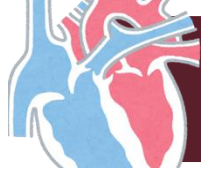
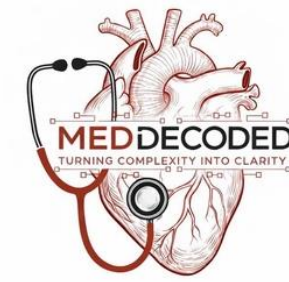


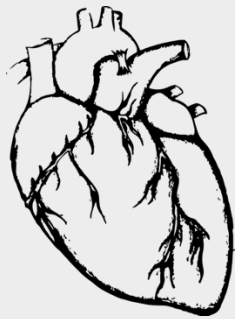
بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



HISTOLOGY

﴿ وَلَقَدْ خَلَقْنَا الْإِنْسَانَ وَنَعَلَهُمَّا تَوْسُوسًا بِهِ نَفْسُهُ وَنَحْنُ أَقْرَبُ إِلَيْهِ مِنْ حَبْلِ الْوَرِيدِ ﴾

Past paper



Reviewed by : Rand Alkhateeb Yamen Aljarrah
Dareen Alhababseh Khaled Abdalla
Emmad Aljammal

INTRODUCTION TO HISTOLOGY

بسم الله الرحمن الرحيم
اللهم لا سهل إلا ما جعلته سهلاً، وأنت تجعل الصعب إذا شئت سهلاً، اللهم سهل لي أمري واشرح لي صدري، ووفقني لما تحب وترضى.

Question : during the preparation of a routine H&E slide what step occurs after the tissue is fixation?

- A)clearing
- B) Embedding in paraffin
- C) Staining
- D) Slicing
- E)Dehydrated

Question : During the preparation of routine H&E slide, what allows the tissue to hold its form?

- A) Fixation
- B) Embedding in paraffin
- C) Staining
- D) Slicing
- E) Dehydration

Question : During the preparation of a routine H&E slide , Alcohol is removed in organic solvents in which both alcohol and paraffin are miscible. This process is called:

- A) Clearing
- B) Fixation
- C) Dehydration
- D Embedding
- E) Infiltration

Question : The type of microscope that used in studying living cell

- A) Phase contrast microscope
- B) bright field microscope
- C) fluorescent microscope
- D) Confocal microscope
- E) Transition electron microscope

Question : which of the following is basophilic :

- A) Mitochondria
- B) Granules
- C) collagen
- D) DNA
- E) Proteins

Question : when you need to obtain general idea about any tissue which of the following stain will you see :

- A) H&E
- B) Silver stain
- C) Immunohistochemistry
- D) Mason's trichromatic
- E) Metal impregnating

Question : What is the most commonly used chemical for removing water from biological samples (dehydration):

- A) xylene
- B) paraformaldehyde
- C) alcohol
- D) air dry sample instead
- E) none of above

Question : A Student used the light microscope to acquire image for stained histological section what is the final magnification of the images if she used the 40x objective lens?

- A) 40
- B) 400
- C) 4000
- D) 1600
- E) 40000

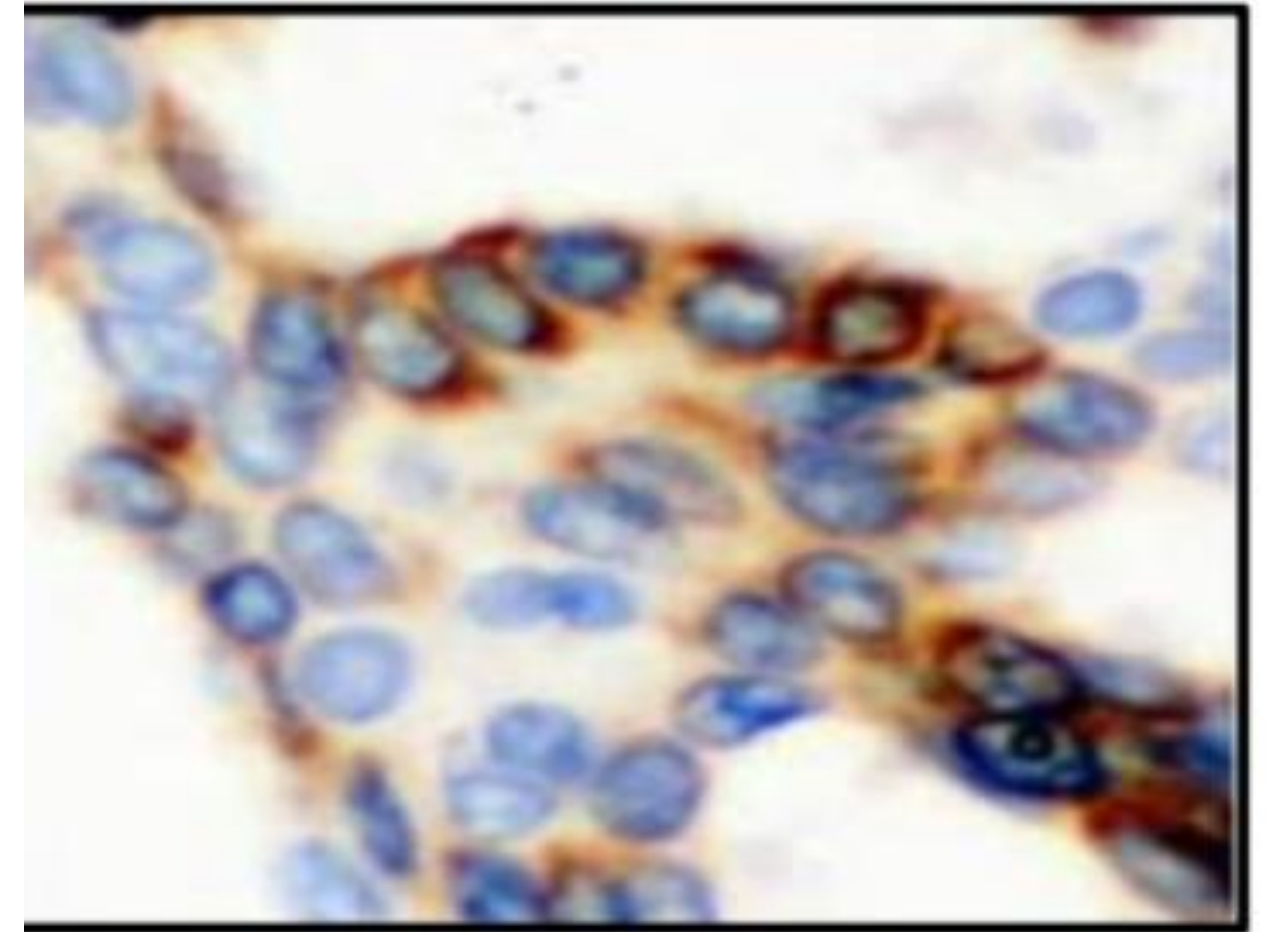
Question : The structure marked eblue star is :

- A) Ocular lenses
- B) Condensers
- C) Objective lenses
- D) Illuminators
- E) None of above



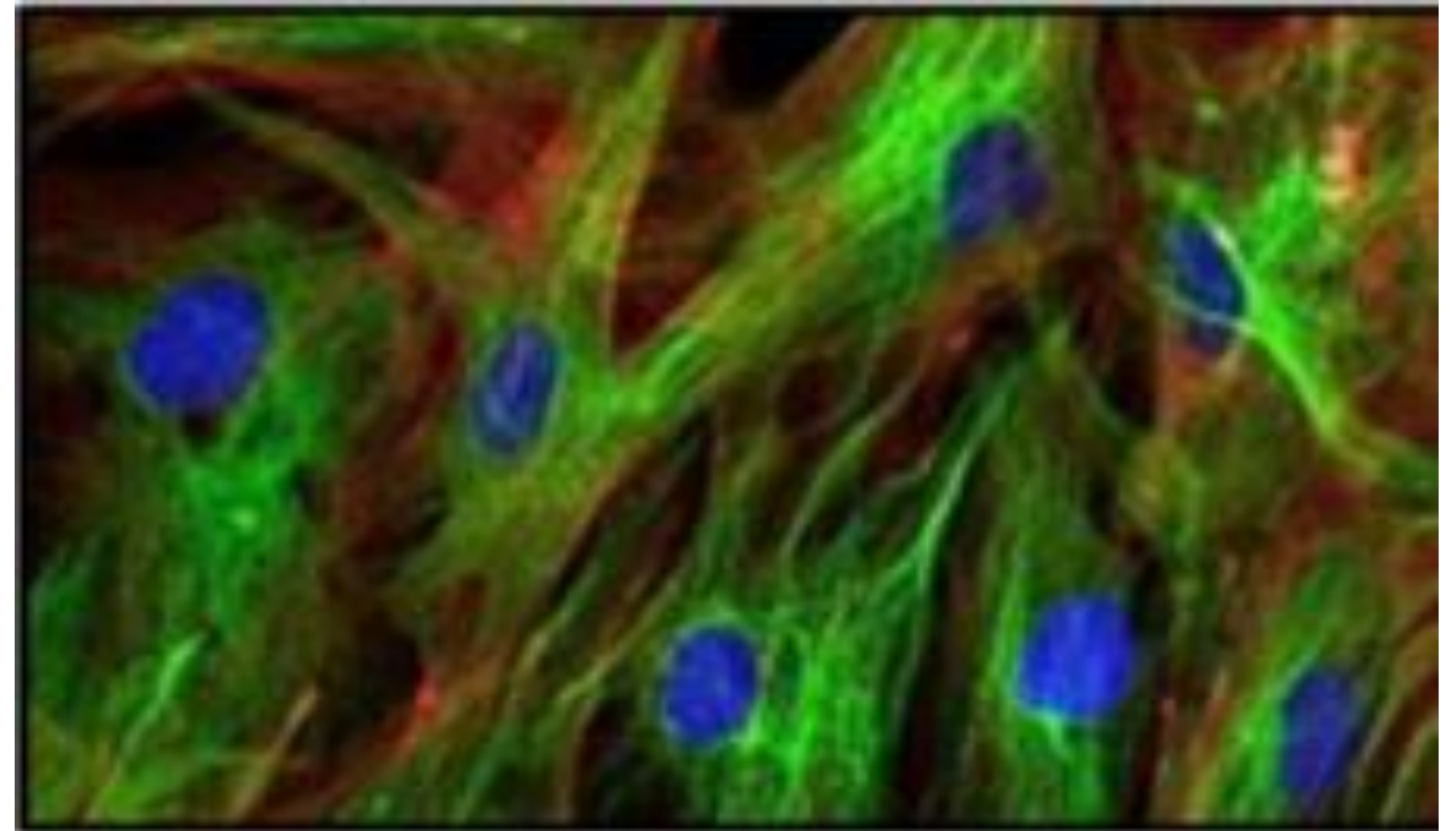
Question : what is the staining method used in this image:

- A) Hematoxylin stain only
- B) Immunofluorescence staining
- C) PAS stain
- D) H&E stain
- E) immunohistochemistry and hematoxylin



Question : The colour which indicate the nucleus:

- A) Red
- B) Black
- C) Green
- D) Blue
- E) The nucleus is not stain

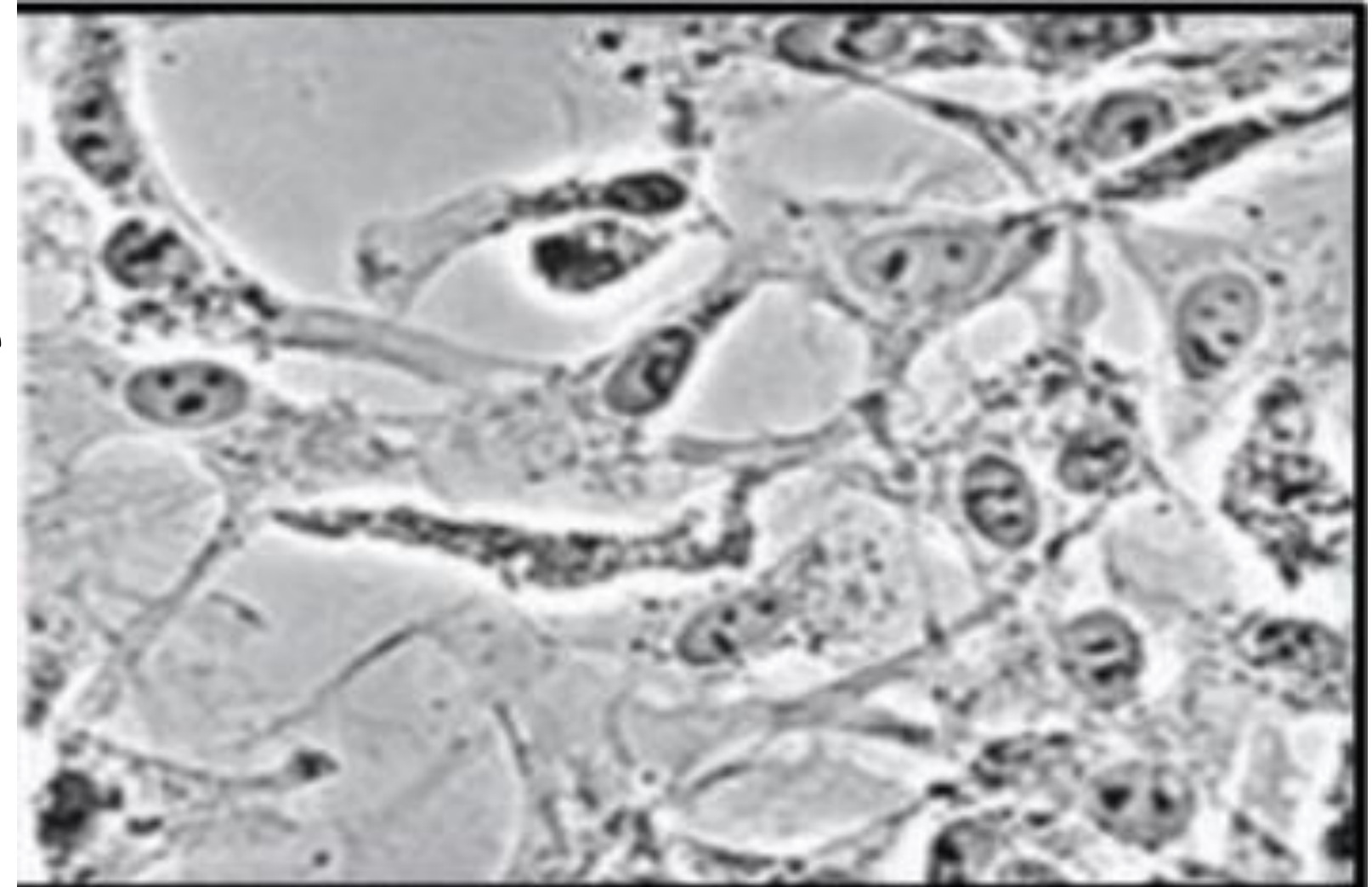


Question : Regarding the electron microscope, choose the correct statement:

- A) SEM type yields colored and three-dimensional images
- B) TEM stands for transparent electron microscope
- C) Specimens are coated with metal atoms for both types
- D) The resolution is 0.003 micrometer in TEM
- E) All are correct

Question : The image was acquired using which type of microscope:

- A) Differential interference contrast microscope
- B) Bright field microscope
- C) Fluorescence microscope
- D) phase-contrast microscope
- E) TEM



Question : If you want to count specific number of cells in tissue section what type of staining we should use?

