

TUTORIAL ON CYTOPREPARATORY TECHNIQUES

JULY 9-13, 1973

SELF-EVALUATION QUIZ

*JWS*  
*20 Oct 73*

Please circle each correct answer.

1. According to Papanicolaou, in his Atlas of Exfoliative Cytology, all of the following may be used for fixing routine cytologic preparations EXCEPT:
  - A. 95% METHYL ALCOHOL
  - B. 95% ETHYL ALCOHOL
  - C. 95% ISOPROPYL ALCOHOL
  - D. FORMALDEHYDE VAPOR
  - E. EQUAL PARTS OF 95% ETHYL ALCOHOL AND ETHYL ETHER
  
2. In obtaining prefixed sputum specimens the fixative commonly used is:
  - A. 50% ETHYL ALCOHOL
  - B. 70% ISOPROPYL ALCOHOL
  - C. FORMALIN
  - D. 95% ETHYL ALCOHOL
  - E. NONE OF THE ABOVE
  
3. Xylene:
  - A. MAKES CELLS TRANSPARENT BECAUSE ITS REFRACTIVE INDEX IS SIMILAR TO THAT OF FIXED PROTEIN.
  - B. IS MISCIBLE WITH WATER.
  - C. MAY BE "DRIED" BY FILTERING IT THROUGH BIBULOUS FILTER PAPER.
  - D. A, B, C
  - E. A & B
  - F. A & C

4. The slides prepared in your laboratory are cloudy after coverslipping. You are asked to correct this problem. Which of the following step or steps would you take?
- A. CHANGE THE ABSOLUTE ALCOHOL AND XYLENE USED IN THE LAST STEPS OF THE STAINING PROCEDURE.
  - B. CHANGE XYLENE IN THE STAINING PROCEDURE.
  - C. PREPARE ALL ALCOHOL-BASED STAINS WITH ABSOLUTE ALCOHOL.
  - D. USE ONLY ABSOLUTE ALCOHOL THROUGHOUT THE STAINING PROCEDURE.
  - E. DRY THE COVERSLIPPED SLIDES IN AN OVEN FOR A MINIMUM OF 24 HOURS.
5. All of the following are factors responsible for poor nuclear staining EXCEPT:
- A. POOR FIXATION.
  - B. DEGENERATION.
  - C. DRYING.
  - D. OVER OXIDIZED HEMATOXYLIN.
  - E. OVER EXPOSURE TO EA-65 STAIN.
6. The most important way to guard against over or understaining is:
- A. AVOID OVER FIXATION.
  - B. PREPARE THIN SMEARS.
  - C. AVOID USE OF WEAK ALCOHOL SOLUTIONS.
  - D. USE FREQUENT MICROSCOPIC CHECKS.
  - E. TIME CAREFULLY IN HEMATOXYLIN.
7. The purpose of dilute alcohol in sputum collection is to:
- A. FIX CELLS.
  - B. COAGULATE MUCUS.
  - C. PRESERVE CELLS.
  - D. CONCENTRATE CELLS.
  - E. RENDER SPECIMEN MORE WORKABLE.

8. You are asked to stain as rapidly as possible by the Papanicolaou method an imprint of a mass in the breast removed surgically. What should be the minimum time for fixing the imprint in 95% ethyl alcohol before proceeding to stain it?
- A. 1 SECOND.
  - B. 1 MINUTE.
  - C. 10 MINUTES.
  - D. 1 HOUR.
  - E. 1 DAY.
9. Which of the following techniques is likely to demonstrate with most clarity LE (Lupus erythematosus) cells in a specimen of pleural fluid from a patient with systemic lupus erythematosus?
- A. SMEAR PREPARATION, WRIGHT'S STAIN.
  - B. SMEAR PREPARATION, PAPANICOLAOU STAIN.
  - C. CELL BLOCK, HEMATOXYLIN AND EOSIN STAIN.
  - D. WET FILM, TOLUIDINE BLUE STAIN.
  - E. MEMBRANE FILTER PREPARATION, PAPANICOLAOU STAIN.
10. If Periodic Acid-Schiff reaction is used which of the following tissue component(s) is specifically colored (PAS positive)?
- A. MUCIN AND GLYCOGEN.
  - B. LIPID AND GLYCOGEN.
  - C. GLYCOGEN AND CYTOPLASMIC RNA.
  - D. KERATIN.
  - E. CYTOPLASMIC RNA.
11. Carbowax in alcohol:
- A. ACTS AS A SECONDARY FIXATIVE.
  - B. COATS CELLS AND MAINTAINS THEM AS A SINGLE CELL SUSPENSION.
  - C. PRECIPITATES AND PROTECTS CELLS AGAINST SHRINKAGE-DISTORTION DURING AIR-DRYING.
  - D. AIDS THE ADHESION OF CELLS TO GLASS MICROSLIDES.

