



Immunohistochemical Staining: Use of Protein-A Peroxidase Conjugate

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Protein-A is a cell wall component of *Staphylococcus aureus* that combines specifically with the Fc portion of many IgG molecules. This portion has been conjugated with peroxidase and used as a substitute chemical technique. Protein-A has a high affinity for rabbit-antihuman antibodies and seems to be helpful in eliminating background staining. It has also been reported that protein-A has better specificity and higher affinity for immune complexes than a secondary antibody directed against a primary antibody.¹

This technique is used in our laboratory for all antibodies except the mouse monoclonal antibodies. For mouse monoclonal antibodies we use an avidin-biotin technique. The various attempts to use protein-A peroxidase with the mouse-antihuman antibodies have produced either a very weak stain or no stain at all. One of the problems could be that not all mouse immunoglobulins react with staphylococcal protein-A.²

Materials and Methods

For this paper, 4 micron sections of formalin fixed thyroid gland and liver tissue from autopsy cases were used. Tissue was placed on albuminized slides and heated in an oven at 60° to 64°C for 30-45 minutes.

Antibodies Used

Rabbit-antihuman calcitonin (Dako) diluted 1 to 80 with phosphate buffered saline (PBS). Rabbit-antihuman alpha-feto protein (Dako) diluted 1 to 100 with PBS. Protein-A-Peroxidase (Boehringer-Mannheim) diluted 1 to 200 with PBS.

Immunoperoxidase for All Non-Mouse Antibodies

NOTE: Read all remarks below before beginning the staining procedure.

1. Deparaffinize and hydrate slides to distilled water.
2. If tissue enzyme digestion is necessary, refer to remarks below.
3. Place tissue in 3 changes of PBS.
4. Primary antibody, 30 minutes.

5. Rinse in 3 changes of PBS.
6. Hydrogen peroxide/water, 5 minutes.
7. Rinse in 3 changes of PBS.
8. Protein-A-Peroxidase, 1 to 200 in PBS, 30 minutes.
9. Rinse in 3 changes of PBS.
10. Diaminobenzidine (DAB), 5-10 minutes.
11. Wash in water, 5 minutes.
12. Harris' hematoxylin, 5 minutes.
13. Wash in water, 2 minutes.
14. Acid alcohol, 1 quick dip.
15. Wash in water, 2 minutes.
16. Ammonia water (0.5%) 15 dips.
17. Wash in water, 5 minutes.
18. Dehydrate from 95% to absolute alcohol, xylene and mount with resinous media.

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No reader should utilize or undertake procedures in Histo-Logic articles unless the reader, by reason of education, training and experience, has a complete understanding of the chemical and physical properties of all materials to be utilized and the function of each material by which any procedure is accomplished.

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Remarks

1. Hydrogen Peroxide/Water: 1 ml of 30% hydrogen peroxide to 30 ml of distilled water (3% solution).
2. DAB: 4 mg of DAB to 10 ml of PBS (pH 7.0-7.2), filter and add 20 microliters of 3% hydrogen peroxide.
3. PBS: 16 gr of sodium phosphate dibasic. Add up to 5000 cc with distilled water.
4. Protease digestion; 0.02 gm of Protease III to 40 ml of PBS, pH to 7.3. Place slides in preheated solution into 37°C oven for 20 minutes. Wash slides for 5 minutes in water and continue at step 3.
5. Elmer's glue should be used to attach sections to slides.
6. Run a positive and negative control. Negative control receives the same treatment as the positive control with the exception of the primary antibody. Slide can be left in PBS for this step. (step 4).
7. Do not allow slides to become dry at any time during the staining procedure.

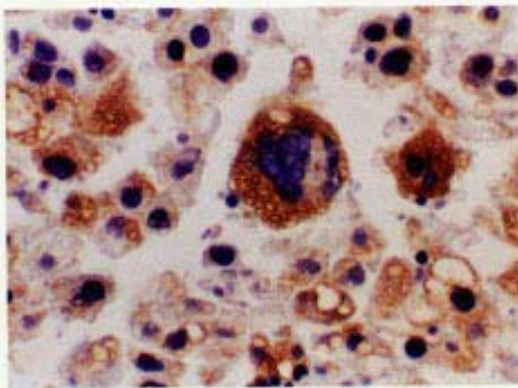


Fig. 1: Liver Alpha-feto protein. Malignant tumor cells of the hepatocellular carcinoma (liver cancer) stain brown, due to alpha-feto protein content. X40

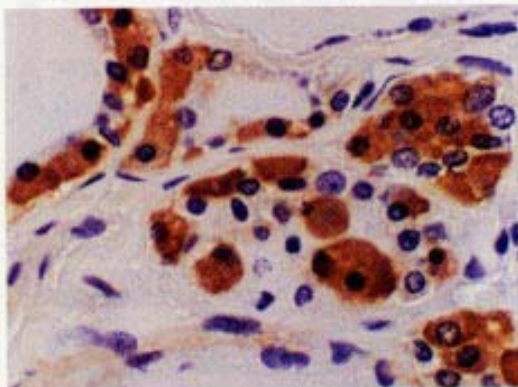


Fig. 2: Thyroid gland-Calcitonin. C-cells of thyroid stain brown with antihuman calcitonin. X40

Comments

Compared to other methods, we found that this Protein-A-Peroxidase method results in less background staining. Protein-A-Peroxidase has helped to decrease our overall staining time by 45 to 60 minutes. With this technique, we have been able to eliminate several steps of our usual technique.

