. As with most acids, nuclei acids in the cell can become subject to ribonuclease digestion, resulting in a loss of basophilic properties. Careful monitoring should be used with Super Decal II – Heavy Duty Decal to avoid over decalcification. Most decalcification occurs in approximately 4-6 hours or less, depending on the thickness and density of the specimens. Overnight decalcification should be avoided. Super Decal II – Heavy Duty Decal is not recommended for IHC.

- Save Time Decalcify in as little as 3 hours
- Ready-to-use decalcifier for human and animal tissues
- Enhanced nuclear detail
- Environmentally safe and biodegradable.

## New Products for the Histology & Pathology Lab

See us at NSH in Birmingham, AL Booth #1101-1103

- Delicate Melanin Bleach Kit for Special Stains & IHC
- Acetic Acid Formalin Fixative for Bone Marrow & Lymph Node Fixation
- New Stains & Reagents
- Formvar/Carbon Coated Grids
- SHUR/Trim<sup>™</sup> Paraffin Block Dewaxer

Visit www.polysciences.com for product information.



Human Degenerative Joint Disease, decalcified with Super Decal I - Delicate Decal. Stained with H & E, 10X



Bottlenose dolphin calf teeth, decalcified using Super Decal II – Heavy Duty Decal. Stained with Methylene Blue



Human Degenerative Joint Disease, decalcified with Super Decal II – Heavy Duty Decal. Stained with H & E, 40X

### Deli-Cal Block Solution for Bone Marrow Biopsies and Clots - Enhances Ribbon Cutting

Using our microtome soak Deli-Cal Block Solution, saves you time and money by allowing you to salvage problem blocks right at your cutting station. The quality and thoroughness of Deli-Cal Block Solution is dependent upon the original decal procedure and condition of the specimen. Try Deli-Cal Block Solution on the next block that gives you problems.



#### **Benefits:**

- Saves knives and money
- Useful for bone marrows, special stains and IHC
- Enhances ribbon section cutting
- Salvages undecalcified and under processed bone marrow biopsies at the cutting station
- Fast soaking procedure
- Environmentally safe and biodegradable

#### **De-Calcify Decal Block Solution**

Soaking blocks in De-Calcify Decal Block Solution enhances ribbon cutting and saves knives allowing you to salvage problem blocks right at your cutting station. Try De-Calcify Decal Block Solution on your next block that requires decalcification before damaging expensive microtome knives.



### **Benefits:**

- Saves knives and money
- Enhances ribbon cutting
- H&E and routine staining
- Fast soaking procedure
- Ready-to-use formulation
- Environmentally safe

Cat. #	Description	Size
24888	Gold Standard Series: Super Decal I - Delicate Decal	500ml, 1L, 6x1L
24887	Gold Standard Series: Super Decal II - Heavy Duty Decal	500ml, 1L, 6x1L
24900	Deli-Cal Block Solution for Bone Marrow Biopsies and Clots	250ml, 500ml
24903	De-Calcify Decal Block Solution	250ml, 500ml

### Visit www.polysciences.com to learn more about all our decalcifying products and reagents.

## The Papanicolaou Staining Procedure



2

The original staining procedure was developed by Dr. George N. Papanicolaou for interpretation of gynecologic specimens, the Pap stain has several advantages for use with all cytologic samples. The first advantage is that it provides good definition of nuclear detail. Hematoxylin will color the nuclei and demonstrate chromatic patterns of normal and abnormal cells. Good detail can only be accomplished with proper cellular fixation. If properly stained with hematoxylin, the nuclei of cells are visible, although their cytoplasm are not easily seen. The likelihood of detecting and identifying abnormal cells at this step are decreased. This is avoided by staining the cytoplasm of cells a contrasting color (i.e., counterstaining). Alcoholic counterstains, OG-6 and EA (eosin-azure) enables the cellular differentiation. This allows for the clear visualization through multiple layers of cells and mucus. The final step in the procedure is clearing with xylene which contributes to the cellular transparency.

