

## HISTOLOGY

Match the germ layers and their respective tissue derivatives:

Paraxial mesoderm à [dermis of the skin](#)

Endoderm à [tracheal epithelium](#)

Intermediate mesoderm à [urogenital epithelium](#)

Surface ectoderm à [epidermis](#)

Lateral mesoderm à [pleura, pericardium, peritoneum](#)

Match each of the listed tissues to the structure from the drop down menu

Which is characteristic for the corresponding tissue type?

Covering epithelium à [mesothelium](#)

Cardiac muscle tissue à [myocardium](#)

Nerve tissue à [synapse](#)

Glandula epithelium à [islet of langerhans](#)

Bone tissue à [osteon](#)

Match the listed descriptions to corresponding tissue from the drop down menu

It is characterized by a close cell apposition and presence at a free surface à [epithelial tissue](#)

It allows rapid response to external stimuli à [nerve tissue](#)

It is composed of cells called chondrocytes and a highly specialized ECM à [cartilaginous tissue](#)

It contains large amounts of contractile proteins à [muscle tissue](#)

It is characterized by a mineralized ECM à [bone tissue](#)

Match the listed morphological characteristics to the corresponding tissues from the drop-down menu:

Tall prismatic cells, oval nucleus, tight contact to the basal lamina, up to 300 microvilli on the apical surface → **Correct**

**Simple columnar absorptive epithelium**

Elongated eosinophilic structural syncytia with clearly pronounced regular transverse striations and round peripherally located nuclei → **Correct** **Transversely striated skeletal muscle tissue**

Globular complexes with central small lumen, made of cells with pyramidal shape and pronounced apical acidophilia and basal basophilia → **Correct** **Serous secretory divisions of an exocrine glandular epithelium**

Weakly contacting fixed and migrating cells with diverse morphological characteristics and abundance of extracellular matrix rich in diverse fine fibers → **Correct** **Loose connective tissue**

Complexes of polyhedral cells in close contact with each other within scarce extracellular matrix without visible ducts or cavities → **Correct** **Endocrine glandular epithelium**

Match the listed morphological characteristics to the corresponding differentiates cells from the drop-down menu:

High number of nuclei → **osteoclasts**

Prominent RER → **plasma cells**

Simple squamous → **endothelial cells**

Derive from monocytes → **macrophages**

Contain myofilaments → **muscle cells**

Match the listed tissues and the characteristic location of this

tissue:

Dense irregular connective tissue à deep layer of the dermis

Elastic connective tissue à [ligg.flava](#)

Bone tissue à [skeleton](#)

Reticular connective tissue à [spleen stroma](#)

Mucous connective tissue à [umbilical cord](#)

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As a source of energy erythrocytes use: [anaerobic glycolysis in the cytoplasm](#)

The process of metaplasia is: [Transformation from the subtype to another subtype of the same type of basic tissue](#)

The cartilage tissue subtypes are: [Hyaline, elastic and fibrous](#)

Which cells return to the blood from the tissues through diapedesis? [Lymphocytes](#)

What is the type of ossification in which the bone is formed directly without a cartilage template? [Intramembranous](#)

Which glial cell participates in myelin formation in the PNS? [Schwann cell](#)

Which of the following proteins builds the reticular fibers in the loose connective tissue? [Collagen type 3](#)

What is the number of leucocytes in 1  $\mu$ l blood? [6000-10000](#)

Skeletal and cardiac muscle tissue originate from? [Mesoblast](#)

Chondrocytes receive nutrients via: [diffusion through the matrix of the cartilage](#)

What are the main types of lymphocytes? [NK-cells, T-lymphocytes and B-lymphocytes](#)

Which of the following glial cells participates in the cerebrospinal fluid? [Ependymal cells](#)

Which of the listed neurotransmitters are inhibitory? [GABA and Glycine](#)

Which of the answers regarding stratified epithelium is true?

None of the answers is true

Which of the following connective tissue cells modulates the allergic reaction? Eosinophilic leucocytes

Which of the following properties is characteristic of rhabdomyocytes? All listed

What is the shape of the nucleus of a cardiomyocyte? Oval

According to the shape of secretory portion of the exocrine glands, they are classified as: Acinar

How many lobules can be typically found in a neutrophilic granulocyte? 3-5

Which one of the following statements is not true regarding the elastic connective tissue? It is in a specially large quantities in cicatrices and celloides

The bone matrix is produced by: Osteoblasts

Which of the listed proteins is involved in the contraction of cardiomyocytes but not smooth muscle cells? Troponin

The approx. size of the platelets is? 2-4 micrometer

Which of the following cells is not part of the reticular connective tissue, located in the red bone marrow? mesangial cells

In granulocytopoiesis, which cell type is the next developmental stage after myeloblast stage? Promyeleocyt

Which of the following structures is present in electrical synapses? Connexones

Which of the following glands is purely serous? All listed

Which of the answers regarding stratified epithelium is true?