- A) trichrome
- B) immunostaining
- C) H&E
- D) Silver stain
- E) Metal impregnating

Ans : B

Immunostaining uses antibodies to target specific proteins, which allows for the identification and counting of specific cell types

Question : which of the following is true with regard to electron microscope?

- A) Its resolving power can reach 0.2nm
- B) It uses glass lenses
- C) It gives colour images
- D) Uses thin section (1-30nm)
- E) Sample are mounted on slides

Question : All the following is true regard to Hematoxylin
Except:

- A) It's a basic dye
- B) It has a positive charge
- C) It can stain mitochondria
- D) It stain basophilic structures
- E) It can stain GAGS

Question : You are a researcher in nanotechnology interested to understand the ultra structural distribution of a potential biomaterial used for as an intracellular drug. The microscope most useful to use is:

- A) Polarizing microscope
- B) Confocal microscope
- C) TEM
- D) Fluorescent microscope using phalloidin
- E) SEM

Question : If you are a researcher and you want to study the organising of actin filament (one layer/layers) and you want to create a sharp image limiting the light out of focus. what microscope should you use:

- A) Confocal microscope
- B) Fluorescence use phalloidin
- C) Phase contrast
- D) Bright microscope
- E) Polarizing microscope

Question : The step to preserve biological material nature:

- A) Fixation
- B) Infiltration
- C) Embedding
- D) Clearing
- E) Dehydration

Question : During a surgery the surgeon took a biopsy and needed its histochemical analysis report in a short time to complete the surgery.how could pathologists avoid time barrier in sample preparation:

- A) Using freezing of tissues technique
- B) By dehydration the biopsy in one step
- C) By using plastic solvents rather than paraffin in embedding
- D) By staining with more reactive dyes
- E) By inactivating more enzymes in tissues

Question : Which of the following materials is used in embedding in sample preparation for TEM?

- A) paraffin wax
- B) epoxy resin
- C) ethanol
- D) a and b
- E) none of the above

Ans : B

It's mentioned in the book

Question : The part of bright field microscope that collects and focuse a cone of light that illuminates the tissue slide on the stage is called:

- A) objective lens
- B) condenser
- C) ocular lens
- D) a and c
- E) none of the above

Question : Phase-Contrast microscope creates contrast by:

- A) Changing of light speed through a specimen with different refractive indices
- B) Starting
- C) Using a small point of high intensive light
- D) The amount of radiolabel applied to the specimen
- E) none of the above

Question : For what extent of resolution does TEM imaging permit?

- A) 3×10^{-8}
- B) 0.3×10^{-8}
- C) 3×10^{-6}
- D) 0.3×10^{-6}
- E) None of

Question : we have a skin sample what type of convenient special stain do we use to stain protein?

- A) Immunohistochemical
- B) Immunofluorescence
- C) H&E
- D) A+B
- E) Silver staining

Ans : D

Both immunohistochemistry and immunofluorescence are used to target and visualize specific proteins

Question : How to calculate the total magnification of a light microscope?

- A) By multiplying the magnifying power of the ocular and objective lenses
- B) By dividing the magnifying power of the ocular and objective lenses
- C) By multiplying the resolution power of the ocular and objective lenses
- D) By multiplying the magnifying power of the ocular lens by 10
- E) By summing the resolving power of the ocular and objective lenses

Question : You did a surgery and after it has finished you need a quick decision to make sure that there's no tumour at the borders of surgery site, which of the following would you order?

- A) SEM
- B) Routine LM
- C) TEM
- D) Freezing technique
- E) Phase contrast microscopy

Question : which one of these organelles makes the cytoplasm acidophilic?

- A) ER
- B) Golgi
- C) Ribosome
- D) Nucleus
- E) Mitochondria

Question : WHAT is the process name of replacing the dehydration fluid with one that is totally miscible with both the dehydration fluid and embedding medium?

- A) Clearing
- B) Embedding
- C) Impregnation
- D) Fixation
- E) dehydration

Question : Which fixative is most commonly used in electron microscope:

- A) Gluteraldehyde
- B) Xylene
- C) Alcohol
- D) Formalin
- E) Osmium tetroxide

Question : if you want to see mitochondria, you should use :

- A) TEM
- B) SEM
- C) confocal
- D) Brightfield

Question : detoxification of drugs and alcohol occurs in:

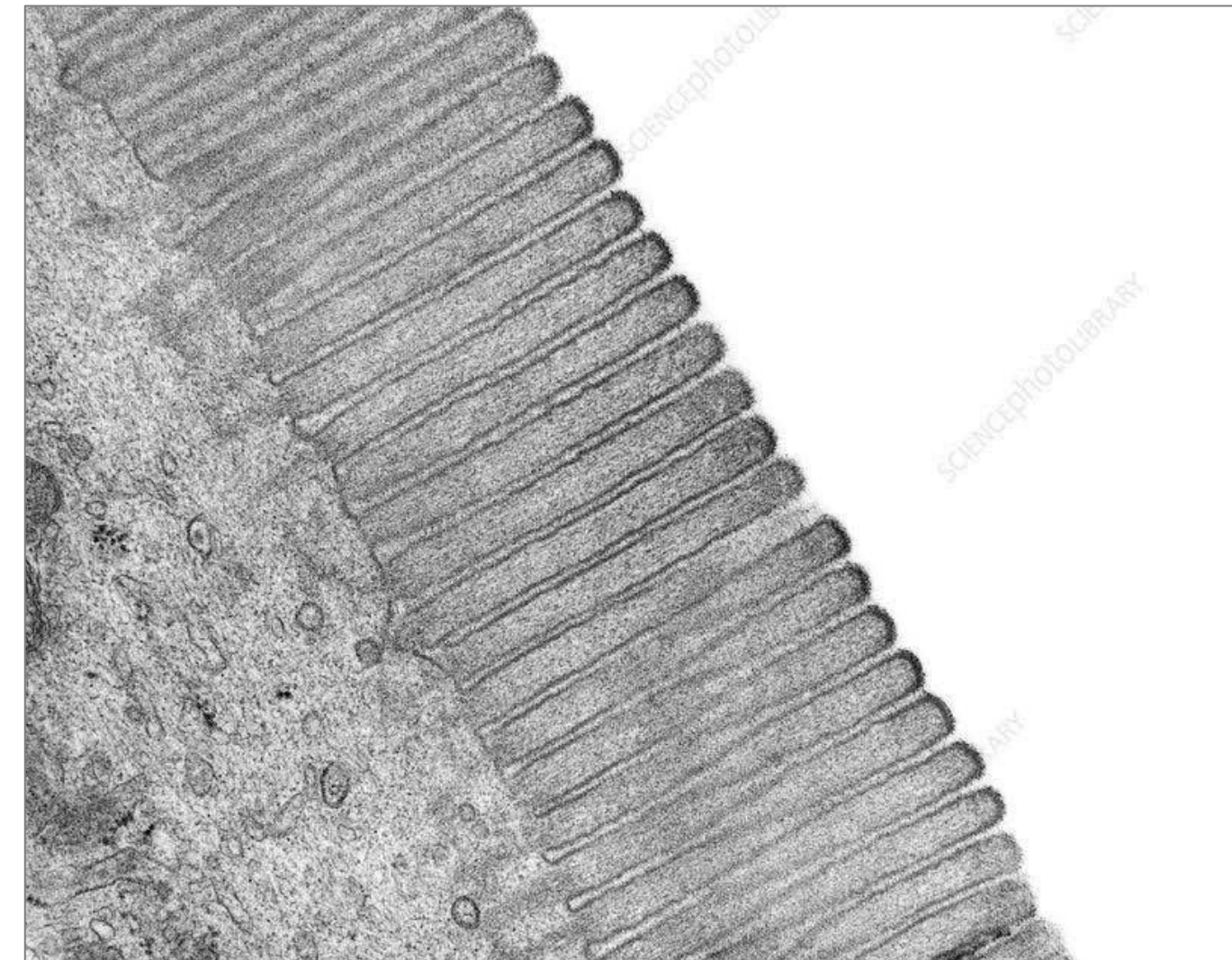
- A) Golgi
- B) SER
- C) RER
- D) SER & RER

Question : if something has a size of $5 \mu\text{m}$, it would :

- A) Resolve in both light and electron microscopes
- B) Unresolved in both
- C) resolved in the electron microscope only
- D) Resolved in light microscope

Question : what is the type of the microscope :

- A) LM
- B) SEM
- C) TEM
- D) confocal



Ans : C

Question : In bright field microscope, if the objective lens x20 , what is the final magnification of it:

- A) x20
- B) x4
- C) x400
- D) x200
- E) x2000

Question : Polyribosomes :

- A) complex of ribosomes on the same strand of DNA
- B) complex of ribosomes on different strands of DNA
- C) Complex of ribosomes after synthetic reaction
- D) Many ribosomes attached to RER
- E) Fragments of ribosomes

Question : Sudan black stain :

- A) elastic fibers
- B) fats
- C) granules
- D) nucleus

Question : Two organelles the space between them $5\ \mu\text{m}$ regarding this :

- A) They can be resolved by both EM and LM
- B) Just resolved by LM and resolved by EM
- C) Just resolved by both of them

EPITHELIUM TISSUE

Question : which of the following statements is true about Myo-epithelia ?

- A) They rest on basement membrane.
- B) They contain a huge amount of ER.
- C) They have no processes.
- D) It is considered a part of the connective tissue.

Question : An apical modification that can't be individually resolved under LM:

- A) Stereocilia
- B) microvilli
- C) cilia
- D) goblet cells

Question : Which of the following is true about transitional epithelium?

- A) It can be stratified or simple.
- B) They all look like flattened cells.
- C) It is found in the urinary system only.
- D) All cells are in contact with basal lamina.

Question : Which of the following structures contain connexin subunits?

- A) Zonula occludens
- B) Macula adherens
- C) Zonula adherens.
- D) Desmosomes.
- E) gap junction

Question : An apical modification that is motile and has 9+2 axoneme core:

- A) stereocilia
- B) centriole
- C) microvilli
- D) cilia

Question : What is the shape of nucleus in simple cuboidal epithelium?

- A) elongated
- B) circular
- C) flattened
- D) ovoid
- E) any of the above

Question : Which structure is targeted by *Helicobacter pylori*?

- A) ZO-1 of zonula occludens
- B) Laminin V of basal lamina
- C) Desmogleins of desmosomes.
- D) Cadherins

Question : Which of the following is true about hemidesmosomes?

- A) They are not associated with integrins.
- B) Cytoplasmic plaque is attached to actin filaments.
- C) They are only found in the basal side of the cell.

Question : Which of the following structures function in influencing cell polarity?

- A) reticular lamina
- B) basal lamina
- C) cytoplasm
- D) cilia and microvilli

Question : What is the major component of lamina densa?

- A) Collagen VII.
- B) Laminin.
- C) Collagen III.
- D) Integrins.
- E) Collagen IV.

Question : Where is endothelium found?

- A) lining blood vessels
- B) covering the external body
- C) in lungs
- D) covering large cavities

Question : Which of these is found most apically in TEM?

- A) gap junctions
- B) zonula occludens
- C) zonula adherens
- D) desmosomes

Question : Where are the non-classical cadherins found?

- A) zonula occludens
- B) gap junction
- C) zonula adherens
- D) tight junctions
- E) macula adherens

Question : Which of the following is true about the basement membrane?

- A) It is a real membrane lying under the epithelium
- B) Usually formed by the fusion of basal lamina and reticular lamina.
- C) It is equivalent to basal lamina.

Question : Which of the following is true about epithelium?

- A) Can be derived from ectoderm and endoderm only.
- B) It is highly polarized.
- C) It is highly vascular
- D) Contains much intercellular material.

Question : Where is non-keratinized stratified squamous epithelium found?

- A) skin
- B) lungs
- C) oral cavity
- D) intestine

Question : The name of stratified epithelium depends on

- A) Size of the apical layer
- B) stain of the basal layer
- C) shape of the basal layer cells
- D) shape of the apical layer cells

Question : Epidermolysis Bullosa is a medical significance which is related to ?

- A) Tight junction
- B) desmosomes
- C) hemidesmosomes
- D) gap junction
- E) adherent junction

Question : the most apical structure in epithelial tissue

- A) Zonula adherens
- B) Zonula occludens
- C) Macula Adherens
- D) Hemidesmosomes
- E) nexus

Ans: b

Question : Which component in basal lamina self assemble into a two dimensional network of evenly spaced subunits.

- A) collagen II
- B) collagen IV
- C) laminin
- D) collagen III
- E) perlecan

Question : Organelles and membrane proteins are unevenly distributed, this is called :

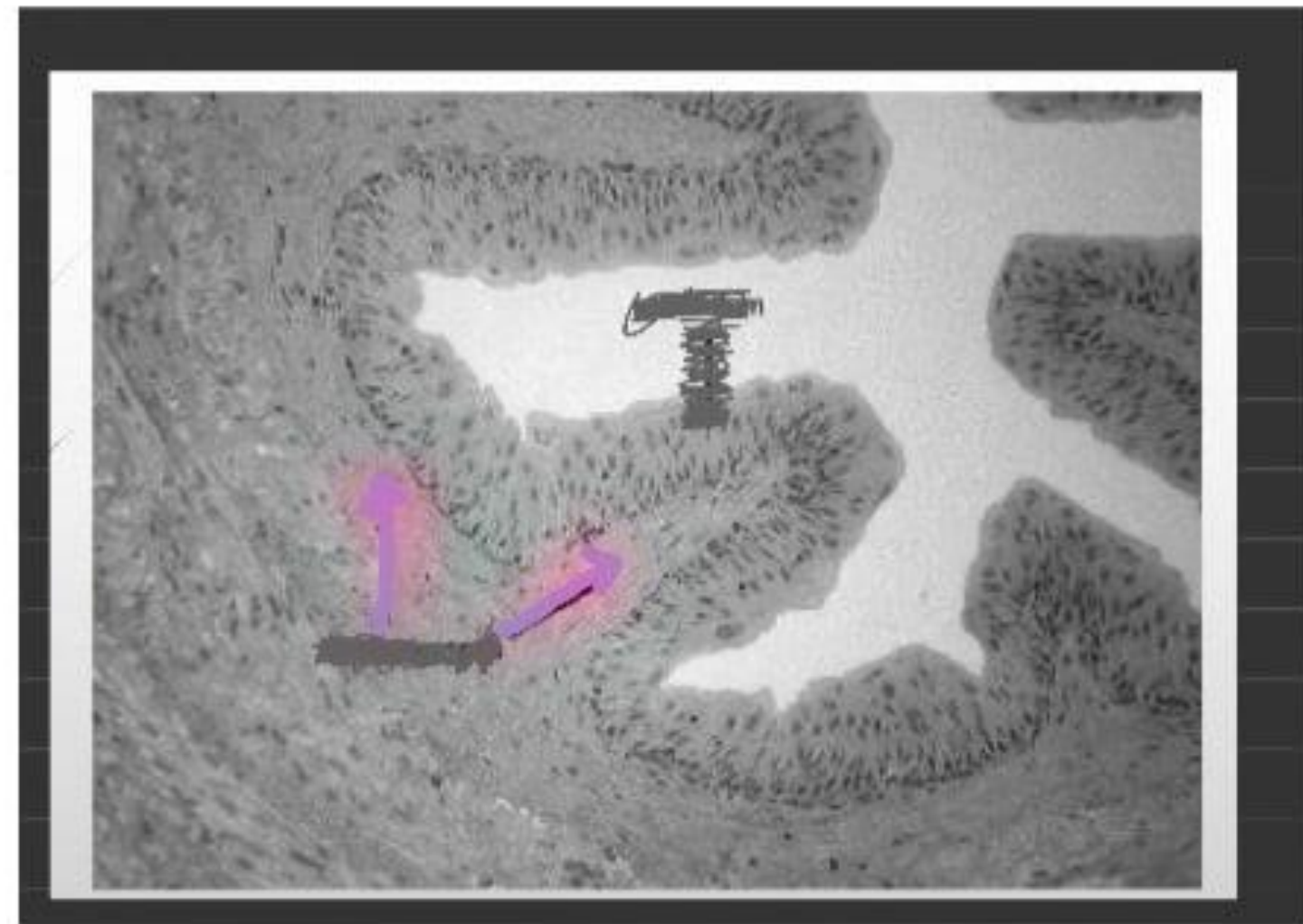
- A) apical
- B) basal
- C) polarity
- D) basement membrane
- E) desmosome