The Pap stain is a colorful, polychromatic stain and when properly performed will show subtle variations of yellows, oranges, pinks, reds, blues and blue-greens (cyan) with crisp nuclear detail and cellular transparency. The cell nuclei are crisp blue to black. Cells with high content of keratin and glycogen stain yellow. Superficial cells are orange to pink and intermediate and parabasal cells are turquoise green to blue. Metaplastic cells stain both pink and green. In today's histopathology laboratory you need a manufacturer who can deliver reliable stains with lot-to-lot consistency every time. Learn more about our full line of stains and dyes at www.polysciences.com

Cat. #	Description	Size
09782	Gill's modified OG-6	500ml, 1000ml, 3.75L
09783	Gill's modified EA	500ml, 1000ml, 3.75L

Technical Data Sheet Online Gill's Modified OG-EA for Papanicolaou Staining, TDS #196 www.polysciences.com/SiteData/poly/Assets/DataSheets/196.pdf

#### Advantages of this staining procedure:

- 1. Good definition of nuclear detail
- 2. Cytoplasmic transparency
- 3. Indication of cellular differentiation

### Main steps of this staining procedure:

- 1. Fixation
- 2. Nuclear staining with hematoxylin
- 3. Cytoplasmic staining with counterstains OG-6 & EA
- 4. Clearing

## New Hematology Stains



Polysciences, Inc. is a leading manufacturer of an extensive line of routine, special stains and powdered dyes for histology, cytology and hematology for the scientific and clinical research community. We now offer May-Grunwald, Wright-Giemsa and Wright stains

used for tissue sections, cytology, blood smears, cell smears and bone marrow aspirations. Our formulations create the highest standards in optimized intensity of color. Polysciences offers various formulations of Hematoxylin and Eosin in ready-to-use solutions for routine staining in the histology laboratory as well. In addition to our hematoxylins and eosins, we also offer bluing solutions, which enhance the bluing of the cell nucleus.

All of our reagents are manufactured to the highest possible standards to provide consistency and reliability every time.

Cat. #	Description	Size
24981	May-Grunwald Stain Solution	1L, 4L
08711	Wright-Giemsa Stain Solution	470ml, 1L, 10L
24986	Wright Stain Solution	1L, 4L, 20L
24984	Wright-Giemsa Stain Phosphate Buffer pH 6.8	1L, 4L
24989	Wright Stain Phosphate Buffer pH 6.8	1L, 4L
24242	Gill's Hematoxylin #1 for Cytology	500ml, 1000ml
24243	Gill's Hematoxylin #2,	500ml, 1000ml
	2x Strength for Histology & Cytology	
24244	Gill's Hematoxylin #3, 3x Strength for Histology	500ml, 1000ml
24245	Harris Hematoxylin, Acidified (mercury free)	500ml, 1000ml
24821	Mayers Hematoxylin	500ml, 1L
17269	Eosin Y, 1% Alcoholic Solution	500ml, 1000ml
09859	Eosin Y, 0.5% Alcoholic Solution	500ml, 1000ml

**Need Stains?** Competitively priced, brilliant stains direct from the manufacturer, visit www.polysciences.com

# Science Solutions

### Fix Lymphoreticular Myeloid, Lymph Nodes and Bone Marrow Tissues

Fixation is the most influential factor in the long series of steps between grossing the tissue and coverslipping the stained slide. Nearly all the steps can be reversed if a problem occurs. Tissue can be reverse processed and reprocessed. Most stains can be removed and restained to improve intensity. The one step in which errors are permanent and can not be undone is fixation. Understanding the importance of fixation is crucial to producing quality slides and interpreting results. For over 45 years, Polysciences, Inc. has set the standard for consistent, high quality fixatives and reagents. Our new Acetic Acid Formalin Fixative for Bone Marrow and Lymph Nodes is designed to fix lymphoreticular myeloid, lymph nodes and bone marrow tissues.

### Procedure for bone marrow biopsies using Polysciences' Acetic Acid Formalin for Bone Marrow & Lymph Node Fixative

#### Aspirate

- 1. Allow aspirate to clot in petri dish.
- 2. Transfer clot to specimen container filled with 10% neutral buffered formalin.
- 3. Process as usual.

### **Bone Core Fixation**

- 1. Immediately fix in Acetic Acid Formalin for Bone Marrow and Lymph Node Fixative (*Cat. #24910*) for a minimum of one hour.
- 2. Fix overnight if brought in later than 2 hours before end of the work day. Decalcify first thing in the morning.

### **Bone Core Decalcification**

- 1. Place fixed core and label in a plastic cassette. (Super Decal II: Heavy Duty Decal discolors metal). Decalcify in Deli-Cal Block Solution (*Cat. #24900*) for 1 hour. Do not leave overnight.
- 2. Test for decalcification by gently checking for pliability.
- 3. Rinse in running tap water for approximately 2 minutes.

### Processing

- 1. If biopsy came in afternoon, process with the rest of the specimens.
- If the biopsy is decalcified in the morning, hand process in 120cc plastic specimen cups, 15 minutes in each container,

starting with 70% ethanol or speed process through processor, 15 minutes each station with heat and vacuum, starting with the first dehydrant station.

