

Histology MCQs/Connective Tissue

1 All but one of following bones are based on intramembranous ossification. Which of them is not based on intramembranous ossification?

- ☐ Parietal bone
- ☐ Clavicle
- ☐ Scapula
- ☐ Femur

2 Do **white adipocytes** (fat cells) produce some hormones?

- ☐ Probably yes, they do it, but no one knows them
- ☐ Yes, they do produce hormones, e.g. insulin
- ☐ Yes, they do produce hormones, e.g. leptin
- ☐ No, they do not produce hormones

3 We have two types of lamellar bone (secondary bone). Which one?

- ☐ Lamellar bone does not have well-defined subtypes
- ☐ Compact bone and spongy (cancellous) bone
- ☐ Woven bone and spongy (cancellous) bone
- ☐ Compact bone and woven bone

4 What are interstitial lamellae?

- ☐ Remnants of older Haversian systems destroyed during remodeling of the bone
- ☐ Traces of microtraumata which were able to affect the structure of the bone
- ☐ First parts of newly formed Haversian systems
- ☐ Remnants of immature bone

5 Which type of cartilage is main material of the **growth plate**?

- ☐ Hyaline cartilage
- ☐ Elastic cartilage
- ☐ Fibrocartilage

6 What does it mean that reticular fibers are argyrophilic?

- ☐ They are indistinguishable from background in hematoxylin-eosin staining
- ☐ It is possible to highlight them using silver impregnation
- ☐ It is possible to highlight them using PAS reaction
- ☐ They contain huge amount of saccharides

7 What is a **glycosaminoglycan**?

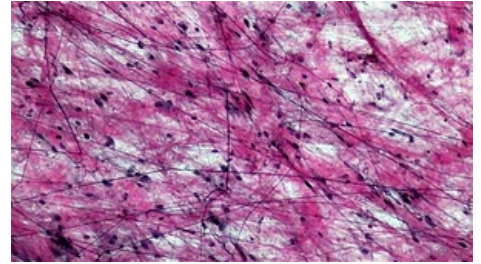
- ☐ Branched polysaccharide rich on, e.g., hexosamine or uronic acid
- ☐ Linear polysaccharide rich on, e.g., hexosamine or uronic acid
- ☐ Branched peptide rich on, e.g., leucine or isoleucine
- ☐ Linear peptide rich on, e.g., leucine or isoleucine

8 What is a precursor cell of **macrophages** (histiocytes)?

- ☐ Langerhans cell
- ☐ Dendritic cell
- ☐ Kupffer cell
- ☐ Monocyte

9 What is a **Sharpey fiber** (perforating fiber)?

- ☐ Bundle of reticular fiber growing from the bone marrow through the endosteum to the bone
- ☐ Bundle of collagen fibers growing from the periosteum to the bone
- ☐ Bundle of reticular fibers inside the tendon



Loose connective tissue is sometimes assumed as a "template of connective tissue" on which are described structures common for more types of connective tissue.

- ☐ Bundle of collagen fibers inside the tendon

10 What is an **aggrecan**?

- ☐ Abundant proteoglycan in the extracellular matrix of a dense connective tissue
- ☐ Abundant proteoglycan in the extracellular matrix of a hyaline cartilage
- ☐ Abundant proteoglycan in the extracellular matrix of a compact bone
- ☐ Abundant proteoglycan in the extracellular matrix of a spongy bone

11 Which is diameter of fibrils of type I collagen?

- ☐ 2 to 9 nm
- ☐ 20 to 90 nm
- ☐ 200 to 900 nm
- ☐ 2 to 9 μm

12 Which is a fate of **osteoblasts**?

- ☐ After production of the extracellular matrix is completed, all of them differentiate to osteocytes
- ☐ After production of the extracellular matrix is completed, all of them disappear via apoptosis
- ☐ Minority of them disappear via apoptosis, majority of them differentiate to osteocytes
- ☐ Majority of them disappear via apoptosis, minority of them differentiate to osteocytes

13 Which is a general function of **mast cells**?

- ☐ Releasing of molecules involved in regulation of local immune response
- ☐ Releasing of molecules of the extracellular matrix
- ☐ Phagocytosis of damaged molecules
- ☐ Phagocytosis of bacteria