Question : What is not true about transitional epithelial cells

- A) binucleated cells in all cells
- B) appears thinner when stretched
- C) it lines organs of the urinary system
- D) known as urothelium

Question : Where we could find this CT:

- A) Under epithelial. .
- B) lining blood vessels
- C) cartilage
- D) bone

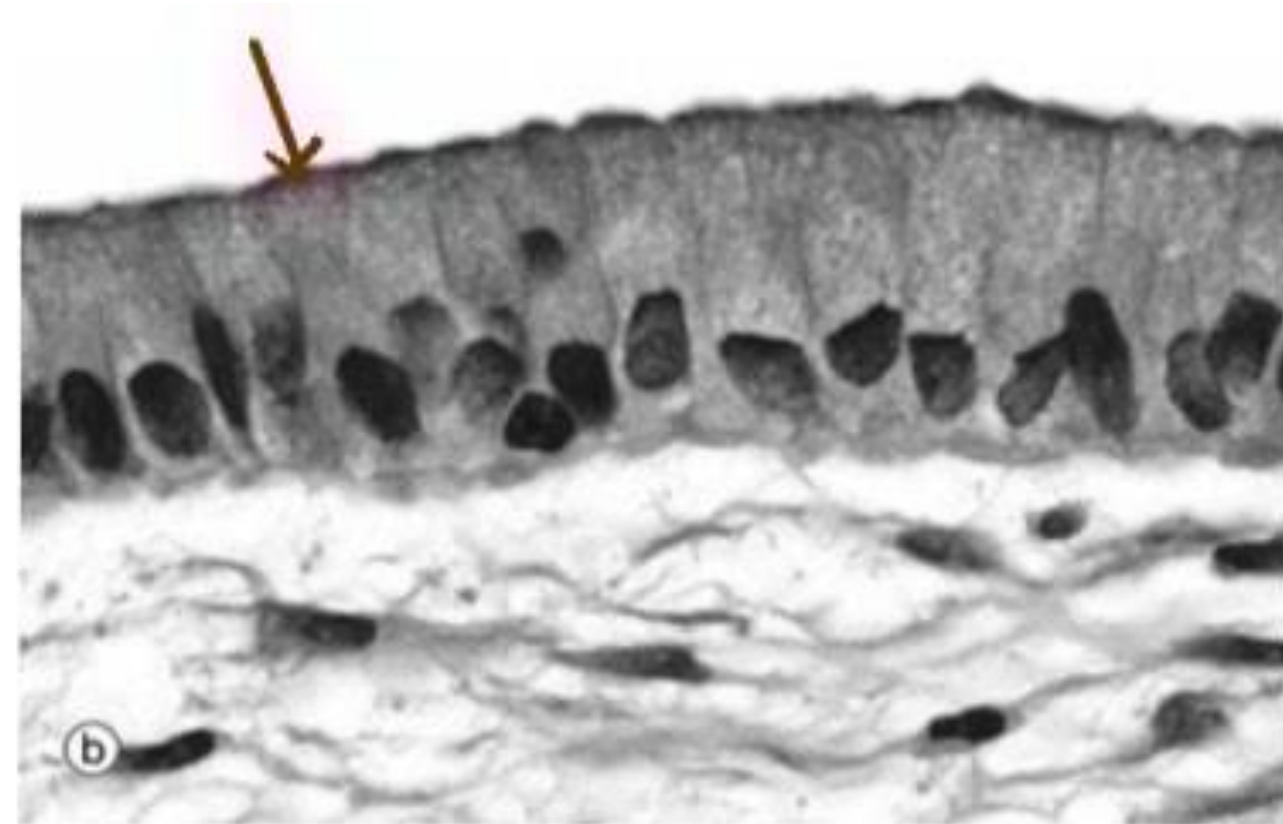


Question : What stains with PAS:

- A) basement membrane
- B) basal lamina
- C) reticular lamina
- D) epithelial

Question : This is:

- A) microvilli
- B) cilia
- C) stereocilia
- D) actin
- E) flagella



Ans: a

Question : This is:

- A) microvilli
- B) cilia
- C) stereocilia
- D) Microvilli and cilia
- E) Microvilli and stereocilia



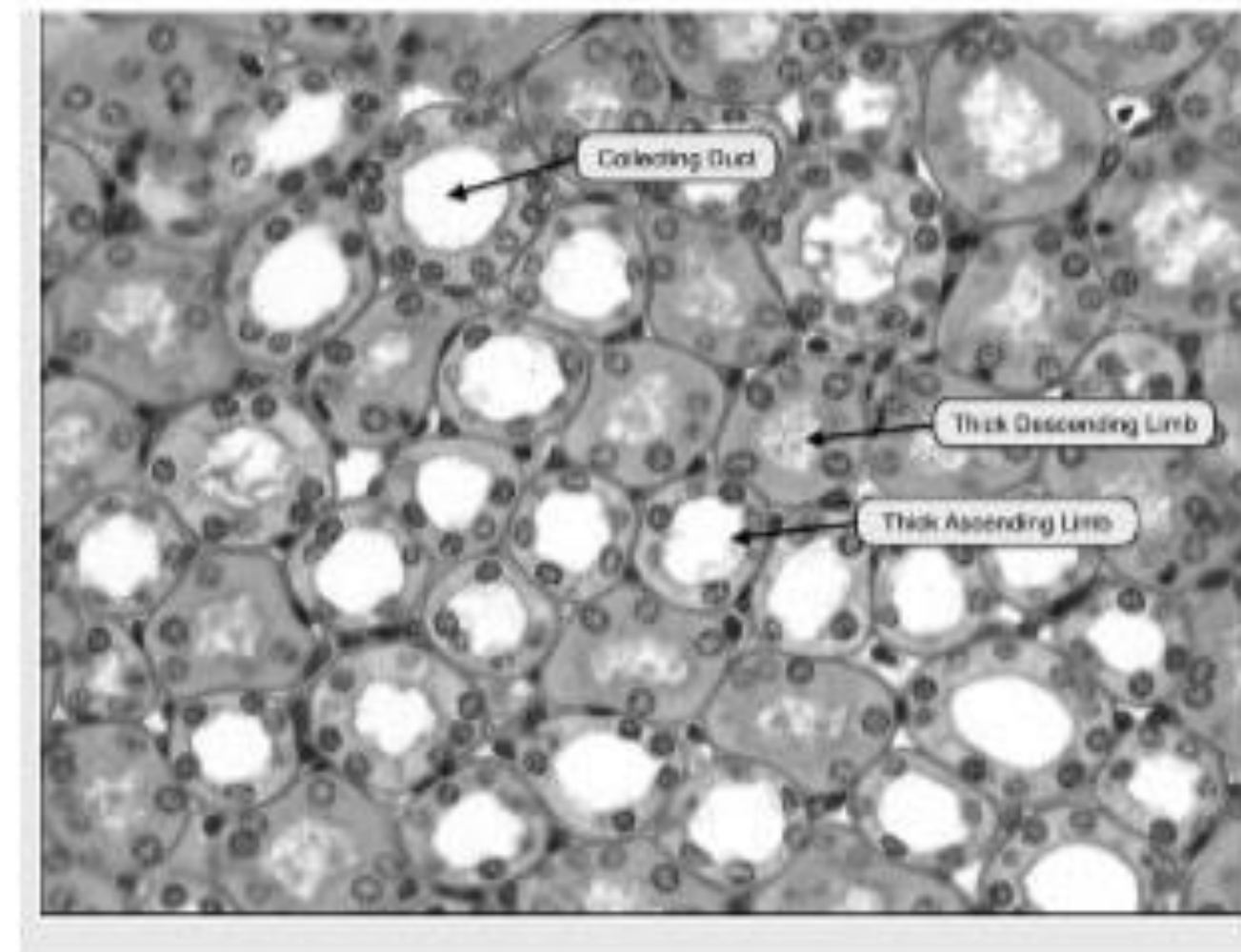
Question : The type of this epithelial tissue is:

- A) simple cuboidal
- B) transitional epithelium
- C) pseudo-stratified columnar
- D) stratified columnar



Question : The type of this epithelial :

- A) glandular tissue
- B) adipose tissue
- C) simple cuboidal epithelium
- D) stratified cuboidal epithelial



Question : Tissue for absorption and secretion will be :

- A) Stratified squamous epithelium.
- B) Transitional epithelium.
- C) Columnar epithelium with microvilli.
- D) Columnar epithelium with cilia.

Question : Choose the mismatch :

- A) Large ducts → simple cuboidal.
- B) Large ducts → stratified cuboidal.
- C) epidermis → keratinized stratified squamous epithelium.
- D) Alveoli of lungs → simple squamous epithelium

Question : the wrong sentence of the following :

- A) Cilia help in moving mucus or fluids.
- B) Microvilli increase the surface area for absorption.
- C) Stereocilia are long, branched structures.
- D) Stereocilia & microvilli are motile structures.

Question : choose the mismatch :

- A) Desmosomes → cadherins.
- B) Desmosomes → integrin.
- C) Tight junctions → claudins and occludins.
- D) Hemidesmosomes → integrins.

Question : pseudostratified is a simple epithelium ... Why?

-because all the cells touch basement membrane

Question : choose the correct sentence about epithelium :

- A) Loosely arranged cells with abundant extracellular matrix.
- B) Rich blood supply between epithelial cells.
- C) Densely packed cells with little amount of ECM.
- D) Epithelial tissue isn't innervated.

Question : stratified epithelium is found in the following except :

- A) Lining urinary bladder
- B) Oral cavity
- C) Covering of ovaries
- D) Large glands
- E) Covering cornea

Question : person who has slow absorption in the digestive system , most likely has a problem with

- A) Microvilli
- B) Cilia
- C) Stereocilia
- D) Microvilli and stereocilia
- E) Microvilli and cilia

Question : regarding the transitional epithelium, the correct statement is :

- A) It's also called urethelium
- B) It appears stretched when relaxed
- C) It has cubed shaped umbrella cells in the apical surface
- D) All cells are binucleated

Question : Stratified epithelium is found in the following except:

- A)
- B) Oral cavity
- C) Covering of ovaries
- D) Conjunctiva

Question : Choose the wrong statement about cell junctions:

- A) Tight junctions prevent leakage of molecules between epithelial cells.
- B) Hemidesmosomes anchor epithelial cells to the basement membrane.
- C) Gap junctions allow the passage of ions and small molecules between cells.
- D) Desmosomes is effective border for diffusion of ECM material.

Question : Choose the wrong statement about stratified epithelium:

- A) Stratified epithelium provides protection against mechanical stress.
- B) It is named according to the shape of the apical layer of cells.
- C) Stratified squamous epithelium can be keratinized or non-keratinized.
- D) It is named according to the shape of basal layer.

Question : what is wrong about goblet cells ?

- A) Goblet cells secrete mucus to lubricate and protect epithelial surfaces.
- B) Goblet cells comes usually with columnar epithelium.
- C) Goblet cells are commonly found in the respiratory and digestive tracts.
- D) Goblet cells secrete serous .

Question : Choose the wrong statement about proteins in cell junctions:

- A) Cadherins are calcium-dependent proteins found in adherens junctions.
- B) Connexins form channels in gap junctions for communication.
- C) Keratin filaments are essential in tight junction.
- D) Integrins connect epithelial cells to the extracellular matrix in hemidesmosomes.

Question : Choose the wrong statement about proteins in cell junctions:

- A) Tight junctions contain claudins and occludins.
- B) Gap junctions are made of connexins.
- C) Desmosomes use integrins for cell-cell adhesion.
- D) Hemidesmosomes connect cells to the basement membrane via integrins.

Question : Connective tissue and epithelium share the following characteristics, except:

- A) Presence of specialized cells.
- B) Involvement in protection and support.
- C) High intercellular spaces.
- D) Ability to regenerate.

Question : Connective tissue and epithelium share the following characteristics, except:

- A. They both have a high rate of cell division
- B. They both contain a large amount of extracellular matrix
- C. They both function in protection
- D. They are both types of tissue found in the human body

Question : The passage of ions between epithelial cells is facilitated by which type of junctions:

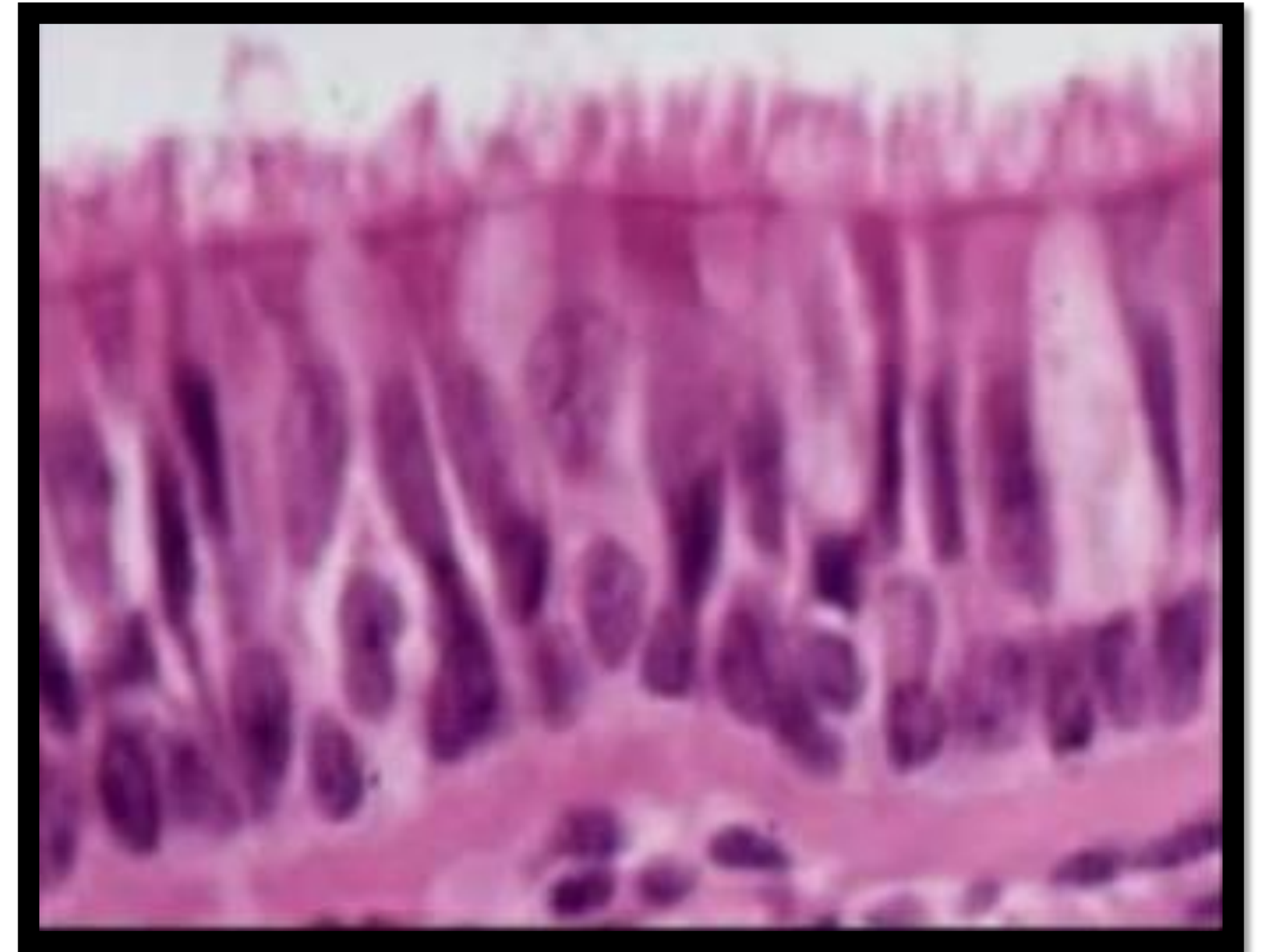
- A. Tight junctions.
- B. Desmosomes.
- C. Hemidesmosomes.
- D. Gap junctions.

