

Histology MCQs/Cell

1 Where inside the cell takes place the **ATP synthase**?

- In the cell membrane
- In the the cytoplasm
- In the inner mitochondrial membrane
- In the outer mitochondrial membrane

2 Which is common number of chromosomes (diploid count) in the non-mitotic cell?

- 21 pairs
- 22 pairs
- 23 pairs
- 24 pairs

3 Which cytoskeletal structure is associated with **dyneins**?

- Vimentin
- Microtubules
- Actin filaments
- Intermediate filaments

4 Where takes place final sorting ("addressing") of proteins?

- Peroxisomes
- Golgi apparatus
- Rough endoplasmic reticulum
- Smooth endoplasmic reticulum

5 For which molecules is a simple diffusion main mechanism of transportation through the cell membrane?

- Aminoacids
- Monosaccharides
- Lipophilic molecules
- Positively charged proteins

6 How are called enzymes which are responsible for fragmentation of cellular structures during apoptosis?

- Caspases
- Phosphatases
- Phosphokinases
- Adenylatcyclases

7 How are transported natrium ions through the cell membrane?

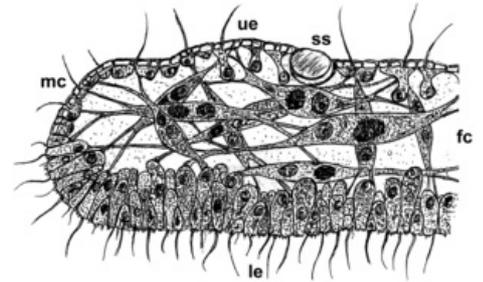
- Diffusion through the phospholipid bilayer
- Diffusion through the membrane rafts
- Through the specific channels
- Through the aquaporins

8 How is called the phase of the cycle in which is the cell in the rest and does not proliferate?

- G0 phase
- G1 phase
- G2 phase
- G3 phase

9 How is stored the **glycogen**?

- Glycogen is stored freely dissolved in the cytoplasm
- Glycogen is stored as granules in the cytoplasm



Because of few cell types only, med students at the end of first year like Placozoa.

- Glycogen is stored inside membranous vacuoles
- Glycogen is stored as nuclear inclusions

10 How many membranes (biomembranes) form the nuclear envelope?

- One membrane
- Two membranes
- Three membranes
- There are no membranes in the nuclear envelope

11 Which of the following statements describes **lipofuscin** the best?

- Material waiting for secretion out of the cell
- End-product of digestion in lysosomes
- Storage of molecules for further use
- Protection of the nucleus

12 Inner layer of the nuclear envelope is called lamina fibrosa. What is its chemical nature? (i.e., "*Which molecules form the lamina fibrosa?*")

- Proteins which belong to the intermediate filaments
- Proteins which belong to the microfilaments
- Polysaccharides related to the glycocalyx
- Lipoprotein particles

13 Which type of cytoskeleton is associated with **kinesins**?

- Intermediate filaments
- Actin filaments
- Microtubules
- Vimentin

14 What are **lamins**? (i.e., "*Which structures are called lamins?*")

- Intermediate filaments inside the cell nucleolus
- Intermediate filaments inside the cell nucleus
- Microfilaments inside the cell nucleolus
- Microfilaments inside cell nucleus

15 Which type of enzymes is inside lysosomes?

- Alkaline phosphatase
- Hydrolytic enzymes
- Phosphokinases
- Dehydrogenases

16 What is the basic chemical structure of biological membrane?

- Phospholipid bilayer
- Cholesterol bilayer
- Protein-based web
- Polysaccharides

17 Which type of cytoskeleton is associated with myosin motors?

- Intermediate filaments
- Actin filaments
- Microtubules
- Vimentin

18 How is called well stainable (i.e. "darker") nuclear chromatin?

- Euchromatin
- Pars fibrosa
- Pars granulosa
- Heterochromatin

19 Nuclear envelope continues (i.e., is in association with, can be assumed as a part of) as other cell organelle. Which one?

- Nuclear envelope is completely separated, there are no similar organelles
- Rough endoplasmic reticulum
- Smooth endoplasmic reticulum
- Golgi apparatus

20 Which type of enzymes are usually present in **peroxisomes**?

- Peroxidase and alkaline phosphatase
- Phosphokinase and catalase
- Peroxidase and catalase
- Alcoholdehydrogenase

21 Which proteins are main proteins of the nucleosome?

- Cytokeratines
- Phosphatases
- Integrins
- Histones

22 Smooth endoplasmic reticulum has several functions, but one of following functions is not the function of the smooth endoplasmic reticulum. Which one?

- Metabolisms of some toxic compounds
- Synthesis of phospholipids
- Storage of calcium ions
- Synthesis of proteins

23 **Vimentin** (vimentin intermediate filaments) is marker of one cell population (i.e., it is present in huge amount). Which one?