### Microtoming

- 1. Cut both aspirate and bone cores at 2 microns.
- 2. Place 3 levels on one slide. Cut an extra slide of the last level and set aside on the back of the water bath in case a special stain is requested.

#### Staining

- 1. Hematoxylin approximately 5 minutes. Bone core 1 minute. (check under the microscope before counterstaining)
- 2. Eosin for 10 dips, dehydrate, clear and coverslip.

**Note:** Over decalcification will result in poor or indifferent histological detail and staining characteristics. Less than one hour is usually not sufficient.

**Reference:** Adapted from Becky Scholes, HTL,MT(ASCP) H.I.S.T.O., The Official Newsletter of the Iowa Society for Histotechnology, Tech Tip

Cat. #	Description	Size
24910	Acetic Acid Formalin Fixative for	
	Bone Marrow and Lymph Node Fixative	500ml, 1L

# New Dry Powder Stains & Dyes



Polysciences offers a wide range of dry powder stains and dyes for Hematology and Histology, with most certified by the Biological Stain Commission (BSC). In addition to certified stains and dyes such as Alcian Blue, Acid Fuchsin and Congo Red, Polysciences manufactures hundreds of stains and reagents used for a large

variety of biological and scientific applications. These include; Coomassie Blue for electrophoresis, Hematoxylin & Eosin for microscopy and Fluorescein Isothiocyanate (FITC) for fluorescent dyes. Our stains and dyes are manufactured to meet rigid specifications to provide consistency from lot-to-lot and reliability every time.

Select new products listed at right. For a complete listing of our dry powder stains, please visit www.polysciences.com

Don't miss our new Hematology Stains on page 3!

Your source for dyes, routine stains, special stains, certified stains, stain kits and more.



Request a Polysciences, Inc. catalog today! www.polysciences.com

# **Product Spotlight**

## New

### **Picrosirius Red Stain Kit**

Used to stain collagen I and III. The stain will quantify the amount of collagen in a given area of myocardial tissue, (i.e. the collagen area fraction). Picrosirius Red Stain binds specifically to collagen fibrils of varying diameter that is used to distinguish collagen type I from



collagen type III. Collagenous structures of the mandible stain brilliant red. Dentinal tubules, Sharpey's fibers and other structures not easily seen in sections stained with hematoxylin and eosin alone are seen clearly after this procedure. Under polarized light collagen fibers can be specifically identified and their orientation determined. Picrosirius red-hematoxylin is recommended for examination of normal or pathologic dental specimens.

### Available in 250ml and 500ml Kit sizes.

Cat. #	Description	Size
24901	Picrosirius Red Stain Kit	1 Kit

Cat. #	Description	Size	
24991	Acid Fuchsin, C.I. 42685, Certified	25g, 100g	
24993	Brilliant Cresyl Blue, C.I. 51010, Certified	25g, 50g	
24994	Brilliant Green, C.I. 42040, Certified	25g, 50g	
24995	Bromophenol Blue, ACS	5g, 25g	
25009	Bromothymol Blue, ACS	25g, 50g	
24996	Bromothymol Blue, Sodium Salt, ACS	25g	
24997	Fluorescein, Sodium Salt, C.I. 45350	100g, 500g	
24998	Giemsa Stain Powder, Certified	25g	
24999	Gentian Violet, C.I. 42555, USP	25g	
25000	Hydroxynapthol Blue, ACS	25g	
25001	Leishman Stain	25g	
25002	Malachite Green Oxalate, C.I. 42000, Certified	25g	
25003	Phenol Red, ACS	25g	
25004	Rhodamine 6G, C.I. 45160	25g, 50g	
25005	Rose Bengal, C.I. 45440, Certified	25g	
25006	Rosolic Acid, C.I. 43800	25g	
25007	Saffron	25g	
25008	Sudan Black B, C.I. 26150, Certified	25g	



Osteo-Bed Plus Embedding Kit offers the same benefits as Osteo-Bed Bone Embedding Kit with the added benefit of producing much harder blocks for supporting undecalcified bone specimens and bone containing metal implants, grafts and stents.

Suitable for use with large and small mineralized (undecalcified) bone sections and hard tissues.



• Infiltrates rapidly and produces high hardness after polymerization

Try Osteo-Bed Bone Embedding Solvent (Cat. # 17734B) to remove plastic from sections for brilliant staining

Cat. #	Description	Size
24889	Osteo-Bed Plus Embedding Kit	1 Kit