Question : Choose the correct statement about epithelial tissues:

- A. All types have the same regeneration capacity.
- B. Capillaries penetrate them sometimes.
- C. Line all external and some internal surfaces of the body.
- D. Most substances that enter or leave an organ most cross an epithelial tissue.
- E. None of the above.

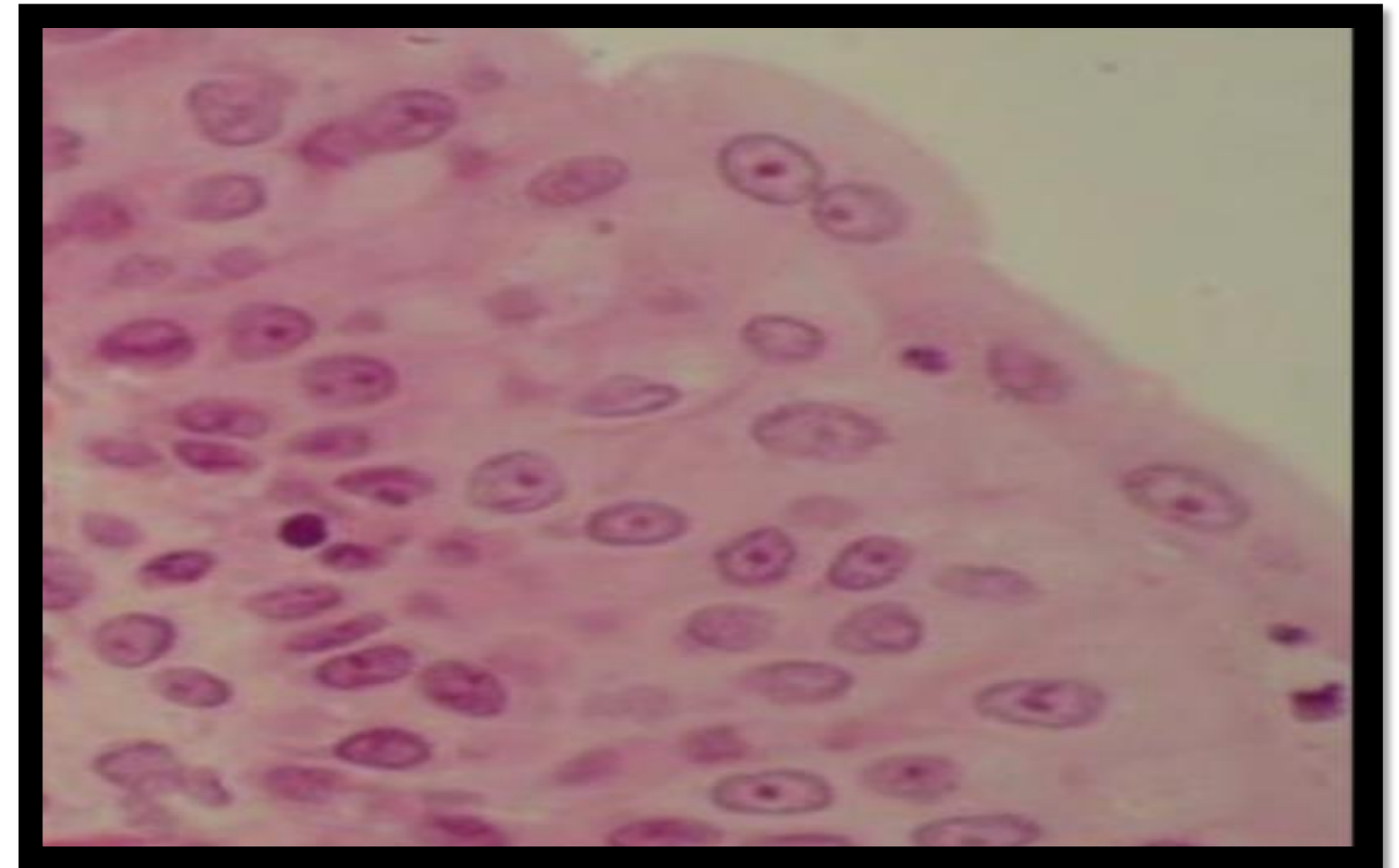
Question : Identify the type of epithelium in this image:

- A. Stratified columnar with goblet cells.
- B. Simple columnar with goblet cells.
- C. Stratified cuboidal with goblet cells.
- D. Ciliated pseudostratified columnar epithelium.
- E. Ciliated pseudostratified columnar epithelium with goblet cells.



Question : Choose the incorrect statement about this tissue:

- A. It lines the urinary bladder.
- B. It is called urothelium.
- C. The apical layer are called umbrella cells.
- D. Binucleation is seen in this type.
- E. It is a stratified cuboidal.

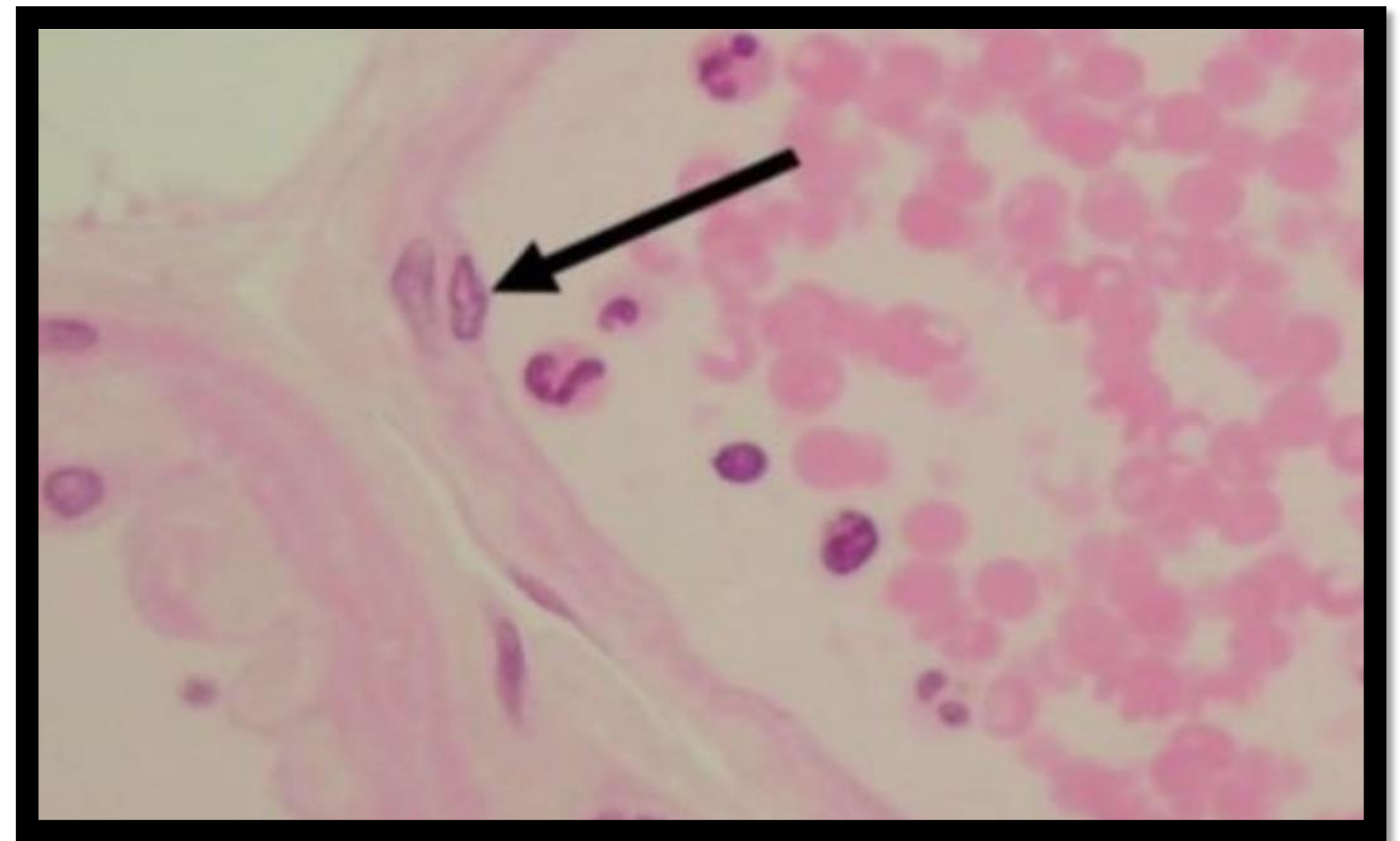


Question : The tissue that seen in the conjunctiva lining the eyelids is :

- A. Stratified cuboidal epithelium
- B. Stratified columnar epithelium
- C. Stratified squamous keratinized epithelium
- D. A and B are correct

Question : The black arrow points to:

- A. Nucleus of an endothelial cell.
- B. Nucleus of a mesothelial cell.
- C. Nucleus of a fibroblast.
- D. Nucleus of a fibroblas.
- E. Nucleus of a fibrocyte.



Question : Simple squamous epithelium is found in all, except:

- A) endothelium
- B) pleural
- C) peritoneume
- D) endocardium
- E) none of the above

Question : Simple columnar is found in of the following except:

- A) Lining of all the large intestine
- B) Lining of all the small intestine
- C) Stomach
- D) Gallbladder
- E) None of the above

Question : Which of the following is mismatched :

- A) tight junction – seals adjacent cells
- B) adherens junction – strengthen nearby tight junction
- C) hemidesmosome – anchors cytoskeleton to the basal lamina
- D) gap junctions – allow direct transfer of medium molecules

Question : Choose the correct statement about the epithelium lining the upper respiratory tract:

- A) It is lined by simple squamous epithelium
- B) It is lined by stratified cuboidal epithelium
- C) It is lined by ciliated pseudostratified columnar epithelium with goblet cells
- D) It is lined by transitional epithelium

Question : The incorrect characteristic about cilia :

- A) Cilia have a core made of microtubules arranged in a 9 + 2 pattern
- B) Cilia move mucus along the surface of epithelial cells
- C) Cilia are longer than microvilli
- D) Cilia have 9 + 0 microtubule arrangement in the core

Question : The incorrect statement about transitional epithelium:

- A) It lines the urinary bladder
- B) It allows distension and relaxation
- C) All cells are binucleated
- D) Surface cells may appear dome-shaped when relaxed

Question : You can find simple columnar epithelium in :

- A) Skin and trachea
- B) Urinary bladder and ureter
- C) Stomach and gallbladder
- D) Esophagus and oral cavity

Question : Stratified squamous epithelium is found in all, except:

- A) vagina
- B) oral cavity
- C) ureter
- D) pharynx
- E) none of the above

Question : One of the following is correct about the characteristics of Basement Membrane:

- A) It is rich in cells and blood vessels
- B) It separates connective tissue from muscle tissue
- C) It supports epithelial tissue structurally and functionally
- D) It is made mainly of collagen type II

Question : what supports the core of the microvilli:

- A) Microtubules
- B) Intermediate filaments
- C) Actin filaments
- D) Keratin fibers

Question : Stratified columnar epithelium lines :

- A) Small intestine
- B) Alveoli
- C) Conjunctiva
- D) Skin (epidermis)

Question : Epidermolysis bullosa is a disorder caused by mutations in genes participate in hemidesmosome, leading the epithelial cells to be strongly attached to the underlying basement membrane

- A) The first sentence is true the second isn't
- B) The second is true the first isn't
- C) both sentences are correct
- D) non of them is correct

Question : The covering of ovaries:

- A) simple cuboidal
- B) simple columnar
- C) stratified cuboidal
- D) simple squamous

Question How many types of tissue are present on this picture :

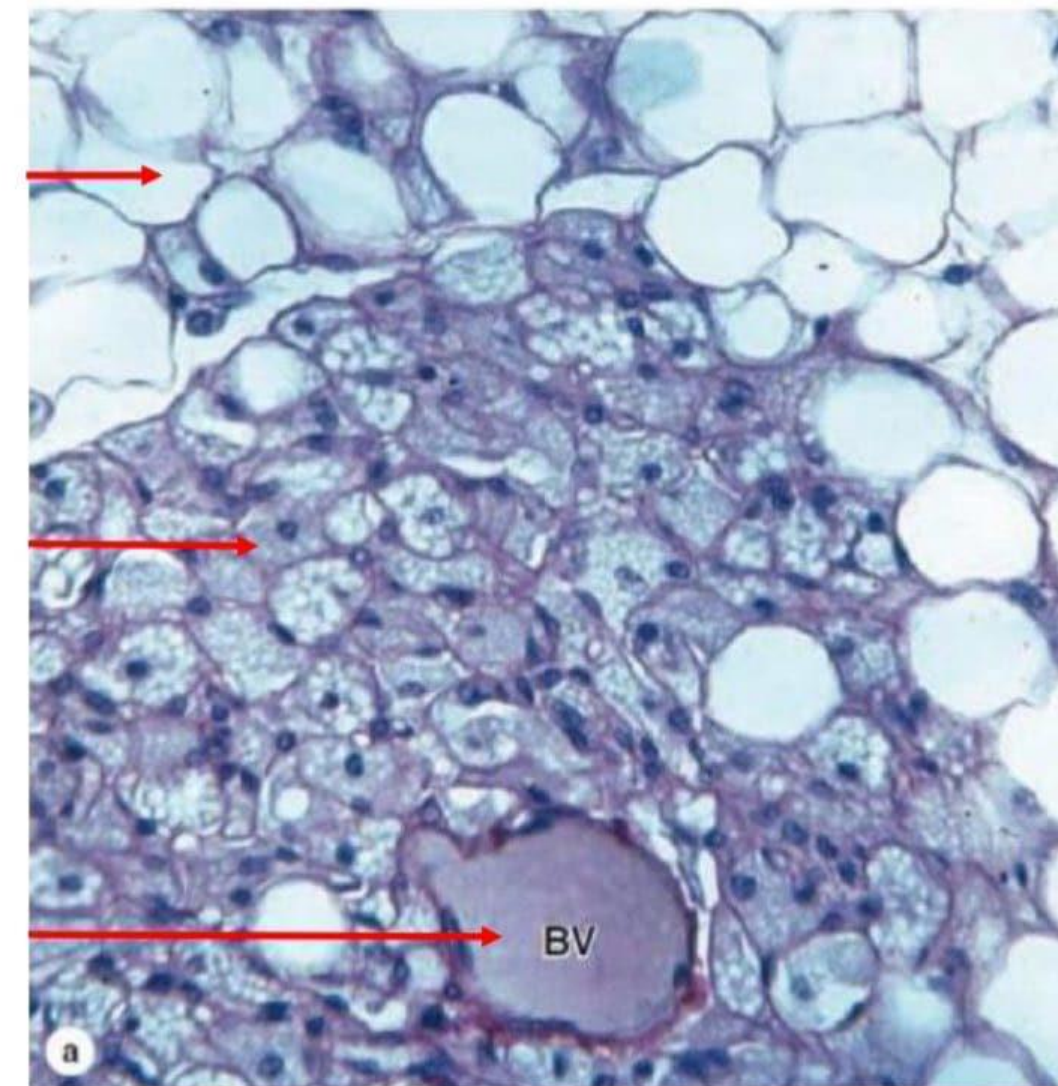
This question was deleted by the doctor , it was not clear enough , but this answer was from the doctor :)

A) 1

B) 3

C) 4

D) 5



Ans: c

Question : which of following is considered as an epithelial tissue feature ?