Protein-A-Peroxidase is an economical reagent which has been used with thirty different primary antibodies in our laboratory. The cost is reasonable; approximately \$50 to \$60 per ml. We have used the same dilution up to four days later with equal success.¹

References

1. Worthinger, R.L., Miller, G.W., Nicodemus, D.S. *Manual of Immunoperoxidase Techniques*. Chicago, ASCP Press, 1983.
2. Sternberger, L.A. *Immunocytochemistry*, 3rd ed., Wiley Medical, 1989.
3. Other adaptations by K. Neum, Howard University Hospital, Wash., D.C., 1985-87.

V.I.P.* Processing for Small Biopsies

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Proper fixation or preservation of tissue is the most important step in processing tissue. This has been true since pathology began in the 1800's. It is a known fact that thickness of the tissue specimen controls the time it is exposed to the fixative. In the case of immunochemical staining, we are finding most problems relate to over-fixed tissue. Research in our laboratory with the pressure vacuum processors has proven that fixation of tissue can be reduced from 12-48 hours, to a maximum of 6 hours. For example, a piece of tissue 4 mm thick can be fixed in 4 hours and needle biopsies can be fixed in 12 minutes with the aid of pressure vacuum processing.

An increase in biopsies and continued effects of DRG's on the hospital have made it necessary to produce slides much faster than in the past. With the V.I.P. System, we are able to accomplish this with no sacrifice in the final slide quality.

With the patient's stay in the hospital now reduced, a diagnosis is required as quickly as possible. In our hospital, the attending physician notifies the laboratory when a biopsy is to be performed. The nurse places the tissue in the appropriate fixative; GI biopsies are placed in Hollande's fixative and brought to the laboratory. There is usually a lapse of not more than 20 minutes before the laboratory receives the tissue. Biopsies are left in this fixative until the V.I.P. processor is started.

*Vacuum Infiltration Processor (V.I.P.), available from Miles Inc., Diagnostics Division, Elkhart, IN 46515.

Needle biopsies of bone are placed in B-5 fixative immediately. The tissue is brought to the laboratory and left in B-5 for 1 hour and is then processed with a short run (V.I.P. program 2 or 3). Lymph nodes are fixed in the same manner and processed with the same short run schedule. All other needle biopsies are fixed in 10% neutral buffered formalin (NBF) for approximately 20 minutes before they are brought to the laboratory and processed with a short run program. We have found that rush processing cycles work well on needle biopsies taken from the prostate, liver, kidney, lung and skin. The following changes are made for weekend processing: 3 hours in 10% NBF, 3 hours in 10% alcoholic formalin and held in 70% alcohol until approximately Sunday midnight, when processing is started. The processing schedule is complete by 5:30 AM the next morning. This modification to the processing schedule does not interfere with immunostaining since the specimens are not left in formalin for a long period of time. Reagent alcohols are used for dehydration, xylene for clearing and Paraplast plain for infiltration and embedding.

Fixatives

Hollande's Fixative

Cupric acetate	100.0 gm
Picric acid	160.0 gm
Glacial acetic acid	60.0 ml
Formalin, 37-40%	400.0 ml
Distilled water	1000.0 ml

Mix in order given.

NOTE: Picric acid fixatives are not recommended for use on the V.I.P.[™] processor due to possible picric and crystal formation.

B-5 Fixative (Stock)

Zinc chloride	12.0 gm
Sodium acetate	2.5 gm
Distilled water	200.0 ml

B-5 Fixative (Working)

Stock B-5 solution 20.0 ml
Add 2 ml of 40% formalin immediately before use.

NOTE: The slides produced after this fixative do not have to be treated with iodine and hypo, since there is no artifact pigment deposited by the zinc chloride.