14 Which is main collagen of basal and external laminae?

- ☐ Type I collagen
- ☐ Type II collagen
- ☐ Type III collagen
- ☐ Type IV collagen

15 Which is main fibrillary part of extracellular matrix of bones?

- ☐ Fibrils composed of type I collagen
- ☐ Fiber composed of type I collagen
- ☐ Fibrils composed of type II collagen
- ☐ Fibers composed of type II collagen

16 Which is main function of **fibroblasts**?

- ☐ They produce nearly nothing, they are the resting form of the cells producing the extracellular matrix
- ☐ Production of the fibrillary component of the extracellular matrix in the connective tissue
- ☐ Production of the ground substance of the extracellular matrix in the connective tissue
- ☐ Production of main part of the extracellular matrix in the connective tissue

17 Which is main function of **plasma cells**?

- ☐ Production of anti-inflammatory signaling molecules
- ☐ Production of pro-inflammatory signaling molecules
- ☐ Phagocytosis of foreign particles
- ☐ Production of antibodies

18 Which is main protein of **collagen fibers**?

- ☐ Type I collagen
- ☐ Type II collagen
- ☐ Type III collagen
- ☐ Type IV collagen

19 Which is main protein of **reticular fibers**?

- ☐ Type I collagen

- ☐ Type II collagen
- ☐ Type III collagen
- ☐ Type IV collagen

20 Which is main tissue of periosteum?

- ☐ Reticular connective tissue
- ☐ Elastic connective tissue
- ☐ Mucoïd connective tissue
- ☐ Dense connective tissue

21 Which is the origin of osteoblasts?

- ☐ Osteoblasts are extraordinary heterogeneous population including plenty of different origins
- ☐ Osteoblasts differentiate from mesenchymal stem cells
- ☐ Osteoblasts are derived from the neural crest
- ☐ Osteoblasts differentiate from monocytes

22 Which statement describes an **articular cartilage** the best?

- ☐ It does not have perichondrium, fibrillary part of its extracellular matrix is arranged in some pattern
- ☐ It does not have perichondrium, fibrillary part of its extracellular matrix is poor
- ☐ It has pronounced perichondrium, fibrillary part of its extracellular matrix is arranged in some pattern
- ☐ It has pronounced perichondrium, fibrillary part of its extracellular matrix is poor

23 Which proteins are main proteins of **elastic fibers**?

- ☐ Elastin and fibrillin
- ☐ Elastin only
- ☐ Fibrillin only
- ☐ Main material of elastic fibers are liposaccharides

24 Which structure is composed of **dense irregular connective tissue**?

- ☐ Main supportive tissue of hematopoietic organs
- ☐ Sheath (capsule) of inner organs
- ☐ Lamina propria mucosae
- ☐ Ligament

25 Which structure is composed of **loose connective tissue**?

- ☐ Main supportive tissue of hematopoietic organs
- ☐ Sheath (capsule) of inner organs
- ☐ Lamina propria mucosae
- ☐ Ligament

26 Which type of cartilage **does not have** well-defined perichondrium?

- ☐ All types have well-defined perichondrium
- ☐ Hyaline cartilage
- ☐ Elastic cartilage
- ☐ Fibrocartilage

27 Which type of cartilage is inside the **auricle**?

- ☐ Elastic cartilage
- ☐ Hyaline cartilage
- ☐ Fibrocartilage

28 Which type of cartilage is material of **intraarticular discs**?

- ☐ Elastic cartilage
- ☐ Hyaline cartilage
- ☐ Fibrocartilage

29 Which type of cartilage is most common in the wall of respiratory ways?

- ☐ Elastic cartilage
- ☐ Hyaline cartilage

- ☐ Fibrocartilage

30 Which type of collagen is main part of fibrillary component of the hyaline cartilage?

- ☐ Type I collagen
- ☐ Type II collagen
- ☐ Type III collagen
- ☐ Type IV collagen

31 Which type of tissue is main type of tissue of the tendon?

- ☐ Dense irregular connective tissue
- ☐ Dense regular connective tissue
- ☐ Loose connective tissue
- ☐ Fibrocartilage