- A) polyhedral cell.
- B) avascular cells.
- C) the major construction of the tissue is ECM.
- D) A and B are correct

Question : one of following is a function of epithelial tissue?

- A) may act as contractile cells
- B) specialized sensory cells
- C) absorption
- D) all of the above are correct

Question : lamina propria is:

- A) a muscular tissue
- B) a nervous tissue
- C) a connective tissue
- D) an epithelial tissue

Question : the main subunits of microvilli are ?

- A) microtubules
- B) actin filaments
- C) Intermediate filaments
- D) A and C

Question : Stereocilia are ?

- A) Highly motile
- B) Composed of microtubules
- C) associated with very high secretory function
- D) longer than microvilli

Question : the surface structure of intestinal cells is called: ?

- A) Brush border
- B) striated border
- C) it does not have a name
- D) A and B can be right

Question : Axoneme is ?

- A) The core structure of cilium
- B) The two central microtubules of cilium
- C) The 9+2 assembly of microtubules
- D) None of the above

Question : nexin molecules : ?

- A) Are extend from A microtubule and make temporary cross- bridges with the B microtubule
- B) Connect the microtubules triplets with each other to form a ring
- C) Bind with actin filaments
- D) none of the above

Question : stereocilia and microvilli ?

- A) have the same length
- B) contain microfilaments
- C) have the same diameters
- D) B and C are correct

Question : basal lamina ?

- A) Is the same as the basement membrane
- B) Is secreted by both epithelial and connective tissue
- C) It consists of a network of fine fibrils
- D) All of the above are wrong

Question : laminin is ?

- A) Short proteoglycans
- B) Large glycoproteins
- C) A component of basal lamina
- D) B and C

Question : anchoring fibrils ?

- A) Are parts of reticular lamina
- B) Link the basal lamina with reticular fibers
- C) Represent polymers of type VII collagen
- D) All of the above are correct

Question : which of these junctional complexes form a band between adjacent cells ?

- A) tight junctions
- B) adherent junctions
- C) gap junctions
- D) A and B only

Question : which of these junctional complexes mediate intercellular communication?

- A) gap junctions
- B) tight junctions
- C) adherent junctions
- D) desmosomes

Question : cell adhesion is mediated by ?

- A) microtubules
- B) cadherins
- C) connexins
- D) none of the above

Question : the cytoplasmic ends of cadherins bind to ?

- A) actin filaments
- B) Another cadherins with the presence of Ca^{++}
- C) intermediate filaments
- D) Catenins

Question : catenins - that bind to the cytoplasmic ends of desmosomes - bind to ?

- A) intermediate filaments
- B) actin filaments
- C) microtubules
- D) none of the above

Question : the main subunits that form gap junctions are ?

- A) cadherins
- B) claudin
- C) connexins
- D) Zo – 1 and Zo - 2

Question : the major function of hemidesmosomes is ?

- A) Intercellular communication
- B. Anchoring cytoskeleton to the basal lamina
- C. It doesn't have a function
- D. None of the above is correct

Question : When a cell cannot directly transfer small molecules with (< 1.5 nm) diameters to its adjacent cell, then you should expect that we have a mutation in.....genes ?

- A. Nexus
- B. Zonula adherens
- C. Zonula occludens
- D. Hemidesmosomes
- E. Cadherins

Question : the ducts of glands are formed by ?

- A. epithelial tissue
- B. connective tissue
- C. it depends on the type of the gland
- D. none of the above

Question : The tissue that lines the vessels is ?

- A. Simple squamous epithelium
- B. Simple columnar epithelium
- C. Endothelium
- D. A and C can be correct

Question : Mesothelium is ?

- A. Simple squamous epithelium that lines serous cavities
- B. Simple squamous epithelium that lines the lumen of the cardiovascular system
- C. Found in kidney tubules
- D.B and C can be correct

Question : The tissue which lines the alveoli is ?

- A. Simple cuboidal epithelium
- B. Simple squamous epithelium
- C. Simple columnar epithelium
- D. None of the above

Question : The tissue that covers the ovaries and can be found in kidney tubules is ?

- A. Simple cuboidal epithelium
- B. Simple squamous epithelium
- C. Simple columnar epithelium
- D. None of the above

Question : he main function of simple columnar epithelium is?

- A. Exchange
- B. Covering and secretion
- C. Absorption
- D. None of the above

Question : The tissue that is found in the fallopian tube (oviduct) is ?

- A. Simple cuboidal epithelium
- B. Ciliated simple columnar epithelium
- C. Simple columnar epithelium with microvilli and goblet cells
- D. Pseudostratified columnar epithelium

Question : The tissue that lines the upper respiratory tract is :

- A. Simple squamous epithelium
- B. Simple cuboidal epithelium
- C. Pseudostratified columnar epithelium
- D. None of the above

Question : The major role of stratified epithelia is:

- A. Exchange
- B. Secretion
- C. Absorption
- D. Protection

Question : The tissue that forms the epidermis :

- A. Simple squamous epithelium
- B. Simple cuboidal epithelium
- C. Stratified squamous non-keratinized epithelium
- D. Stratified squamous keratinized epithelium

Question : Stratified squamous non-keratinized epithelium forms lining of :

- A. Oral cavity
- B. Esophagus
- C. Vagina
- D. All of the above

Question : The tissue seen in the conjunctiva lining the eyelids is:

- A. Stratified cuboidal epithelium
- B. Stratified columnar epithelium
- C. Stratified squamous keratinized epithelium
- D.A and B are correct

Question : Umbrella cells ?

- A. Are large, dome-like cells
- B. Contain large amounts of keratin
- C. Are part of urothelium
- D. A and C are correct

Question : The cells which specialized to protect underlying tissues from the hypertonic and potentially cytotoxic effects of urine are:

- A. Keratinized cells
- B. Non-keratinized cells
- C. Umbrella cells
- D. None of the above

Question : In individuals with chronic vitamin A deficiency, epithelial tissues of the type found in the bronchi and urinary bladder may gradually be replaced by:

- A. Stratified cuboidal epithelium
- B. Stratified squamous epithelium
- C. Simple squamous epithelium
- D. Simple cuboidal epithelium

Question : Transcytosis occurs in :

- A. Simple squamous epithelium
- B. Simple cuboidal epithelium
- C. Simple columnar epithelium
- D. All of the above are correct

Question : Epidermolysis bullosa is a skin blistering disorder in which the epithelium of the skin loses contact with underlying connective tissue. This is most probably caused by a problem in:

A-desmosomes

B-tight junctions

C- gap junctions

D-hemidesmosomes

Question : Respiratory epithelium is:

- a- ciliated simple columnar epithelium with goblet cells
- b- ciliated pseudo stratified columnar epithelium with goblet cells
- c- non-ciliated stratified squamous epithelium
- d- non-ciliated pseudo stratified columnar epithelium with goblet cells
- e- ciliated pseudo stratified squamous epithelium with goblet cells

Question : Which of the following is true regarding cilia?

- a- immotile but rhythmic
- b- have a 9+2 axoneme structure
- c- very short compared to microvilli
- d- function to increase surface area
- e- found in respiratory epithelium only

Question : Stratified epithelia is named according to the:

- a- shape of cells in basal layer
- b- size of cells in apical layer
- c- stain of cells in basal layer
- d- shape of cells in apical layer
- e- size of cells in basal layer

Question : Which of the following structures appears most apical on TEM of epithelial cells lining the intestines, and function to prevent leakiness in the paracellular pathway?

a-desmosomes

b-zonula adherens

c-gap junctions

d-zonula occludens

e-macula adherens

Question : Which of the following is NOT a characteristic of Goblet cells?

- a- Highly polarized
- b- Found in any type of epithelium
- c- Large supranuclear Golgi
- d- Prominent basally located RER
- e- Considered unicellular glands

Question : The tissue which lines the alveoli

- A. Simple cuboidal epithelium
- B. Simple squamous epithelium
- C. Simple columnar epithelium
- D. None of the above

Question : The tissue that covers the ovaries and can be found in kidney tubules is :

- A. Simple cuboidal epithelium
- B. Simple squamous epithelium
- C. Simple columnar epithelium

Question : transitional epithelium the correct statement :

- A. It is also called urethelium
- B. It appears stretched when relaxed
- C. It has cubed shaped umbrella cells in the apical surface
- D. All cells are binucleated

GLANDS

Question : Which epithelium lines the duct that is closest (nearest) to secretory units?

- A) simple columnar
- B) stratified squamous
- C) simple cuboidal
- D) stratified columnar
- E) stratified cuboidal

Question : Which of these gland's secretion mode is apocrine?

- A) all sweat glands
- B) goblet cells
- C) mammary glands
- D) salivary glands
- E) pancreas

Question : Which of these glands is mixed (seromucous)?

- A) parotid
- B) pancreas
- C) goblet cells
- D) submandibular salivary glands

Question : Which of the following glands is an example of simple branched acinar?

- A) sebaceous glands
- B) pancreas
- C) salivary glands
- D) sweat glands

Question : Which of the following is true about goblet cells?

- A) They secrete mucous and serous.
- B) They are found in the respiratory tract.
- C) They are not polarized.
- D) They use the apocrine mode of secretion.

Question : What is mismatched ?

- A) merocrine – salivary gland
- B) apocrine --- mammary gland
- C) holocrine – sebaceous glands
- D) endocrine – sweat glands

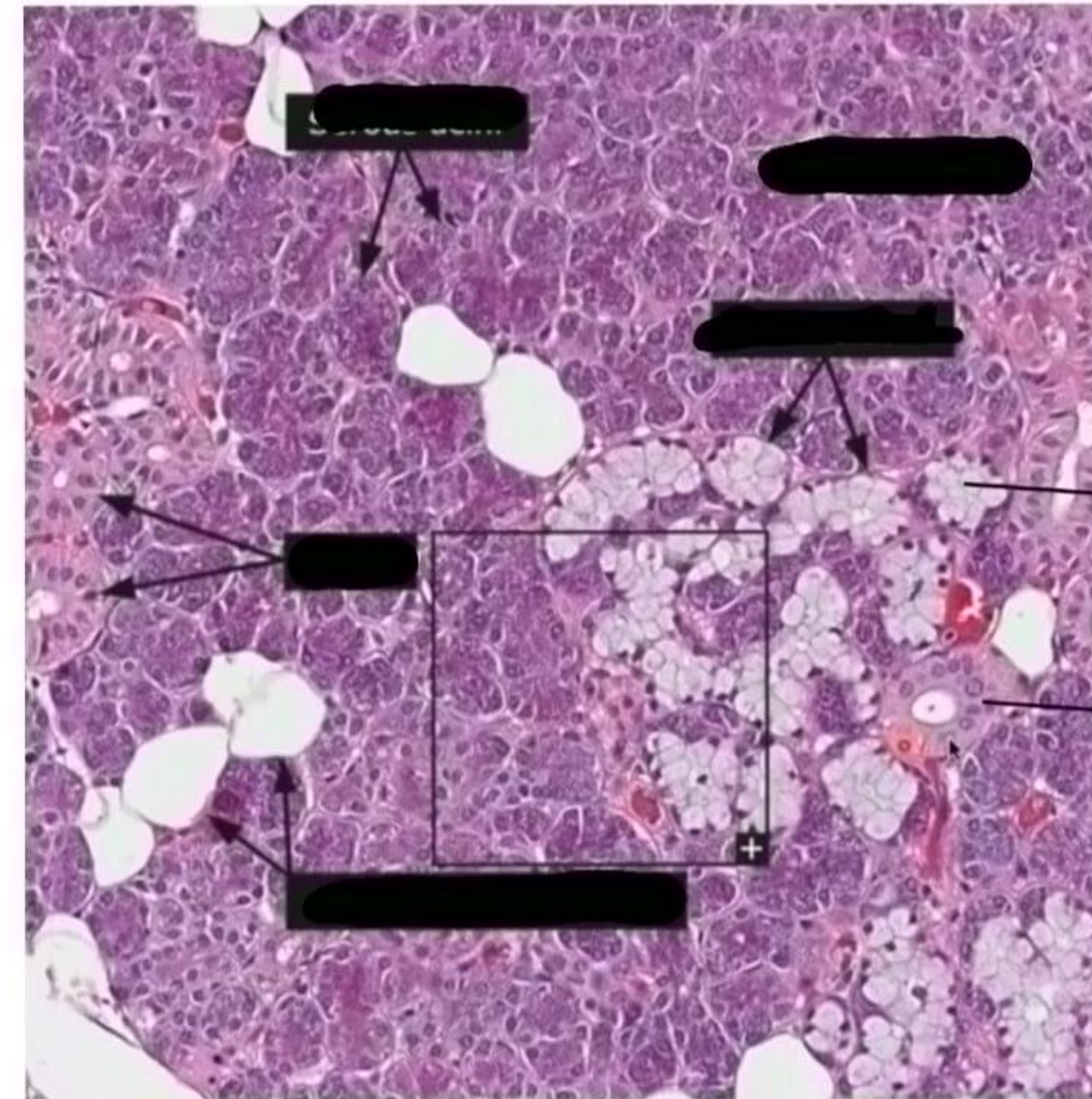
Question : The type of salivary gland is :

- A) simple tubular
- B) simple alveolar
- C) Tubuloalveolar
- D) simple branched tubular
- E) coiled tubular

Ans: c

Question : The type of this tissue:

- A) glandular tissue
- B) adipose tissue
- C) simple cuboidal
- D) stratified cuboidal epithelial



