

# Histology MCQs/Histological Technique

1 All statements below are less or more related to the **autolysis**. Which of them is the best?

- Autolysis is decay of tissues caused mainly by bacteria
- Autolysis is decay of tissues caused mainly by action of the immune system
- Autolysis is decay of tissues caused mainly by enzymes produced inside the tissue
- Autolysis is decay of tissues caused by chemical compounds into which is the sample placed after harvesting

2 **Azokoupling reaction** (azocoupling method) is a proof of enzymatic activity. Which enzyme is usually detected?

- Alkaline phosphatase
- Alcoholdehydrogenase
- Non-specific esterase
- Horseradish peroxidase

3 Degradation of a biological material caused by bacteria is called:

- Apoptosis
- Autolysis
- Liquefaction
- Putrefaction

4 How is removed the water out of tissues during common histological processing?

- We use baths with xylene of subsequently higher and higher concentration
- We use baths with ethanol of subsequently higher and higher concentration
- We use baths with acetone of subsequently higher and higher concentration
- We use baths with benzene of subsequently higher and higher concentration

5 Which compound is proven by **Feulgen's method** (Feulgen's staining)?

- DNA
- RNA
- Proteins
- Polysaccharides

6 How is called harvesting (collecting) of biological material from deceased?

- Necropsy
- Necromancy
- Necrocomion
- Material from deceased is not called "biological material"

7 How is called harvesting (collecting) of biological material?

- Fine needle aspirational biopsy
- Core cut biopsy
- Trepanobiopsy
- Biopsy

8 How thick are usually slices of the sample which are being glued on the underlying slide? (*note: Assume light microscopy only.*)

- 1 - 10 nm
- 1 - 2  $\mu\text{m}$
- 4 - 10  $\mu\text{m}$
- 50 - 100  $\mu\text{m}$



Today's histological laboratories are usually automated, but main principles are often old.

9 Which type of a microscope has to use laser as a source of light?

- Confocal microscope
- Polarisation microscope
- Phase contrast microscope
- Scanning electron microscope

10 Which structure is demonstrated (stained) by **luxol blue**?

- Mucopolysaccharides
- Phospholipids
- Glycogen
- Lipids

11 What is main principle of visualization of **PAS reaction**? (i.e., "How it works in a nutshell?")

- Purple and insoluble product of reaction of Schiff's reagent with an aldehyde
- Green and insoluble product of reaction of Schiff's reagent with an aldehyde
- Purple and insoluble product of reaction of Lugol's reagent with an aldehyde
- Green and insoluble product of reaction of Lugol's reagent with an aldehyde

12 Which type of chemical interaction is main principle of basic (overview) staining methods?

- Van der Waals interactions between charged biomolecules and charged molecules of dyes
- Electrostatic interaction between charged biomolecules and charged molecules of dyes
- Covalent bonds between charged biomolecules and charged molecules of dyes
- It depends on the staining technique, different principles can be dominant

13 Among following dyes, only one **is not acidic**. Which one?

- Eosin
- Orange G
- Anilin blue
- Hematoxylin

14 Which of following dyes **is not** basic?

- Hematein
- Orange G
- Hematoxylin
- Methylen blue

15 Which macromolecules are proven by **PAS reaction**?

- RNA
- DNA
- Proteins
- Polysaccharides

16 How is called the technique which is able to detect specific sequence of nucleic acid on the tissue section?

- In situ hybridization
- Lectin histochemistry
- Immunohistochemistry
- Feulgen's method

17 Which structure is highlighted using **silver impregnation**?

- Mukopolysaccharides
- Reticular fibers
- Elastic fibers
- Mucus

18 Which compound is stained by **alcian blue**?

- Mukopolysaccharides
- Phospholipids
- Glycogen

Lipids

**19** Which cellular structure is stained by **aldehyde fuchsin**?

- Reticular fibers
- Polysaccharides
- Elastic fibers
- Mucus

**20** What stains **orcein**?

- Reticular fibers
- Polysaccharides
- Elastic fibers
- Mucus

**21** **Dyes of Sudan group** are usually used as a staining for:

- Polysaccharides
- Nucleid acids
- Proteins
- Lipids

**22** Which basic (overview) staining technique is used the most often?

- Weigert - Van Gieson
- Mallory's trichrome
- Hematoxylin - eosin
- Masson's trichrome

**23** Trichromatic methods (trichromes) are used for visualization of collagen. On which property of collagen is based this staining?

- Collagen fibers are basophilic
- Collagen fibers are eosinophilic
- Collagen fibers are amphiphilic
- Trichromes cannot be used for this purpose

**24** What is main purpose of a cryotome?

- Slicing of frozen samples
- Slicing of desiccated samples
- Slicing of samples embedded into water soluble media
- Slicing of samples embedded into water insoluble media

**25** What is it a metachromasia? (i.e., *What does it means a metachromatic staining?*)

- Metachromatic structure actively repulses molecules of the dye
- Stained structure has different color than the color of the dye
- Metachromatic structure actively accumulates molecules of the dye
- Stained structure reacts chemically with the dye and this reaction changes substantially the chemical nature of the dye

**26** What does it mean an **excision**?

- Surgical removing of part of organ
- Surgical removing of several organs
- Brush away free cells from the surface
- Harvesting of small cylinder of the tissue using a needle