10% Neutral Buffered Formalin Fixative

37-40% formalin	100.0 ml
Distilled water	900.0 ml
Sodium phosphate monobasic	4.0 gm
Sodium phosphate dibasic	6.5 gm

Alcoholic-Formalin Fixative

70% alcohol	900.0 ml
37-40% formalin	100.0 ml

V.I.P. Routine Processing Cycle—Overnight

Program #1

Station	Concentration/ Solution	Time	Heat	P/V*
1	10% Neutral Buffered Formalin	3 hours	40°C	Yes
2	10% Alcoholic-Formalin	3 hours	40°C	Yes
3	80% Reagent Alcohol	30 min.	40°C	Yes
4	95% Reagent Alcohol	30 min.	40°C	Yes
5	95% Reagent Alcohol	30 min.	40°C	Yes
6	100% Reagent Alcohol	30 min.	40°C	Yes
7	100% Reagent Alcohol	30 min.	40°C	Yes
8	100% Reagent Alcohol	30 min.	40°C	Yes
9	Xylene	20 min.	40°C	Yes
10	Xylene	30 min.	40°C	Yes
11	Paraplast	20 min.	59°C	Yes
12	Paraplast	20 min.	59°C	Yes
13	Paraplast	20 min.	59°C	Yes
14	Paraplast	40 min.	59°C	Yes

V.I.P. Rush Processing Cycle for Needle Biopsies (Fixed)

Program #2

Station	Concentration/ Solution	Time	Heat	P/V*
1	10% Neutral Buffered Formalin	6 min.	40°C	Yes
2	10% Alcoholic-Formalin	6 min.	40°C	Yes
3	80% Alcohol	Skip		
4	95% Alcohol	Skip		
5	95% Alcohol	12 min.	40°C	Yes
6	100% Alcohol	6 min.	40°C	Yes
7	100% Alcohol	6 min.	40°C	Yes
8	100% Alcohol	6 min.	40°C	Yes
9	Xylene	6 min.	40°C	Yes
10	Xylene	6 min.	40°C	Yes
11	Paraplast	Skip		
12	Paraplast	Skip		
13	Paraplast	9 min.	59°C	Yes
14	Paraplast	9 min.	59°C	Yes

V.I.P. Rush Processing Cycle for Needle Biopsies (Unfixed)

Program #3

Station	Concentration/ Solution	Time	Heat	P/V*
1	10% Neutral Buffered Formalin	10 min.	40°C	Yes
2	10% Alcoholic-Formalin	10 min.	40°C	Yes
3	80% Reagent Alcohol	Skip		
4	95% Reagent Alcohol	6 min.	40°C	Yes
5	95% Reagent Alcohol	6 min.	40°C	Yes
6	100% Reagent Alcohol	12 min.	40°C	Yes
7	100% Reagent Alcohol	12 min.	40°C	Yes
8	100% Reagent Alcohol	12 min.	40°C	Yes
9	Xylene	10 min.	40°C	Yes
10	Xylene	10 min.	40°C	Yes
11	Paraplast	Skip		
12	Paraplast	Skip		
13	Paraplast	18 min.	59°C	Yes
14	Paraplast	18 min.	59°C	Yes

*P/V = Pressure and Vacuum

Questions in Search of an Answer

Editor's Note: This feature, "A Question in Search of an Answer," is being reintroduced in *Histo-Logic* starting with this issue. It is felt that this feature can be of extreme value to the readership of *Histo-Logic*. However, the value of this feature is only as good as the responses received for the questions presented. Therefore, we ask that responses contain specific and definite answers rather than potential or guessing answers. Appropriate submitted answers will be published in succeeding issues of *Histo-Logic*. Therefore, it is important that backup material such as references, photographs and/or microscopic slides be submitted with the response. We are also soliciting questions in search of answers from you, the reader of *Histo-Logic*. Please send answers, questions or comments on this subject to: Editor, *Histo-Logic*, P.O. Box 36, Lanham, Maryland 20706.

1. The work in our laboratory is mainly on gastrointestinal mucosal biopsies, especially in diarrhoeal illnesses. We use Bouin's fixative and have been very happy with the fixational quality, especially the nuclear morphology. But the disadvantage of Bouin's fixative is that the morphology of Paneth's cells and eosinophils are lost by the leaching effect of acetic acid. Also, when we do immunocytochemical studies particularly for immunoglobulins, lymphocyte and macrophage markers, the staining is not as good as we can obtain with formal saline. I wonder whether there is any other fixative or additive to formal saline which can improve antigen preservation while giving good nuclear characteristics. Hopefully, any solution suggested would preserve paneth cell and eosinophil granule morphology.

Minnie M. Mathan, M.D., Ph.D.
Tamil Nadu, India

2. Another of our problems is that slides fade very rapidly, especially the haematoxyline of H and E stains and toluidine blue for one micron sections. Our glass slides are prewashed in potassium dichromate and water and cleaned with methylated spirit. The mounting media for H and E slides is 6% gum damar in xylene and for resin plastic sections, DPX mounting media.

Minnie M. Mathan, M.D., Ph.D.
Tamil Nadu, India

3. The gray-to-blue hue on the H and E stained slides (figures 1 and 2) that occurs fairly frequently is a puzzling problem. I have been under the impression for many years that this artifact was due to the denaturing effect of dehydrating and clearing agents during processing. However, numerous attempts to prove this fact have met with failure. I would be

most interested in obtaining specific information on what causes this artifact. Equally important is how one prevents its development or eliminates the problem once observed on the microscopic slides.