Ans: A

Question : Eccentric sweat glands & sebaceous gland differ in:

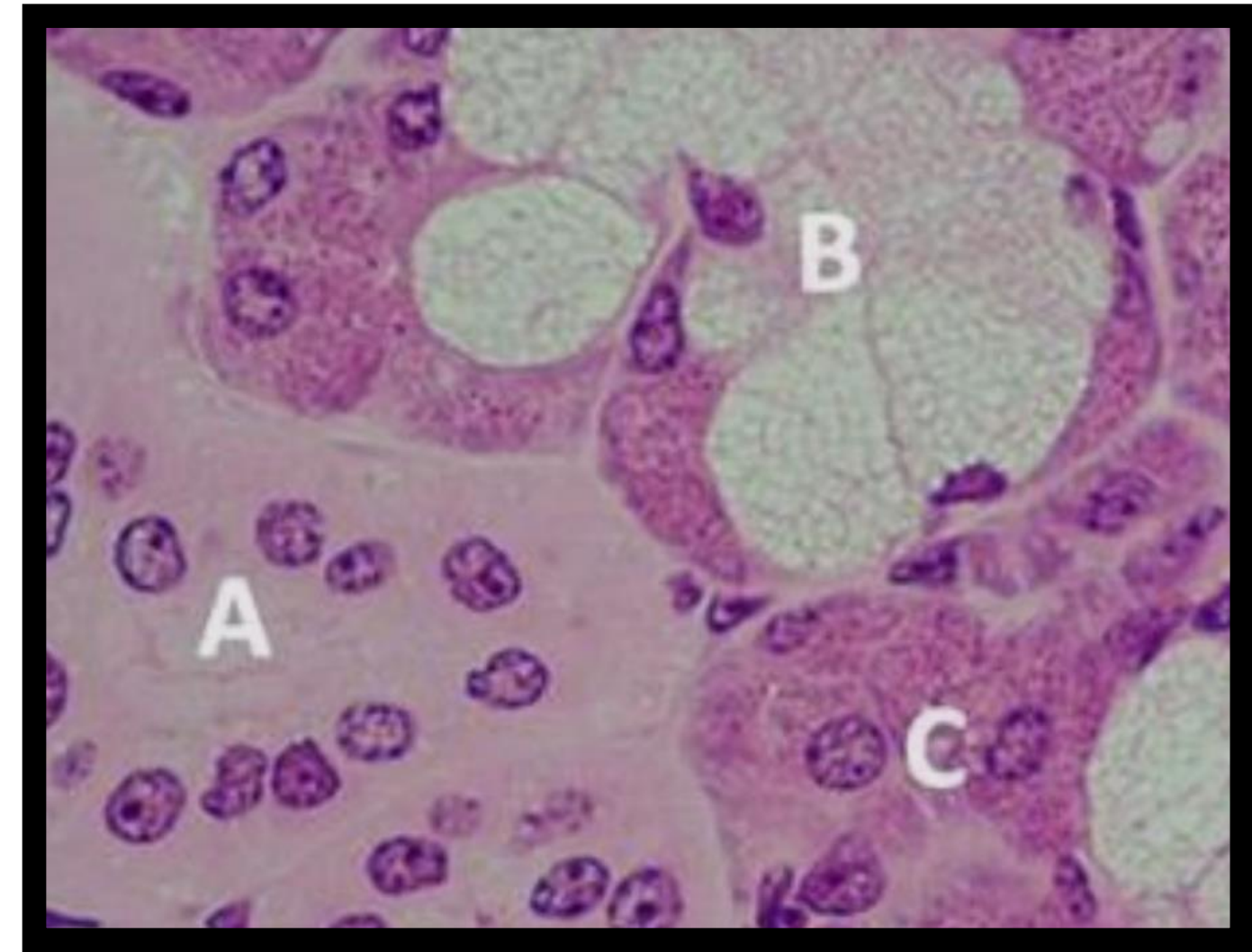
- A) Mode of secretion.
- B) Association with hair.
- C) Content of secretion.
- D) All of the above.

Question : Your colleague is planning to assess the abundance of myoepithelial cells in parotid glands of rats by staining (as precise and easy as possible), what do you advise her/him to do:

- A) H&E stain.
- B) TEM.
- C) PAS stain.
- D) Immunohistochemistry or immunofluorescence staining.
- E) Any of the above.

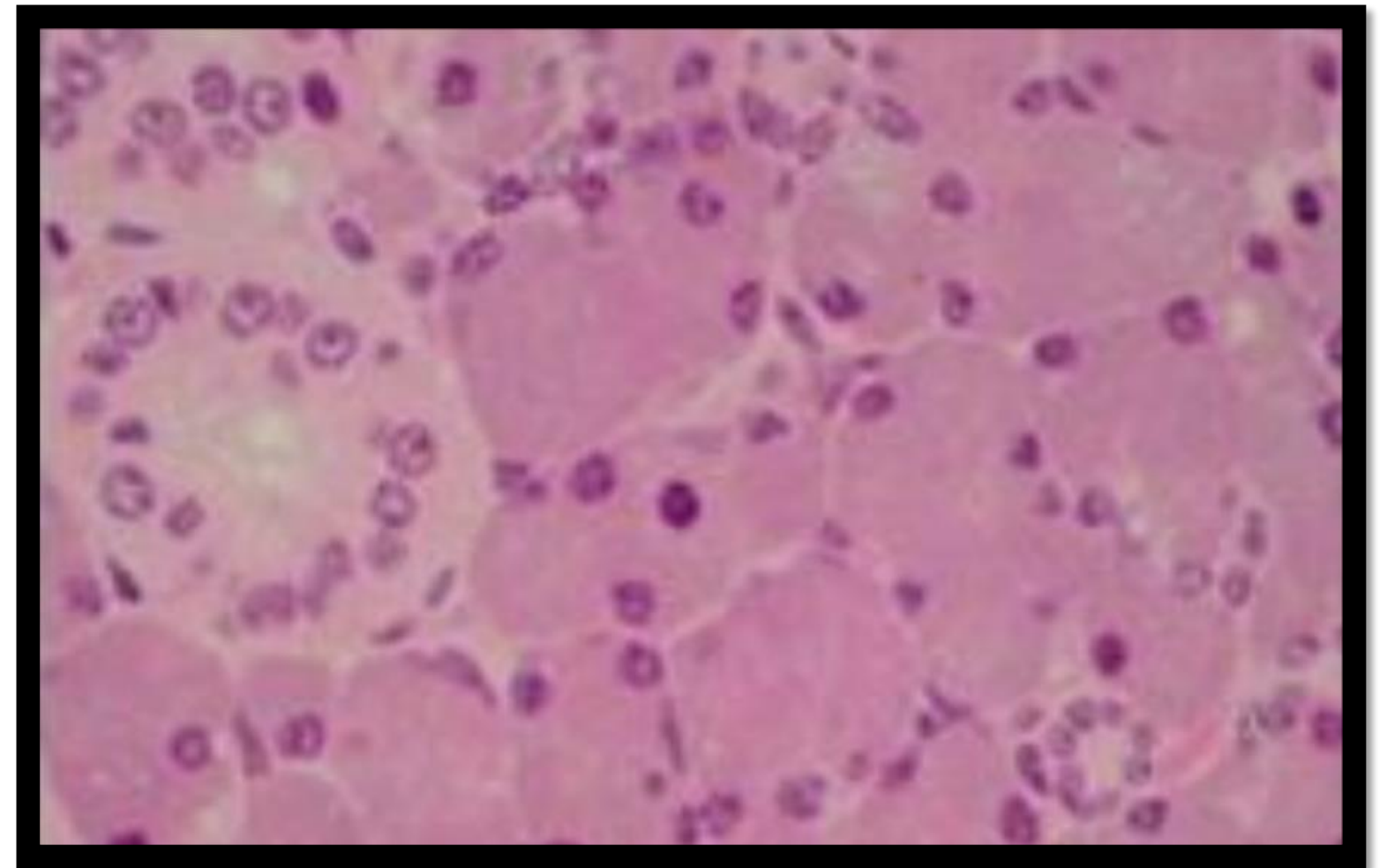
Question : The cells marked with A, B, and C letter are, respectively:

- A) Mucous, and ductal, and myoepithelial.
- B) Serous, mucous, and myoepithelial.
- C) Serous, goblet, and myoepithelial.
- D) Ductal, mucous, and serous.
- E) Mucous, serous, and ductal.



Question : This image was most likely taken from:

- A) Simple alveolar gland.
- B) Simple tubular gland.
- C) Simple tubuloalveolar gland.
- D) Compound alveolar gland.
- E) None of the above.



Ans:D

Question : Apocrine secretion is found in

- A) Mammary gland
- B) Sebaceous gland
- C) Pancreatic acinar

Question : Branched tubular is found in:

- A) Uterine gland
- B) Urethra
- C) Lieberkühn
- D) Brunner

Question : Derived by modification of epithelium into secretory structures

- A)Cartilages
- B)Merocrine
- C)Goblet
- D)Glands
- E)All of the above are correct except A

Question : All of the following are correct about glands except :

- A) They are epithelial cells
- B) They may synthesize, store, and secrete proteins, lipids , or complexes of carbohydrates and proteins .
- C) Some glands have high synthesizing activity, other have low synthesizing activity .
- D) All of the above are correct

Question : The substance that is produced by the gland to be used in the body, This process is

- A) Excretion
- B) Secretion
- C) Hydration
- D) Histogenesis

Question : the mammary glands secrete :

- A) Proteins
- B) Lipids
- C) Complexes of Carbohydrates and Proteins
- D) All of the above are correct

Question : Multicellular Exocrine glands :

- A) Secrete their products onto the surface of epithelium
- B) Secrete products indirectly
- C) Maintain the contact with the overlying epithelium
- D) A and c are correct
- E) All of the above are correct

Question : Most of our glands are MULTICELLULAR GLANDS such as :

- A) Salivary glands
- B) Goblet glands
- C) Thyroid glands
- D) A and C are correct

Question : The products of endocrine glands are called

- A) Enzymes
- B) Hormones
- C) Antibodies
- D) None of the above

Question : Membrane bounded vesicles can be found in

- A) Apocrine secretion
- B) Holocrine secretion
- C) Merocrine secretion
- D) Salivary glands
- E) D and C are correct

Question : Branched compound acinar can be found in :

- A) Uterine gland
- B) Urethra
- C) Exocrine pancreas
- D) Brunner

Question : Mucous-Secreting glands synthesize:

- A) Glycosylated proteins
- B) Mucins
- C) Hydrated mucins
- D) A and B only
- E) All of the above are correct

C is incorrect because hydrated mucins are not synthesized intracellularly; they form after secretion when mucins absorb water in the lumen and form a layer of mucus

Ans: D

Question : Mucous cells can be stained by

- A) PAS method
- B) H&E stain
- C) DAPI stain
- D) Sudan black
- E) All of the above are correct except D

Question : Exocrine glands are classified according to

- A) Number of cells forming it
- B) Secretory units
- C) Epithelium-walled duct structure
- D) Mode of secretion
- E) All of the above are correct

Question : Branched Tubular glands can be classified as

- A) Simple Glands
- B) Compound glands
- C) Multicellular glands
- D) Exocrine glands
- E) All of the above are correct except B

Question : an Example of branched acinar glands:

- A)Glands of uterus
- B)Glands of stomach
- C)Intestinal glands
- D)Sebaceous glands of the skin
- E)A and B are correct

Question : Compound Alveolar glands have

- A) Several elongated secretory units
- B) Several saclike secretory units
- C) Several coiled secretory units
- D) A and C are correct
- E) None of the above

Question : All of the following are correct about **MYOEPITHELIAL CELLS** except:

- A) They are located between the secretory cells and basement membrane
- B) The main function of them is to extrude the glands contents
- C) They are rich in actin, myosin and collagen
- D) They have long cytoplasmic processes
- E) its cytoplasmic processes wrap around a secretory unit

Question : Submucosal mucous glands are

- A) Simple tubular glands
- B) Compound glands
- C) Branched Acinar glands
- D) Coiled Tubular glands
- E) None of the above

Question : The goblet cells have in their apical region

- A) Secretory granules
- B) Nucleus
- C) RER
- D) Mucin
- E) A and D are correct

Question : Sweat glands ?

- A) Have high synthesizing activity
- B) Have low synthesizing activity
- C) Have long and coiled secretory portions
- D) A and C are correct
- E) B and C are correct

Question : One of the following is right about parotid gland:

A) It secretes serous.

B) It secretes mucous.

Question : Derived by modification of epithelium into secretory structures ?

A)Cartilages

B)Merocrine

C)Goblet

D)Glands

Question : The release of lipid droplets from cells is which type of secretion:

- A. Merocrine
- B. Serous
- C. Apocrine
- D. Mucous
- E. Holocrine

It is Apocrine because lipid droplets are released with part of the cell cytoplasm (not just by exocytosis) and the cell is still alive , as seen in the mammary gland.

Ans: C

Question : Which of the following pairs is mismatched:

- A. Simple tubular gland/mucous glands of colon, intestinal glands or crypts (of Lieberkühn)
- B. Simple branched tubular gland/sweat glands
- C. Simple coiled tubular/glands in the uterus and stomach
- D. Sweat glands/low synthesizing activity
- E. b and c

Question : All of the following are secreted by glandular epithelial except:

- a. Lipids
- B. Proteins
- C. Urea
- D. Complex of carbohydrates and protein

Question : All of the following are correct regarding exocrine glands except:

- A. Goblet cells are unicellular and are present in the lining epithelia of intestine and respiratory tract
- B. Salivary glands are multicellular glands
- C. They disappear after invagination
- D. They maintain contact with the surface
- E. Multicellular glands form most of the body glands

Question : Choose the false statement of the following regarding to glands classification:

- A. Exocrine products are released directly or through a duct onto a surface
- B. Thyroid gland is an example for exocrine glands
- C. Endocrine release hormones into the blood stream
- D. Exocrine glands can be unicellular and multicellular
- E. B+D

Question : All of the following are correct about glands except :

A) They are epithelial cells

B) They may synthesize, store, and secrete proteins, lipids, or complexes of carbohydrates and proteins

C) Some glands have high synthesizing activity, other have low synthesizing activity

D) All of the above are correct

Question : Which of the following is incorrect regarding to goblet cells?

- A. Secretory granules containing mucin are concentrated at the base of the cell
- B. They secrete lubricating mucin
- C. Highly polarized
- D. They are classified as endocrine glands
- E. A and D

Question : Goblet cells are found commonly in all of the following except:

- . A. Simple squamous epi.
- B. Simple columnar epi.
- C. Simple cuboidal epi.
- D. Pseudostratified epi

CONNECTIVE TISSUE

Question : Which location that had stratified squamous and Dense irregular CT?