12. Formaldehyde is a gas. Formalin is a trade name for the liquid resulting from the combination of formaldehyde gas and water. To make up a 10% solution of Formalin from a full strength solution which contains 40% Formaldehyde you would add:
- A. 10 ML OF 40% FORMALDEHYDE TO 30 ML OF WATER.
  - B. 40 ML OF 40% FORMALDEHYDE TO 10 ML OF WATER.
  - C. 1.0 ML OF 40% FORMALDEHYDE TO 29 ML OF WATER.
  - D. 10 ML OF 40% FORMALDEHYDE TO 100 ML OF WATER.
  - E. 10 ML OF 40% FORMALDEHYDE TO 90 ML OF WATER.
13. The main advantage of using Buffered Neutral Formalin for tissue fixation rather than unbuffered formalin is it:
- A. PENETRATES TISSUE MORE RAPIDLY.
  - B. DOES NOT OVERHARDEN TISSUE.
  - C. PRESERVES THE TISSUE BETTER THAN OTHER FIXATIVES.
  - D. INHIBITS THE FORMATION OF ARTIFACT PIGMENT IN BLOODY SPECIMENS.
14. What is the most effective method for examining a specimen of sputum for asbestos bodies?
- A. ROUTINE PAPANICOLAOU STAINED SMEARS.
  - B. ROUTINELY PREPARED SMEARS STAINED BY THE PRUSSIAN BLUE REACTION (FOR IRON).
  - C. A CELL BLOCK STAINED WITH HEMATOXYLIN AND EOSIN.
  - D. A DIGEST OF THE SPECIMEN EXAMINED UNSTAINED ON A MEMBRANE FILTER.
  - E. AN UNSTAINED WET FILM OF THE SPECIMEN.
15. While coverslipping Pap smears, one of the most important mistakes to avoid is:
- A. THE PRESENCE OF AIR BUBBLES UNDERNEATH THE COVERSIP.
  - B. APPLYING AN EXCESS AMOUNT OF MOUNTING FLUID.
  - C. ALLOWING THE TIP OF THE EYEDROPPER TO TOUCH THE SLIDE.
  - D. ALLOWING THE SLIDE TO AIR-DRY BEFORE APPLICATION OF MOUNTING FLUID.

16. To prepare the cell samples for a better uptake of hematoxylin in the Pap staining procedure:
- A. KEEP THE SLIDES 20 SECONDS LONGER IN HEMATOXYLIN STAIN.
  - B. USE TAP WATER TO HYDRATE SLIDES ONE STEP BEFORE HEMATOXYLIN.
  - C. KEEP SLIDES IN DISTILLED WATER TILL THE GLASSY APPEARANCE DISAPPEARS FROM THE SLIDES.
  - D. GO DIRECTLY FROM 50% ALCOHOL TO HEMATOXYLIN.
17. When centrifuging fluids it is important to see that:
- A. CENTRIFUGE TUBES ARE BALANCED.
  - B. PROPER SPEED IS MAINTAINED.
  - C. THE RATE AT WHICH THE TUBES ARE SPUN IS CONSTANT.
  - D. THE BRAKE IS NOT USED.
  - E. ALL OF THE ABOVE.
18. Excess xylol should be drained from slides prior to mounting because:
- A. STAINED PREPARATIONS WILL APPEAR CLOUDY.
  - B. AIR SPACES WILL APPEAR LATER AS XYLOL EVAPORATES.
  - C. CELLULAR DISTORTION IS PREVENTED.
  - D. ALL OF THE ABOVE.
  - E. FADING OF CELL SAMPLE WILL OCCUR.
19. The principle dyes which are used to make up both the Wright's stain and Giemsa stain are:
- A. HEMATOXYLIN AND PHLOXINE.
  - B. CRYSTAL VIOLET AND EOSIN.
  - C. METHYLENE BLUE AND EOSIN.
  - D. ANILINE BLUE AND CARMINE.

20. The fixative incorporated in Wright's stain is:
- A. ACETONE.
  - B. FORMALIN.
  - C. ETHYL ALCOHOL.
  - D. METHYL ALCOHOL.
21. The pathologist for whom you work is going to build a new cytopreparatory laboratory. In this laboratory extra genital material will be processed and chemicals such as chloroform, concentrated ammonium hydroxide and concentrated hydrochloric acid will be used. You are asked to make a list of equipment which you feel is absolutely necessary to insure the safety of the individual technicians who will be working in this laboratory. Which of the following would you include in such a list?
- A. SAFETY SHOWER AND EYE FOUNTAIN.
  - B. FUME HOOD.
  - C. DRY CHEMICAL TYPE FIRE EXTINGUISHER.
  - D. MASKS, GLOVES AND SAFETY GLASSES.
  - E. ALL OF THE ABOVE.
22. You are preparing a dilute solution of ammonium hydroxide and the bottle of concentrated ammonium hydroxide spills splattering directly into your eyes. What immediate action do you take?
- A. CALL A PHYSICIAN.
  - B. WASH YOUR EYES IN RUNNING TAP WATER FOR A MINIMUM OF 15 MINUTES.
  - C. WASH YOUR EYES WITH A DILUTE SOLUTION OF VINEGAR.
  - D. WASH YOUR EYES IN RUNNING TAP WATER FOR 1 OR 2 MINUTES AND THEN IN A DILUTE SOLUTION OF VINEGAR.
  - E. DO NOT TAKE ANY ACTION UNTIL THE PHYSICIAN ARRIVES.