**27** What does it mean **mounting of the slide**?

- Final gluing of the covering slide
- Gluing of the slice on the underlying slide
- Covering the block of tissue by the paraffin
- Labeling of final slide by a bar- or QR code

**28** What is it a **diastase reaction**?

- Modification of PAS reaction based on two slides. One of these slides is pretreated by an enzyme which digest a DNA
- Modification of PAS reaction based on two slides. One of these slides is pretreated by an enzyme which digest a glycogen
- Modification of Feulgen's reaction based on two slides. One of these slides is pretreated by an enzyme which digest a DNA
- Modification of Feulgen's reaction based on two slides. One of these slides is pretreated by an enzyme which digest a glycogen

**29** What is it an **indirect methods** of immunohistochemistry?

- Label is used indirectly
- Label is bound to the primary antibody
- Label is bound to the secondary antibody
- Label is not bound to the primary antibody

**30** What is it a **negative control** if the enzyme histochemistry is performed?

- Result of second staining which is again negative
- Sample in the workflow which surely lacks the analyzed structure
- Sample in the workflow which surely contains the analyzed structure
- Result of second staining which is negative, in contrast to the result of first staining

**31** What is it a **positive control** if the enzyme histochemistry is performed?

- Result of second staining which is again positive
- Sample in the workflow which surely lacks the analyzed structure
- Sample in the workflow which surely contains the analyzed structure
- Result of second staining which is positive, in contrast to the result of first staining

**32** What is it a **direct method** in immunohistochemistry?

- Label is bound to the primary antibody
- Label is bound to the secondary antibody
- Label is bound directly to the active site of the antibody
- Label is bound directly to the structure which should be demonstrated

**33** Which structure is the best example of a **basophilic structure**?

- Ribosomes
- Mitochondria
- Lipid droplets
- Golgi apparatus

**34** Which structure is the best example of an **eosinophilic structure**?

- Ribosomes
- Cell nucleus
- Collagen fibers
- Rough endoplasmic reticulum

**35** Which chemical compound is usually main part of **chemical fixatives**?

- Acetone
- Formic acid
- Formaldehyde
- Osmium tetroxide

**36** Which definition of a **fixation** is the best?

- Freezing of the sample
- Intense and careful drying up of the tissue
- Submersion the sample into the fixative fluid
- Fixation stops gently and quickly activity of enzymes inside the tissue

**37** Which embedding medium is the most common?

- Agar

- Resin
- Gelatin
- Paraffin

**38** Which is common color of nuclei after staining with **hematoxylin eosin**?

- Cherry-like red
- Blue to magenta
- Pink to red
- Pale pink

**39** Which is color of the collagen if the **green Masson's trichrome** is used?

- Yellow
- Green
- Blue
- Red

**40** Which is color of the collagen if the **AZAN** is used?

- Red
- Blue
- Green
- Yellow

**41** Which label is the most widely used in immunohistochemistry for the electron microscopy?

- Hematoxylin
- Metal particles
- Enzyme labeling
- Fluorescent dye

**42** Which label is the most widely used in immunohistochemistry for the light microscopy?

- Enzyme labeling
- Fluorescent dye
- Metal particles
- Hematoxylin

**43** Which statement about a histochemistry is the most accurate? (i.e., *"Select the best definition!"*)

- Histochemistry is an identification and visualization of chemical compounds inside cells and tissues
- Histochemistry is a measurement of concentration of chemical compounds inside tissues
- Histochemistry is an analysis of chemical reaction inside cells
- Histochemistry is a research method only

**44** Which statement about the chemical fixation describes it the best? (i.e., *"Which statement is the most accurate?"*)

- Chemical fixation can be based on either induction of cross-linking or denaturation
- Chemical fixation can be performed only if the solution has room temperature
- Chemical fixation is based on acting of formaldehyde on protein
- Chemical fixation is used only exceptionally

**45** Which statement about the physical fixation describes it the best?

- Physical fixation is based on cessation of transporting function of water
- Physical fixation is based on effects of microwave radiation
- Physical fixation is based on effects of high temperature
- Physical fixation is based on effects of low temperature

**46** Which of following statements describes the **curettage**?

- Brush away free cells from the the surface of a mucosa
- Scrape of the tissue using a special tool
- Surgical removing of whole organ
- Surgical removing of whole organ

**47** Why are histological samples stained?

- Tissues are colored to chaotically, we have to reduce the number of colors
- In fact, do dye is used, the term "staining" is a historical mistake
- Reason is purely aesthetic, true colors of tissues are too ugly
- Tissues are usually colorless, we have to add some colors

**48** Why are trichromatic methods called "trichromatic"?

- True reason is hidden in history, now it makes no sense
- There are used three dyes, one basic and two acidic
- There are used three dyes, all three acidic
- There are used three dyes

**49** Why is AZAN called AZAN?

- AZAN is an abbreviation of main principule - **AZ**ocoupling **A**nthracite **N**eutralization
- AZAN is an abbreviation of two main dyes - **AZ**ocarmine and **AN**iline blue
- AZAN is an abbreviation (from German) - **A**lle **Z**ellen **A**zurblau **N**ichfarbige
- AZAN is a cool trade name only

**50** Why is embedding of fixed sample important? (all statements are correct, select the best one)

- Embedding increases hardness without increasing the fragility
- Embedding increases durability of the sample
- Embedded samples can be easily stored
- Embedding is a tradition

Submit

## Links

- List of all tests: Histology MCQs
- Portal:Histology