- A) Stomach
- B) liver
- C) Skin
- D) urinary bladder

Question : Which order of structures in the Collagen 1 assembly is correct:

- A) procollagen- fibril - fiber – bundle
- B) precollagen- fibril - fiber - bundle

Question : which is correct about white adipose tissue:

- A) it is equally distributed in the adult body
- B) it has one fat vacuole

Question : scurvy includes integrin of certain fibers what lead to **bleeding gums**, what fibers we are talking about:

- A) collagen
- B) collagen and elastic
- C) elastic and reticular
- D) all 3 fibers

Question : Collagen I and collagen IV are respectively:

- A) fibril, network forming
- B) net work forming, fibril

Question : What is correct about mesenchyme:

- A) it is located around blood vessels only
- B) it has significant amount of ground substances
- C) it is abundant with collagen fibers
- D) all epithelial cells rise from mesenchyme
- E) mesenchyme rises from endothelium

Question : Brown adipose tissue , its function and location in adults :

- A. Thermogenesis, adrenal gland
- B. Fat storing , inside the liver
- C. Fat synthesis , in the kidneys
- E. Thermogenesis , around liver
- F. Fat storing , around the kidneys

Question : What is false about mesenchymal cells:

- A. cells unevenly distributed
- B. has collagen in ECM
- C. Located near blood vessels only
- D. produce adult connective tissue
- E. None of the above

Question : The correct order to make collagen fiber

- a. procollagen → fibril → fibers → bundles
- c. procollagen → bundle → fibril → fibers
- b. procollagen → fiber → fibril → bundles
- d. fibril → procollagen → fibers → bundle

Question : One of the following is NOT correct regarding the mast cells

- A. Release many bioactive substances such as histamine
- B. They are abundant near blood vessels
- C. They are responsible for immediate hypersensitivity reactions
- D. They are 5-20 micrometers in diameter
- E. Has eccentric nucleus

Question : All of the following have chondronictin-4- sulfate except :

- A. Cartilage
- B. Bone
- C. lens
- D. skin
- E. Arota

Question : What is true about white adipose tissue:

- A. Distributed evenly in all humans
- B. Function in fat burning
- C. Has abundant cytoplasm
- D. Arise from endoderm
- E. None of the above

Question : The tendon is:

- A) loose connective tissue
- B) dense irregular connective tissue
- C) elastic connective tissue
- D) dense regular connective tissue
- E) reticular connective tissue

Question : Reticular connective tissue is present :

- A) in lymph nodes
- B) bone marrow
- C) liver
- D) A&B
- E) all of the above

Question : which of the following is true about kupfer cells?

- A) monocytes macrophage of the lungs
- B) macrophages of the central nervous system
- C) share the same precursor with osteoclasts
- D) none of the above

Question : Which of the following cells secrete histamine:

- A) lymphocytes
- B) mast cells
- C) RBC
- D) B&C

Question : Which of the following cells are a population of undifferentiated cells that give origin to most of the cell types in connective tissue:

- A) Fibroblasts
- B) Fibrocytes
- C) Preadipocytes
- D) Mesenchymal cells
- E) Leukocytes

Question : You are a researcher interested in the framework of spleen, Which of the following stains would you use?

- A) Silver salts
- B) H&E
- C) Orcein
- D) Aldehyde fuchsin
- E) Alacian blue

Question : Which of the following cells are mostly involved in the initial stages of wound healing as it contracts to help in approximation of the edges of the wound?

- A) Smooth muscle cells
- B) Fibrocytes
- C) Myofibroblasts
- D) Leukocytes
- E) Mesenchymal cells

Question : Which of the following is classified as sheet-forming collagen?

- A) Type I
- B) Type II
- C) Type III
- D) Type IV
- E) Type VII

Question : With regard to collagen synthesis, all the following events take place intracellularly EXCEPT:

- A) Hydroxylation of certain amino acid residues
- B) Assembly of triple helix
- C) Formation of covalent bonds between collagen molecules
- D) Packaging of procollagen molecules
- E) Vitamin C - dependent modification of procollagen

Question : You are a researcher and you decide to find a cure for Covid-19 virus (Corona). First you purify the antigen unique of the virus and expose some leukocytes in the lab. Which cells do you expect to synthesize antibodies to Covid-19?

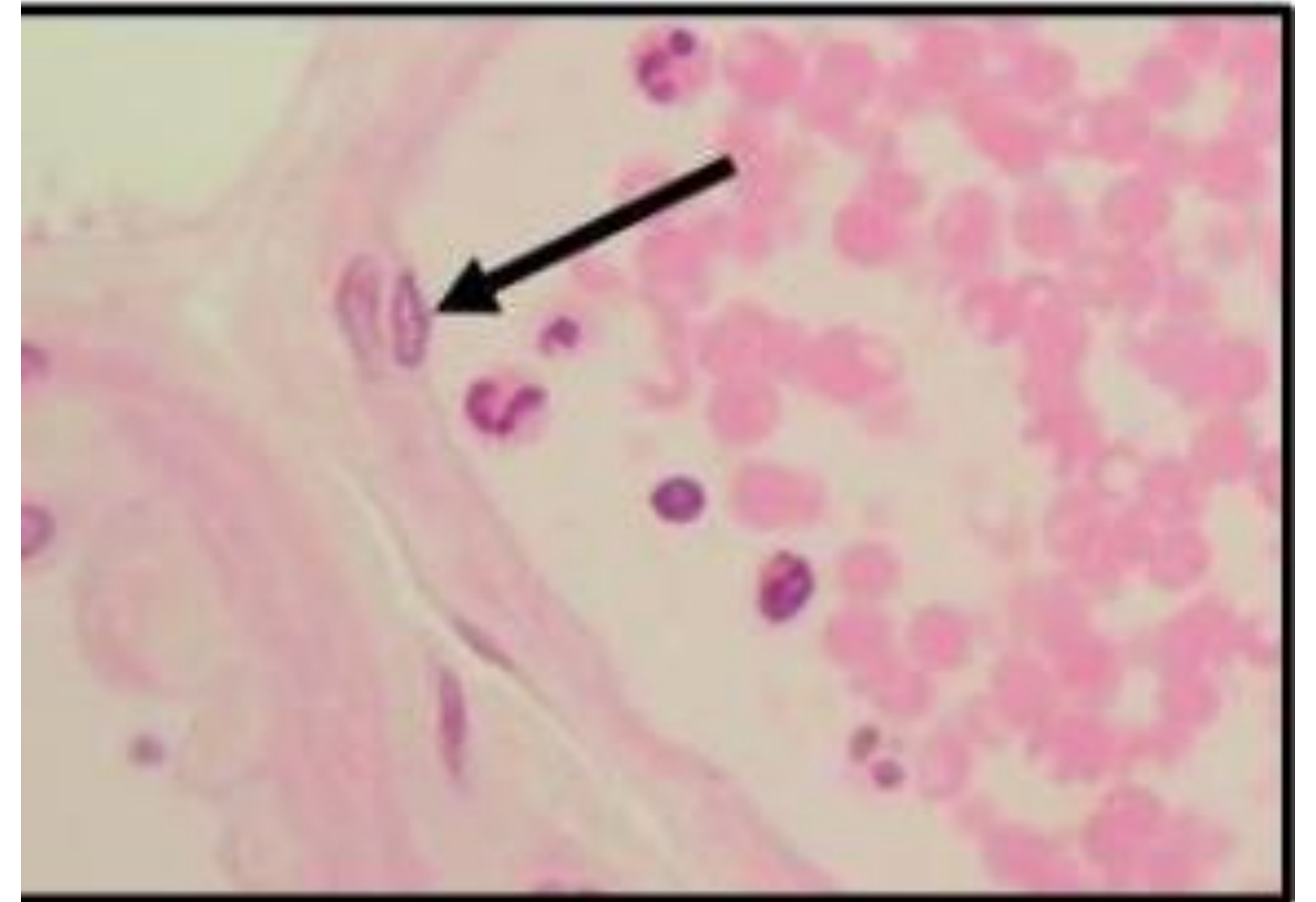
- A) Mast cells
- B) Plasma cells
- C) T-cells
- D) Macrophages
- E) Dendritic cells

Question : You are a researcher interested in Keratan sulfate, which of the following would you study?

- A) Dense regular connective tissue
- B) Skin
- C) Blood vessels
- D) Cartilage
- E) Umbilical cord

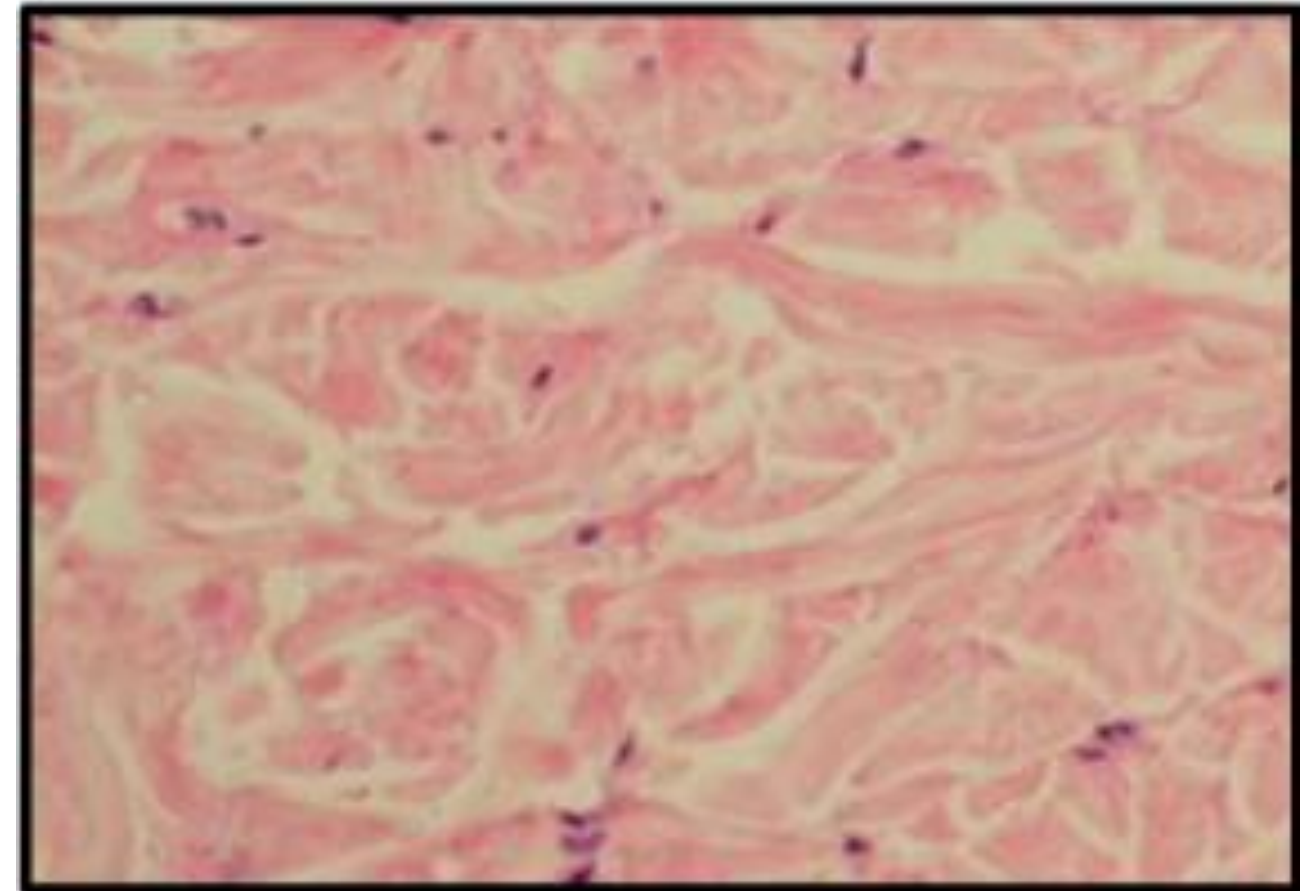
Question : The black arrow points to:

- A) Nucleus of an endothelial cell.
- B) Nucleus of a mesothelial cell.
- C) Nucleus of a fibroblast.
- D) Nucleus of a white blood cell.
- E) Nucleus of a fibrocyte.



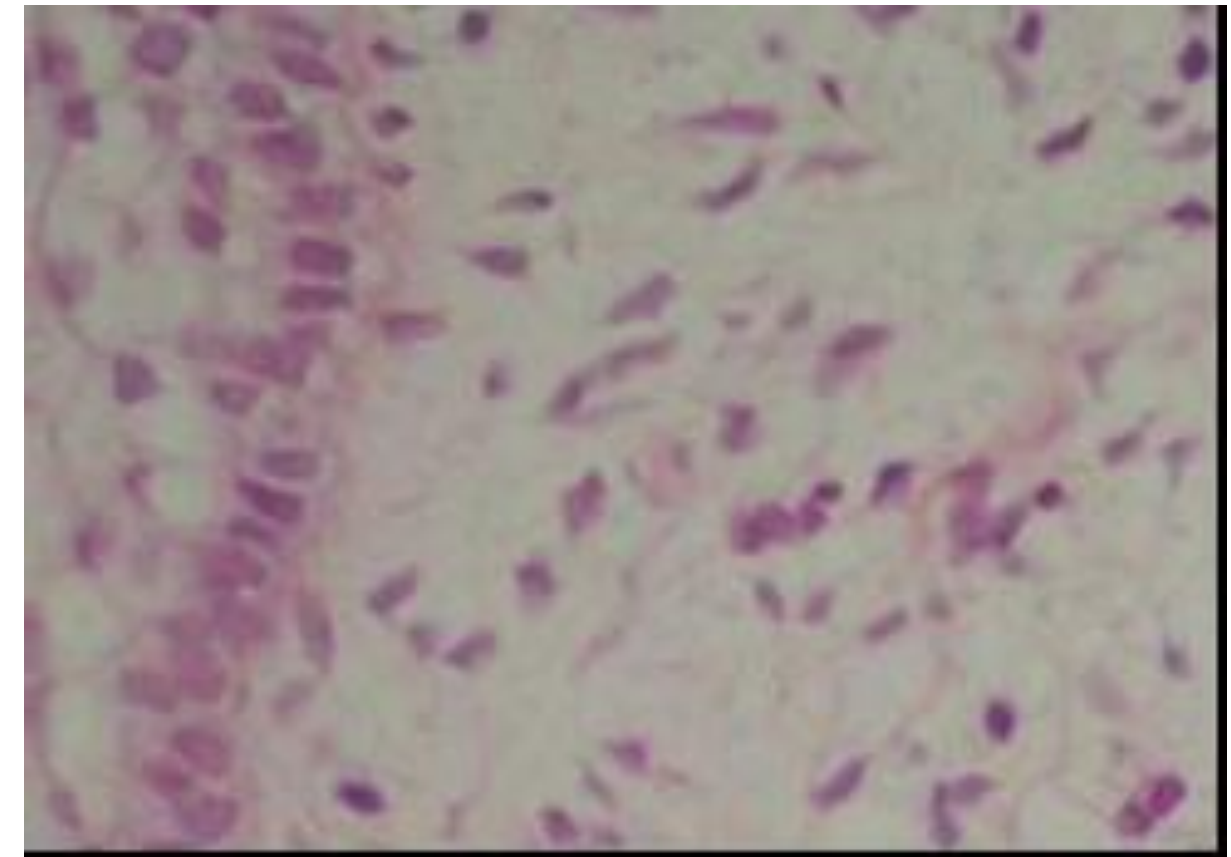
Question : The most abundant type of fibers in this tissue is/are:

- A) Collagen/fibroblasts.
- B) Reticular/reticular cells.
- C) Elastic/fibroblasts.
- D) A&B.
- E) A&C.