- Cells of nerve tissue
- Cells of epithelial origin
- Cells of mesenchymal origin
- Cells originating in the neural crest

24 What is main function of **histones**?

- Histones are nuclear proteins which are involved mainly in arrangement of DNA
- Histones are nuclear proteins which are involved mainly in direct regulation of gene expression
- Histones are cytoplasmic proteins which are involved mainly in further processing of mRNA
- Histones are cytoplasmic proteins which are responsible mainly for regulation of life-span of mRNA

25 What does it mean that mitosis of stem cell is asymmetric?

- Daughter cells are different according to their genetics. Amount of genetic information in one if them is obviously smaller than in the second
- Daughter cells are different according to their function. One of them remains the stem cell whereas the second differentiates to mature cell
- Daughter cells are different according to their energetic. After cytokinesis, majority of mitochondria is in one daughter cell only
- Daughter cells are different according to their morphology. One of them is obviously smaller than the second

26 What is it a **glycocalyx**?

- Group of integral proteins serving as a support for membrane-associated polysaccharides
- Layer of peripheral proteins associated with outer side of the cell membrane
- Layer of peripheral proteins associated with inner side of the cell membrane
- Layer of saccharides bind on the the cell membrane

27 What is it an **ubiquitin**?

- Small protein which labels proteins targeted to degradation in proteasomes
- Small protein which labels proteins targeted to degradation in lysosomes
- Oligosaccharide which labels proteins targeted to degradation in proteasomes
- Oligosaccharide which labels proteins targeted to degradation in lysosomes

28 What is main function of **cyclin-dependent kinases**?

- Phosphorylation of other important protein and keeping the cell cycle in progress
- After binding of cyclins, these enzymes modify DNA
- After binding of cyclins, these enzymes replicate DNA
- Removing of used cyclines

29 What is main function of **nucleolus**?

- Synthesis of lipids
- Synthesis of sugars
- Synthesis of rRNA
- Synthesis of mRNA

30 What is main function of **rough endoplasmic reticulum**?

- Synthesis of sterols (derivatives of cholesterol)
- Metabolic transformation of toxic substances
- Synthesis of phospholipids
- Synthesis of proteins

31 What is **not** common for apoptosis?

- Spontaneous course of whole process
- Degradation of membrane proteins
- Fragmentation of DNA
- Consumption of energy

32 What is it a **pinocytosis**?

- Ingestion of big particles, for example death cells
- Passing of water and ions through membrane channels
- Ingestion of small volumes of fluid into the cell
- Excretion of material out of the cell

33 Where takes place checking of quality of packing of the proteins (quality of conformation)?

- Smooth endoplasmic reticulum
- Rough endoplasmic reticulum
- Golgi apparatus
- Lysosomes

34 Which of following cell junctions is usually responsible for mechanical cohesivity?

- Desmosome (macula adhaerens)
- Gap junction (nexus)
- Zonula adhaerens
- Focal adhesion

35 Which of following statements describes an **active transport** the best?

- Active transport is important for maintenance of activity of cell receptors
- Carrier proteins select molecules for the transport actively
- Active transport is a sign of metabolic activity of the cell
- Carrier proteins consume energy for main transport

36 Which of following statements describes an **autophagy** the best?

- Cell surrounds part of its own cytoplasm with organelles by a membrane which later on fuses with proteasomes. Resulting structure is called autophagosome and the content is digested.
- Cell surrounds part of its own cytoplasm with organelles by a membrane which later on fuses with lysosomes. Resulting structure is called autophagosome and the content is digested.
- Cell which is not true phagocyte ingests other labeled cell. Cell in cell is called autophagosome and its content is slowly dissolved.
- Balance of the cell metabolism is skewed from the anabolism to the catabolism, the cell seemingly slowly digest itself.

37 Which order of steps of mitosis is correct?

- Prophase - metaphase - anaphase - telophase

- Metaphase - telophase - anaphase - prophase
- Telophase - metaphase - prophase - anaphase
- Anaphase - prophase - metaphase - telophase

38 Which type of cytoskeleton is associated with **desmosomes** (macula adhaerens)?

- Desmosomes are not associated with the cytoskeleton
- Intermediate filaments
- Actin filaments
- Microtubules

39 Which type of cytoskeleton is associated with **gap junctions** (nexus)?

- Gap junctions are not associated with cytoskeleton
- Vimentin filaments
- Actin filaments
- Microtubules

40 Which type of cytoskeleton is associated with **zonulae occludentes** (tight junction)?

- Intermediate filaments
- Vimentin filaments
- Actin filaments
- Microtubules

41 Which type of cytoskeleton supports kinocilia?

- Intermediate filaments
- Vimentin filaments
- Actin filaments
- Microtubules

42 Which staining is appropriate tool for proof of glycogen granules?

- Silver impregnation according to Gömöri
- Azocoupling reaction
- Feulgen's reaction
- PAS reaction

43 Which statement about the intermediate filaments is true?

- Some intermediate filaments are temporary structures, some are stable structures
- Rearrangement of intermediate filaments is performed without depolymerization
- Intermediate filaments polymerize and depolymerize quickly
- Intermediate filaments are stable structures

44 Which statement about the **mitochondrial DNA** is true?

- There can be some DNA inside mitochondria, but these fragments do not contain genes
- Mitochondria have their own circular DNA
- Mitochondria have their own linear DNA
- There is no DNA inside mitochondria

45 Which statement about the mitochondrial membranes is true?

- Mitochondria have three membranes - inner, middle and outer
- Mitochondria have two membranes - inner and outer
- Mitochondria have only one membrane
- Mitochondria have no membrane

46 Which statement about microtubules is true?

- Microtubules grow from the centrosome and quickly disintegrate
- Microtubules quickly form regular network inside the cell and quickly disintegrate
- Microtubules grow from the centrosome, the star-shaped network is stable
- Microtubules form stable regular network inside the cell

47 Which structure supports (i.e., forms their inner "skeleton") stereocilia?

- Intermediate filaments
- Vimentin filaments
- Actin filaments
- Microtubules

48 Which technique allows us to distinguish different chromosomes?

- Lectin histochemistry using horse radish peroxidase as a label
- Immunohistochemistry labeled by fluorescent dye
- Fluorescent in situ hybridization (FISH)
- Feulgen's reaction

49 Which type of membrane receptors **is not common** in our cells?

- Receptors associated with ion channels
- Receptors associated with ATP synthase
- Receptors with own enzymatic activity
- Receptors associated with G proteins

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Links

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