Lee G. Luna
Gaithersburg, Maryland

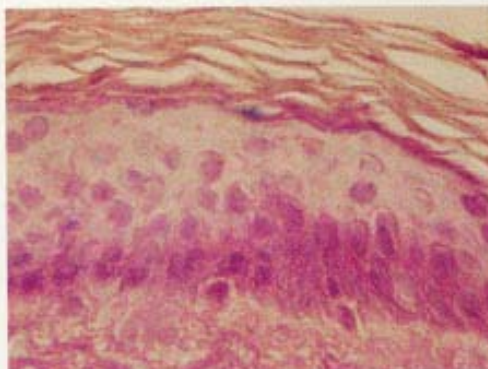


Figure 1: Gray-to-blue hue (unstaining) of portion of the epidermis. Note especially the heterogeneity of the affected portion of the tissue. Skin epidermis, H and E, original magnification X100.

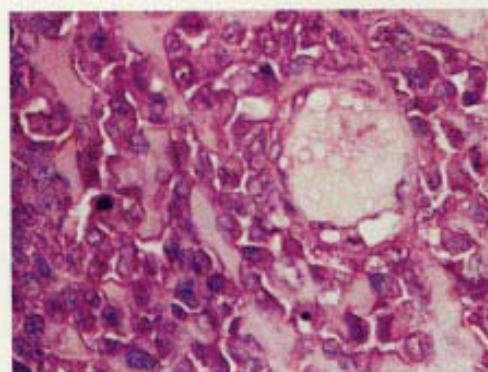


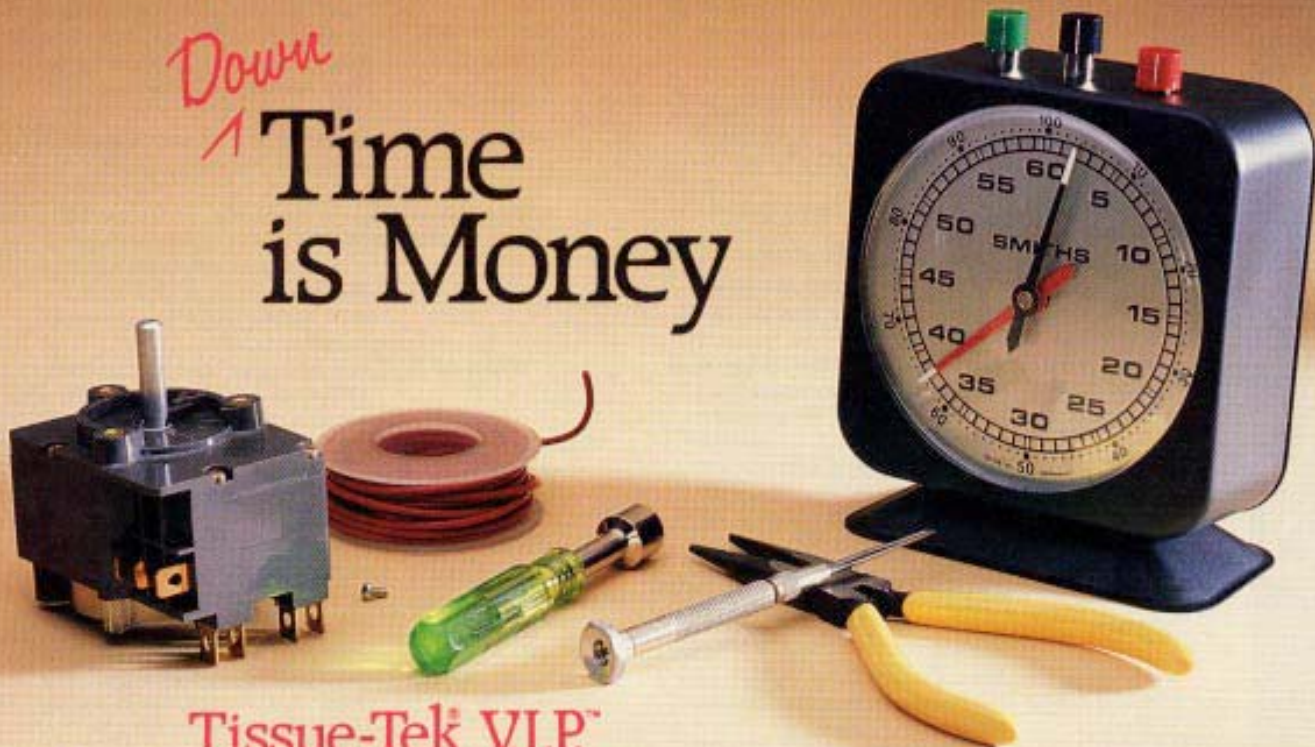
Figure 2: Gray-to-blue hue (unstaining) is also evident in this section. Note that nuclei also contain the same staining artifact. Spleen, H and E, original magnification X100.