None of the answers are true

Which one of the following statements is NOT true regarding the adipose tissue? It is important for the immunological defense of the organism

Which of the listed cells does NOT belong to the glial lineage? Martinotti cell

The Meissner's corpuscles respond to: **Light touch**

Macrophages in the tissues are derived from which of the following? **Monocyte**

Which is the protective connective tissue sheath covering the nerve fascicles in a peripheral nerve? **Perineurium**

A characteristic feature of the process of erythropoiesis is: **disappearance of almost all organelles**

Which of the following is typical for inhibitory synapses?

**Both pre-and postsynaptic membranes are with a similar thickness**

Thrombopoietin is a hormone, which is important for:

**Thrombocytopoiesis**

From which embryonic layer originates the smooth muscle tissue? **Mesenchyme**

Which is the protective connective tissue sheath covering the nerve fascicles in a peripheral nerve? **Perineurium**

Which of the following statements regarding conductive cardiomyocytes is NOT correct? **They are smaller than contractile cardiomyocytes**

What is the shape of the nucleus of a neutrophilic myelocyte? **kidney-shaped**

In which of the following combinations the stages of monocytopoiesis are ordered correctly? **monocyte-granulocyte colony-forming unit -> monocyte colony-forming unit -> monoblast -> promonocyte -> monocyte**

Which of the following statements regarding cardiomyocytes is NOT correct? **They have a better developed endoplasmic reticulum than rhabdomyocytes**

Hyaline cartilage is present in the listed structures except for: **Epiglottis**

Which of the following statements regarding the red muscle fibers is NOT correct? **They contract quickly**

Which of the listed cell contacts are found in the epithelial

tissue? **All answers are true**

Retrograde axonal transport is executed by the protein: **Dynein**

Which of the following is typical for inhibitory synapses?

**Both pre- and postsynaptic membranes are with a similar thickness**

The average life-time of erythrocytes in the circulatory system is: **120 Days**

Which of the following connective tissue cells has antigen-presenting properties? **macrophage**

Which of the following glands is purely serous? **all listed**

Which of the following connective tissue cells modulates the allergic reactions? **eosinophilic leucocyte**

Which of the following substances is involved in the blood coagulation: **factor of von Willebrand**

Which of the statements regarding secretory cardiomyocytes is correct? **They are located in the atria of the heart**

The length of the molecule of the hyaluronic acid is approximately: **2.5 micrometers**

Somatostatin is produced in the: **Hypothalamus**

Which of the following statements regarding the Z-discs is correct? **They are built of alpha-actinin**

Which of the listed cells does NOT belong to the glial lineage? **Martinotti cell**

Which type of cartilage tissue forms the template for the endochondral bone formation? **Hyaline**

Which of the following properties is characteristic of rhabdomyocytes? **all listed**

The cardiac muscle tissue originates from: **mesoderm**

How many lobules can we typically find in a Neutrophilic granulocyte? **three - five**

Which of the following glial cells participate in the movement of cerebrospinal fluid? **Ependymal cells**

Which one of the following cells is NOT part of the reticular

connective tissue, located in the red bone marrow? **Mesangial cells**

Which of the following statements IS NOT true about the platelets: **they contain hemoglobin**

Neurons with typical pyramid shape soma are the: **Giant cells of Betz**

Skeletal and cardiac muscle tissue originate from: **mesoblast**

What is the normal percentage of the monocytes out of the circulating leukocytes in healthy adults? **5-8 %**

Which of the following does not belong to the formed elements of the blood? **Fibrinogen**

Which glial cell participates in myelin formation in the PNS? **Schwann cell**

The bony lamellae of compact bone are organized into lamellar systems. Which of the following is not one of them? **lamellae in the interterritorial matrix**

Which functional types of neurons innervate the neuromuscular spindles? **Sensory and motor**

The Ruffini's corpuscles respond to: **Vibration and pressure**

Which statement about the perichondrium is NOT true? **fibrocartilage is surrounded by well-defined perichondrium**

Which one of the following statements is NOT true regarding the loose connective tissue? **The cells are arranged in isogenous groups**

The mesenchyme is an embryonic: **Connective tissue**

The bone matrix is produced by: **osteoblasts**

The main type of collagen in the fibrous cartilage is: **Type 1**

Which component of the axon may contain Nissl's granulations? **The axonal hillock**

Which organelle stores calcium in cardiomyocytes? **Smooth endoplasmic reticulum**

Macrophages in the tissues are derived from which of the following blood cells? **Monocyte**

Giannuzzi demilunes are typical for: **mixed acini**

What is the average lifespan of lymphocytes? **from a few hours to a few decades**

Which one of the following is a correct statement concerning Haversian systems (osteons)? **mature bone is composed of osteons**

What is the shape of the nucleus of the monocyte? **kidney shape**