32 Which of following descriptions is appropriate description of **white adipocyte** (fat cell)?

- ☐ It is usually relatively big cell which is nearly filled by plenty small of lipid droplets
- ☐ It is usually relatively big cell which is nearly filled by one big lipid droplet
- ☐ It is extraordinary small cell which is filled by plenty of small lipid droplets
- ☐ It is extraordinary small cell which is filled by one big lipid droplet

33 Imagine the **macrophage** (histiocyte) as a super supervillain. Which superpower does he have?

- ☐ Phagocytosis
- ☐ Autolysis
- ☐ Necrosis
- ☐ NETosis

34 Which of following statements describes **proteoglycans** the best?

- ☐ Proteoglycan is composed of big globular protein on which are attached short oligosaccharides
- ☐ Proteoglycan is composed of protein core on which are attached glycosaminoglycans
- ☐ Proteoglycan is a protein which is able to recognize motifs on saccharides
- ☐ Proteoglycan is a hormone which increases level of glucose in blood

35 Which of following statements is the best description of an **osteoid**?

- ☐ Osteoid is an immature extracellular matrix of bones which still lacks inorganic compounds
- ☐ Osteoid is an immature extracellular matrix of bones which still lacks fibrillary part
- ☐ Osteoid is an destroyed extracellular matrix of bones which already lacks fibrillary part
- ☐ Osteoid is an destroyed extracellular matrix of bones which already lacks inorganic compounds

36 Which of following statements about changes of environment inside the **sealing zone** is true?

- ☐ Osteoclasts release hydrolytic enzymes and decrease pH
- ☐ Osteoclasts release hydrolytic enzymes and increase pH
- ☐ Osteoclasts release lipolytic enzymes and decrease pH
- ☐ Osteoclasts release lipolytic enzymes and increase pH

37 Which of following statements about metabolism of **chondrocyte** is the most accurate?

- ☐ Metabolism is slow, main source of energy is anaerobic glycolysis
- ☐ Metabolism is slow, main source of energy is aerobic glycolysis
- ☐ Metabolism is intense, main source of energy is anaerobic glycolysis
- ☐ Metabolism is intense, main source of energy is aerobic glycolysis

38 Which of following statements describes a **fibroblast** the best?

- ☐ It contains irregular branched cytoplasm, large ovoid euchromatic nucleus with prominent nucleolus, abundant rough endoplasmic reticulum and well-developed Golgi apparatus
- ☐ It contains irregular branched cytoplasm, small condensed nucleus, abundant smooth endoplasmic reticulum and numerous actin filaments
- ☐ It contains a few droplets of lipid in the cytoplasm, round and eccentrically located nucleus with
- ☐ It is spindle-shaped cell with condensed nucleus, cytoplasm is poor with a few organelles only

39 Which of following techniques is an appropriate technique for demonstration of **elastic fibers**?

- ☐ Heidenhein's trichromatic technique AZAN
- ☐ Green Masson trichrome
- ☐ Orcein
- ☐ PAS reaction

40 Which of following tissues is main tissue of the **umbilical cord**?

- ☐ Jelly-like connective tissue
- ☐ Reticular connective tissue
- ☐ Loose connective tissue
- ☐ White adipose tissue

41 Which of following types of cartilage is the most common in adult body?

- ☐ Hyaline cartilage
- ☐ Elastic cartilage
- ☐ Fibrocartilage

42 Which step is first one during the enchondral ossification?

- ☐ Formation of the bone collar on the surface of the cartilaginous model of the bone
- ☐ Growing of blood vessels through the cartilage to the primary ossification center
- ☐ Calcification of the extracellular matrix
- ☐ Hypertrophy of chondrocytes

43 Why is woven bone (primary bone) called **woven**?

- ☐ Bone forms 3D structure which is similar to the wool - "fiber" of bone tissue and big empty spaces
- ☐ Fibrillary part of the extracellular matrix is present in this type of bone only
- ☐ Collagen fibers in the bone are arranged haphazardly like fibers in the wool
- ☐ The name is historical mistake

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