4. I would like to have an answer to the following questions related to the use of plastic embedding of tissue for light microscopy:
 - a. What is the best method of mounting plastic sections on microscopic slides to prevent bubbling (puckering) of the plastic? This bubbling effect often traps residual stain, which makes for an unsightly section and in some cases may effect interpretation.
 - b. In your opinion, which is the most trouble-free plastic for thin sectioning?

Lee G. Luna
Gaithersburg, Maryland

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Stains Commonly Used in Neuropathology

Lee G. Luna
American HistoLabs, Inc.
Gaithersburg, Maryland 20809

The following information is being provided in the hope it may be of help to histologists who may not be familiar with the histology (morphology) of the central nervous system. The information provided below cites most of the entities found in the central nervous system and staining procedures that can be used to demonstrate them.

ENTITY/STAIN	RESULT
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1. Routine

<i>Hematoxylin and Eosin</i>	Nuclei blue; Cytoplasm red.
<i>Hematoxylin and Eosin/Phloxine</i>	Phloxine stains some structures more intensely red; i.e., muscle, inclusion bodies, etc. Eosin stains cytoplasm yellowish-red.
<i>Hematoxylin Phloxine Saffron (HPS)</i>	Same, except collagen is yellow, other cytoplasmic structures are red and the blue stain is less intense.

2. Neuronal cell bodies and various nuclei

Any of several stains/dyes may be used.	Nuclei, Nissl substance and Nissl bodies are blue. Glial nuclei will stain, but normally their cytoplasm will not stain.
<i>Cresyl violet</i> is most common.	Swollen astrocytes will show faint staining of their cytoplasm.
<i>Toluidine blue thionin, methylene blue</i> can also be used.	

3. Axons, neurofibrils, senile plaques

<i>Bielschowsky</i> neurofibrillar stain (Note: This differs from Bielschowsky reticulin stain.)	Intracellular neurofibrils, axis cylinders and senile plaques, black.
<i>Holmes</i>	Same (paraffin sections).
<i>Davenport</i>	Same (paraffin sections). Less staining of senile plaques or neurofibrils.
<i>Von Braunmuhl</i>	Same (frozen sections).

Bodian Same (paraffin sections). This stain uses protargol as the silver component rather than silver nitrate used in above stains. Very tricky! Used mostly for axis cylinders.

Nauta Degenerating axons stain with silver as fragmented and swollen fibers.

4. Myelin Sheath

Kluver-Barera Myelin blue. This stain is often counter-stained with cresyl violet for Nissl, PAS, H&E, or other combinations. Not absolutely specific for myelin, but good.

Weigert-Pal Normal myelin black or blue-black. Degenerating myelin fails to stain. This is one of the oldest stains for normal myelin. Depends upon mordanting with a chrome salt, staining with hematoxylin and subsequent differentiation.

Lopez, Weil Heidenhain Spielmeyer, Smith-Quigley Gives similar results to the Weigert-Pal, but they take less time to perform and can be done on paraffin sections. The principle of mordanting, staining and differentiating are the same.

Marchi Degenerating droplets of myelin are black, due to intense staining with osmic acid. Normal myelin is light brown or brownish-black.

Swank-Davenport A rapid Marchi stain.

5. Neuroglia

Cajal's Gold Chloride Sublimate Astrocytes stain black. Background reddish-brown. Requires frozen sections. One of the most popular of Cajal's stains.

Hortega's Silver Carbonate Oligodendroglial processes stain black; occasionally astrocytes or microglia may stain. Requires frozen sections. One of Hortega's most popular stains.

Penfield's Silver Carbonate Oligodendroglia and microglia black. Penfield's modification of Hortega's SCO. Requires frozen sections.

Mallory's Phosphotungstic Acid Hematoxylin Nuclei blue. Fibrin blue. Fibroglial, myogial and neuroglial fibrils blue. Collagen yellowish-to-brownish-red. Coarse elastic fibers purplish.

Holzer's Crystal Violet Reactive astrocytes, especially their fibers, deep blue on a lighter blue background. (Not specific.)

6. Collagen

Hematoxylin-Van Gieson Collagen red. Nuclei brown. Muscle, glia cornified epithelium, yellow to brown.

7. Reticulum

- Gomori's* Reticulin black. Collagen may stain
Reticulin rose color. May be counterstained.
Wilder's Reticulin Same.
Laidlaw's Same.
Reticulin

8. Mucin

- Hotchkiss* Stains mucopolysaccharides, which
McMann's include many things with
Periodic Acid-
Schiff (PAS)
Stain
$$\begin{array}{c} | \\ -C-OH \\ | \\ -C-OH \\ | \end{array}$$

(vicinal hydroxy groups).
Mucin red. Not specific for mucin.

9. Fungi

- See above—(PAS) Fungi red.
Gomori's Fungi black. Often counterstained
Methenamine green for contrast.
Silver
Gridley's Mycelia blue. Conidia rose or purple.
Fungus Stain Background yellow. Elastic tissue and
mucin blue.

10. Fat (all done on frozen sections)

- Scharlach R* Fat orange to red.
(Sudan 3 or 4;
Scarlet Red)
Oil Red O Same.
Sudan Black B Fat black, blue or blue-black.
Nile Blue Neutral fats, pink. Fatty acids blue to
Sulfate violet. Nuclei and elastic tissue, dark
blue. (Not very specific.)

11. Iron

- Turnbull Blue* Hemosiderin blue.
Reaction
Gomori Same.
Lillie Same.

12. Calcium

- Von-Kossa* Calcium salts black. Nuclei red. Cyto-
plasm pink.
Alizarin Red S Calcium red. Often counterstained with
light green.

13. Amyloid

- Congo Red* Amyloid red. Dichroism under polar-
ized light (green to yellow).
Liab's Amyloid reddish-purple. Background
Crystal Violet blue.

14. Bacteria

- Brown-Hopps* Gram-positive bacteria blue. Gram-
negative red. Nuclei red. Other ele-
ments yellow.
Ziehl-Nielsen Acid fast bacilli stain red. Background
Fite-Faraco light blue.
or Kinyoun's

15. Pituitary granules

- Russell—* Acidophil granules orange to vermil-
D. Russell's Acid lion. Basophil granules blue. Connect-
Fuchsin Aniline tive tissue red. Erythrocytes vermilion.
Blue Method

16. Inclusion Bodies

- Lendrum's* Inclusion bodies red. Nuclei blue.
(Hematoxylin, Background yellow.
Phloxine,
Tartrazine)

17. Other special stains, less commonly used, include: Giemsa
for malarial parasites and rickettsia, AMP (acid muco-
polysaccharides), alkaline phosphatase, acridine orange
(for RNA), Feulgen (for DNA) and many other stains. For
further information, see following references:

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6. Culling, CFA, Allison, RT, Barr, WT: *Cellular Pathology Techniques*, 4th ed. Butterworth and Co., Boston, Mass, 1985.

Calendar Check

SEPTEMBER

8-10 Minnesota Society of Histotechnology,
Minneapolis, Minnesota

22 NSH Teleconference, Laboratory
Safety

OCTOBER

9-14 NSH Symposium/Convention,
Louisville, Kentucky

Ninth Annual "Wet" Workshop

Forty-nine histotechnologists representing 26 states and Canada recently participated in the Ninth Annual Practical Stain Technology "Wet" Workshop and Seminar. The five-day program, conducted March 20-25, 1988, in Williamsburg, Virginia, was sponsored by the Center for Histotechnology Training, Gaithersburg, Maryland.

The program was organized and conducted by Lee G. Luna, American Histolabs, Inc. According to Lee, the program provided 38 hours of intensive training in all facets of histopathological techniques, with emphasis on special staining techniques such as microwave and immunochemical staining.

Hands-on workshops were held that gave participants an opportunity to participate in 25 special staining procedures, including rickettsia, rabies inclusion bodies, copper, leprosy bacilli,



Lee G. Luna and Lamar Jones



Robert Loetzer and Lee G. Luna



Judy Pettella and Charlotte Acree

cat scratch disease bacilli, and insulin. Microscopes were available to view slides prepared by the participants.

Between the Hands-on sessions, lectures were given on a number of current topics, including tissue identification, fixation, the shelf life of staining solutions, H & E staining, decalcification, microtomy, and immunohistochemistry. In addition, representatives from Miles Inc. Diagnostics Division, Richard-Allan Medical Industries, and E. Leitz conducted question and answer sessions on their respective products.

The program staff included Lee G. Luna, HT (ASCP); Shelley B. Hoover, B.S., HTL (ASCP), Special Stain Laboratory, American Histolabs; and Jack B. Wenger, HTL (ASCP) Histopathology Laboratories, Armed Forces Institute of Pathology. Assistance was also provided by Darlene Nix, HT (ASCP), Pompano Beach, Florida.

The tenth annual "wet" workshop is already in the planning stages, according to Lee G. Luna. It will be held at the same location on March 12-17, 1989.



Charlotte Acree, Judy Pettella and Nancy Mills

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Histotechnology Training: Kentucky Style

Not long ago, on-the-job training was the only way to learn histotechnology. And it is still a critical element. Hands-on, day-to-day experience in a laboratory will always be necessary to perfect the skills that make a good histotechnologist.

But today, an increasing number of histotechnologists are finding that they want to know more than just *how* to perform their duties. They want to understand the theory. They want to know why, in a specific situation, one stain is better than another. They want to know how and why a tissue processor works. In other words, they want in-depth knowledge—book knowledge that will complement their practical experience.

That's why people are willing to drive as far as 300 miles round trip every week to attend a class taught by M. Lamar Jones, HT (ASCP), through the University of Kentucky. The class was first offered in 1983 at Good Samaritan Hospital in Lexington, Kentucky. It was originally designed to help histotechnologists prepare for the board of registry exam.

M. Lamar Jones is the chief of the histopathology lab at Good Samaritan Hospital and Pathology Associates in Lexington, Kentucky. He has been teaching and training in the area of histotechnology since 1978 and has conducted numerous lectures and workshops at state and national meetings.

"Kentucky has no accredited school of histotechnology," Jones explained. "The nearest schools are in Peoria, Illinois, or Charleston, South Carolina. The students and histotechnologists in this area are very hungry for knowledge regarding histotechnology."

The training program is set up like a school. There are two classes, one in Lexington and one in Louisville. The classes include lectures, lab exercises, long-term projects, and exams. Each class meets one night a week for two semesters. The first semester covers almost everything from the structure of cells to embedding. The second semester covers topics from microtomy to basic special stains. Since the University of Kentucky began sponsoring the program in 1987, students receive three hours of credit.

Students are assigned in-depth projects that help improve their overall knowledge of the histology lab. For example, they may be asked to prepare a plan for setting up a new histology lab, explaining what equipment and materials to buy, where to buy them, and how much to budget. Or they may be asked to take a special stain and totally dissect it, explaining every solution and how it works.

Before 1987, the classes were not promoted in any way. Students heard about them from other histotechnologists. But now the university mails brochures to all the hospitals in the area.

Students in Jones' classes have varied educational and professional backgrounds. Most are currently histotechnologists, but a few are beginners who would like to have a career in histotechnology. Jones can help in that respect, too. He has assisted many of his students in finding permanent positions after taking the course.

In fact, the program's reputation is expanding fast. Jones receives many calls from employers looking for histotechnologists. Many of the calls are from other states, including Tennessee, Ohio, Mississippi, Pennsylvania, Arkansas, and Indiana. Many labs are willing to hire inexperienced histotechs with the stipulation that they complete the class taught by Jones.

Jones encourages all of his students to become board-registered histotechs. And most of those who do take the board of registry exam find that the course has helped.

Educational requirements vary considerably from one lab to another. Jones would like to see better-defined educational standards that apply to all histology labs. "The only way our profession will advance is to have board-registered histotechs," he said.

This program is one of only a few offered outside of accredited schools of histotechnology. In the near future, Jones would like to offer a more advanced course in addition to the basic course. His ultimate goal, however, is to make his course at the University of Kentucky an accredited school of histotechnology.

NSH Symposium/Convention

Workshops are filling up fast, so register for the National Society for Histotechnology 14th Annual Symposium/Convention, Louisville, KY, October 9-14.

Special rates are available on executive suites at the beautiful Galt House East on the Ohio River. And, Louisville has plenty to offer...from bluegrass music to gracious Southern hospitality and warm, friendly people.

Attend workshops, clinical and veterinary presentations, technical exhibits and social events. Don't miss it. For more information, call the NSH office at (301) 577-4907.

NSH Working to Improve the Histotechnology Profession

Editor's Note

Next year, the National Society for Histotechnology (NSH) will celebrate the fifteenth anniversary of its incorporation. Over the years, this organization has had a far-reaching impact on the histotechnology profession. Today, the NSH is involved in virtually every aspect of histotechnology, from education to legislation. Because of the complexity of the NSH, we will attempt to explain its structure as well as some of its functions, accomplishments and goals in this and future issues of *Histo-Logic*. This, the first article of the series, provides an overview of the NSH and its development.

When the NSH pioneers began building the foundation for the Society, they knew that progress in the field of histotechnology would be fast and furious. Their goal was to provide some guidance in the midst of this rapid change that would sustain histotechnology as a viable, exciting and important function in patient care.

The NSH was born out of a need to coordinate the efforts of histotechnologists throughout the United States. The groundwork for the Society began with the establishment of the Annual Symposium on Histopathologic Technique sponsored by the Armed Forces Institute of Pathology (AFIP). This AFIP symposium later evolved into the NSH National Symposium/Convention. From this came *Histo-Logic*, the first newsletter directed specifically to the histotech audience. It was the success of the national symposium and the newsletter that provided the encouragement to form the Society.

In August of 1973, the first organized meeting was held with the purpose of forming a society. By October, the National Society for Histotechnology was a reality. Then, in July of 1974, the NSH was incorporated in the state of Virginia.

From the very beginning, it was made clear that the purpose of the Society was to fulfill the needs of the profession. There was no intention to become a union or a politically motivated organization. Specifically, the articles of incorporation state that the purpose of the NSH is:

- 1) To provide an interchange of ideas pertinent to histotechnology.
- 2) To advance professional growth, standards, knowledge and performance in histotechnology through continuing and formal educational programs, and
- 3) To create mutual understanding and cooperation between the Society and other allied professions.

Today, the NSH is the only organization representing histotechnologists exclusively. It serves a membership of more than 2700 and supports constituent societies in 40 states. The organization is controlled by a board of directors that acts according to the policies determined by the House of Delegates. All business and affairs of the Society are supervised by officers who are elected every two years at the national Symposium/Convention. Regional Directors are also elected for each of the Society's nine regions. Day-to-day administration of the Society's affairs is conducted by Roberta Mosedale, Executive Secretary, from the NSH headquarters in Lanham, Maryland.

All NSH members have an opportunity to play an active role in the organization through a number of committees, including: Budget & Finance; Membership; Public Relations; Health & Safety; Awards; Quality Control; Legislative; Bylaws; Credentials; Nominations; House Rules; Judicial; Employment Opportunity; Education; CEU; Veterinary Histology; and Convention. The chairperson of each of these committees is appointed by the president.

Members may also represent the NSH by serving on various committees and organizations outside the Society. The NSH is currently represented on the National Committee for Clinical Laboratory Standards, the Committee on Allied Health Education and Accreditation, the National Accrediting Agency for Clinical Laboratory Science, the Board of Registry of the ASCP, the Biological Stain Commission, and the National Commission for Health Certifying Agencies. Essentially, the NSH tries to become involved in anything that impacts the histotechnology profession.

Education is a critical function of the NSH. The Society participates in more than 50 scientific programs per year dealing with the field of histotechnology. In addition, the NSH sponsors an external degree program through Thomas A. Edison State College in Trenton, New Jersey. Credits can be earned that can be applied toward an Associate in Arts degree with an emphasis in histotechnology, or a baccalaureate degree in Arts or Science.

The highlight of the year for the NSH is the national symposium/convention. Here, histotechs from across the country meet to share their experiences, ideas and friendship. Workshops and lectures are held throughout the six-day event. A number of awards are also presented at the symposium/convention, including the Histotech of the Year Award, the Golden Forceps Award, and the J.B. McCormick Award.

Membership in the NSH is open to anyone with an interest in histotechnology. Dues are \$30 per year, which include a subscription to the *Journal of Histotechnology* and the *NSH In Action*.

Promoting Histotechnology as a Career

Miles Inc., Diagnostics Division, and the National Society for Histotechnology have recently published a new brochure promoting histotechnology as a career. The brochure, titled "The Art and Science of Histotechnology—A Career to Consider" will be available to all those who promote the histotechnology profession, or would like to consider a career in histotechnology.

The brochure provides a concise overview of the profession, briefly discussing the origin of histotechnology, explaining what it is, and describing what a histotech does. Histotechnology is defined in terms of its artistic as well as its scientific aspects.

The 12-page, full color brochure includes numerous photographs showing lab settings, histology equipment, and histotechs at work. It also provides an overview of the skills necessary to become a histotech, and describes the five basic steps of tissue preparation.

The brochure also describes the training necessary to prepare for a career in histotechnology, and it lists accredited training programs by state. A list of available films and books is also included so those who are interested can learn more about a histotechnology career.

The careers brochure is available by contacting the National Society for Histotechnology; 5900 Princess Garden Parkway, Suite 805; Lanham, MD 20706.

To receive your own copy of *Histo-Logic*® or to have someone added to the mailing list, submit home address to: Miles Inc., Diagnostics Division, P.O. Box 70, Elkhart, Indiana 46515.



Miles Inc.
Diagnostics Division
Elkhart, Indiana 46515

Histo-Logic®

New "800" Number Gives Better Service

We're changing our customer service "800" number to be able to respond to calls more quickly and efficiently. We're also expanding our hours by one hour...8:00 AM to 6:00 PM, Eastern Time.

Beginning September 1, our new number will be: 1-800-348-8100. It's also the current number for all Diagnostics Division technical product support and parts order calls. As of September 1, just dial **1-800-348-8100**. If you follow the simple instructions, your call will be automatically routed to the right person to answer troubleshooting questions or to take your parts order.

We know how important prompt service is and how important immediate answers are when you have a "can't wait" question. That's why we're making this change. And, to assist you, we've enclosed new stickers for your instruments and new rolodex cards with the **1-800-348-8100** number in this issue of *Histo-Logic*. Also, if you call the old number, you'll be directed to the new one.

We hope you'll appreciate the faster and better service. Give us a call. We'd like to hear from you.

The editor wishes to solicit information, questions, and articles relating to histotechnology. Submit these to: Lee G. Luna, *Histo-Logic* Editor, P.O. Box 36, Lanham, Maryland 20706. Articles, photographs, etc., will not be returned unless requested in writing when they are submitted.