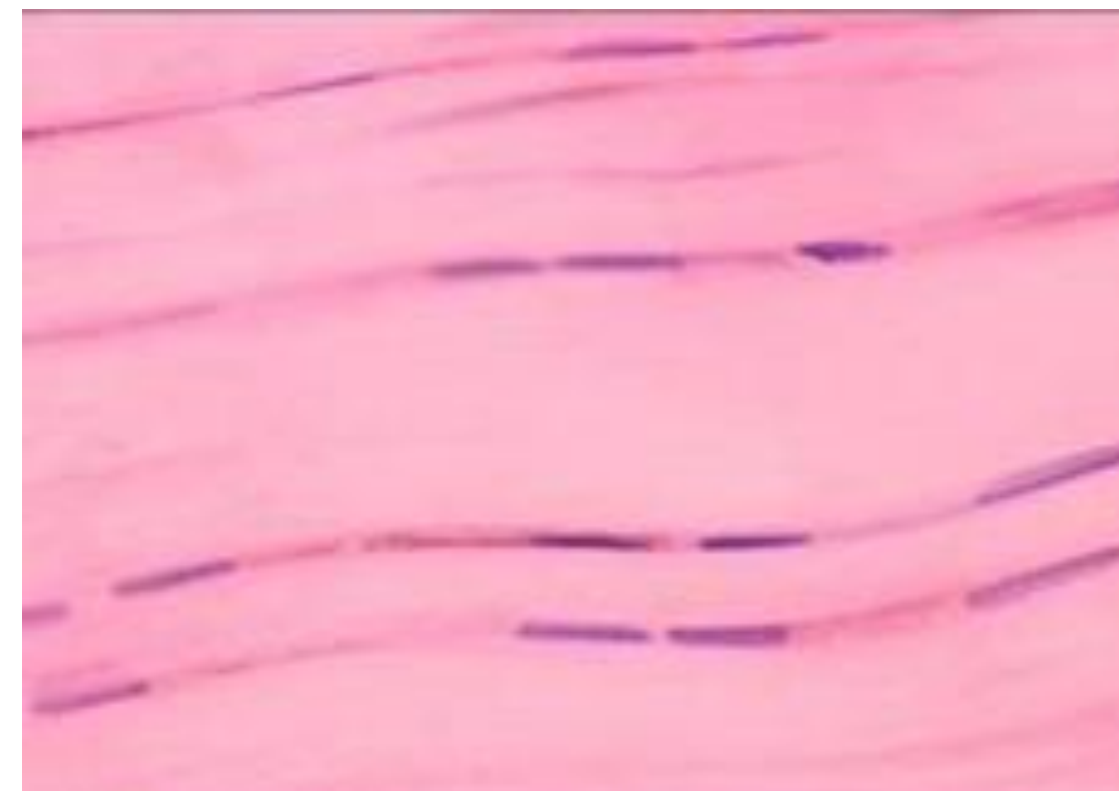
Question : The tissue in the this image is:

- A) Wharton's jelly.
- B) Loose connective tissue.
- C) Reticular connective tissue.
- D) Mesenchymal connective tissue.
- E) None of the above.



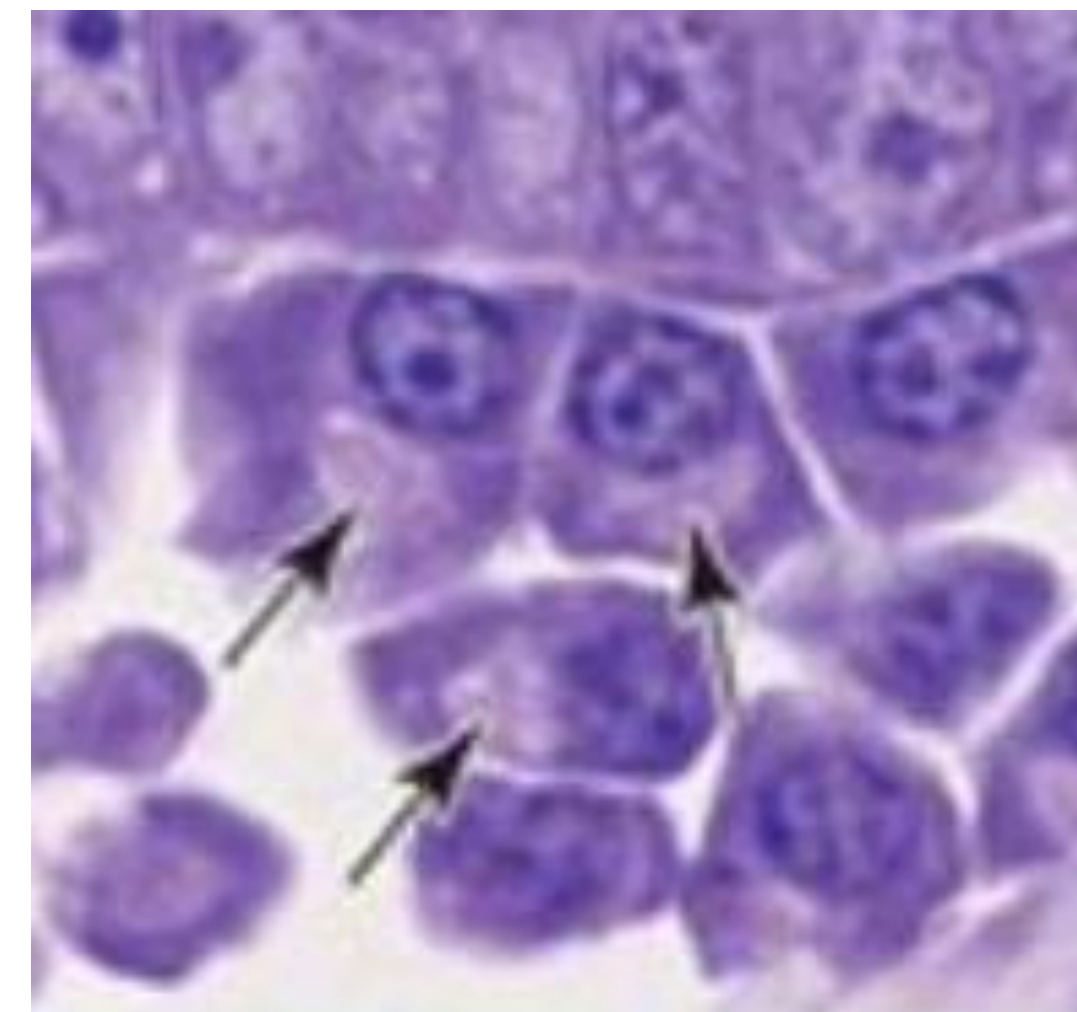
Question : The main fiber in this tissue belong to which type:

- A) Lamina-forming.
- B) Network or sheet-forming.
- C) Fibrillar.
- D) Linking.
- E) Anchoring.



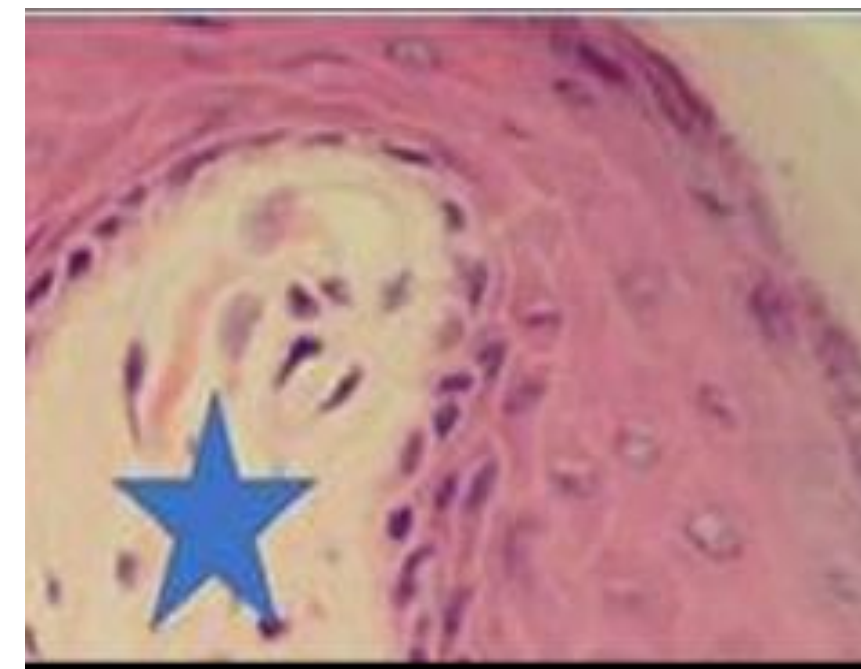
Question : The cells marked with arrows:

- A) Phagocytose bacteria.
- B) Release histamine.
- C) Are involved in hypersensitivity immune reaction.
- D) All of the above.
- E) None of the above.



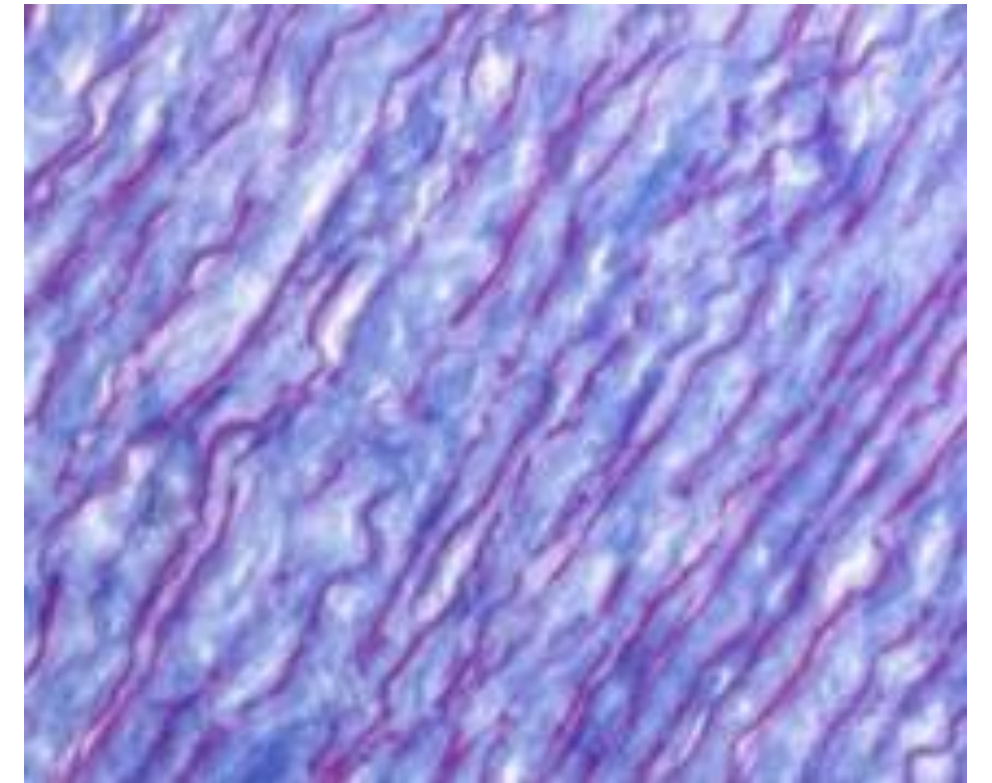
Question : The tissue marked with the star is, and stained with :

- A) Dense regular connective tissue, Eosin stain.
- B) Dense regular connective tissue, H&E stain.
- C) Loose connective tissue, H&E stain.
- D) Loose regular connective tissue, H&E stain.
- E) Reticular connective tissue, H&E stain.



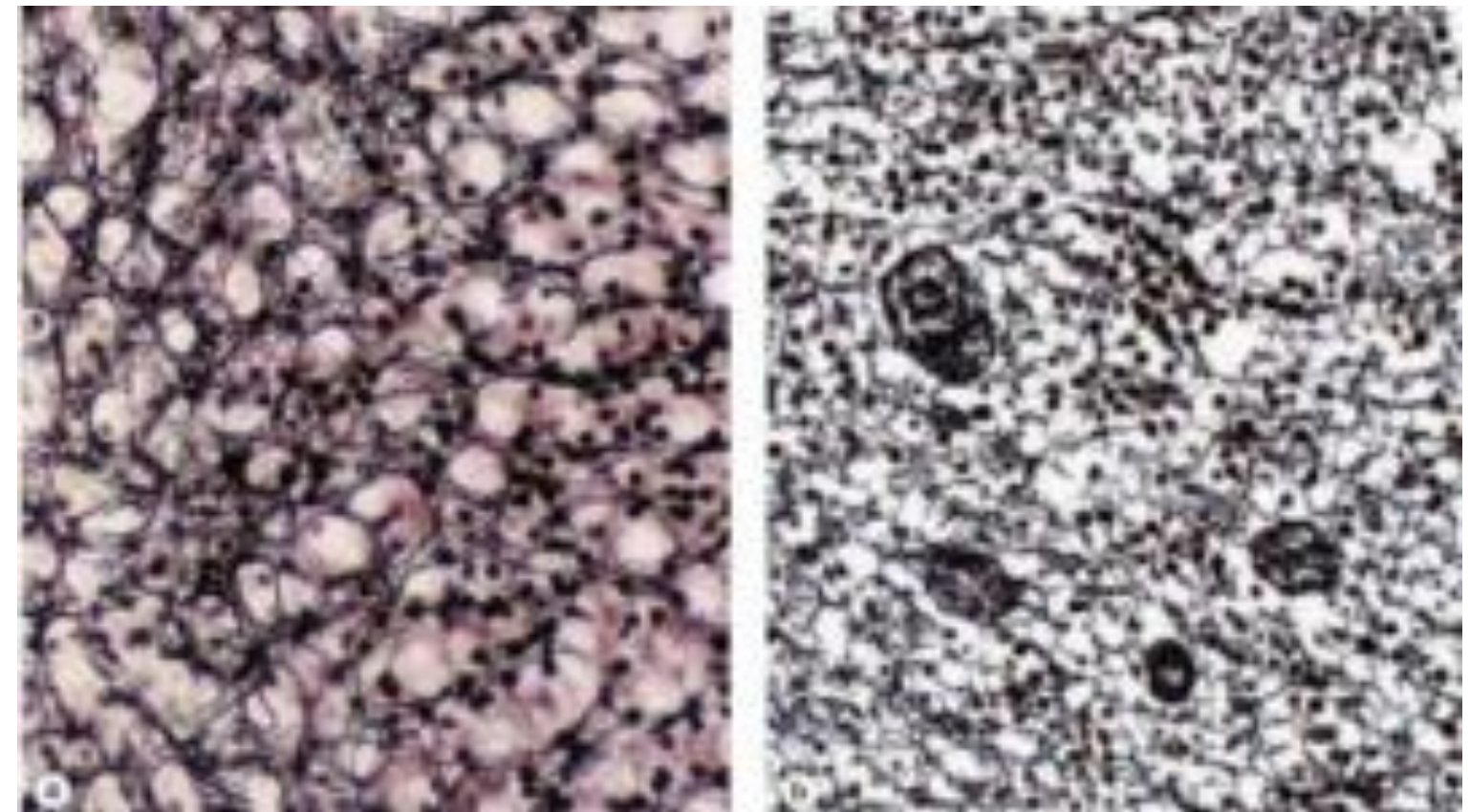
Question : Regarding the pink structure in this image, choose the correct statement of :

- A) Can also be stained with silver.
- B) Is present in the aorta.
- C) It usually forms bundles.
- D) Synthesized by fibroblasts.
- E) B and D

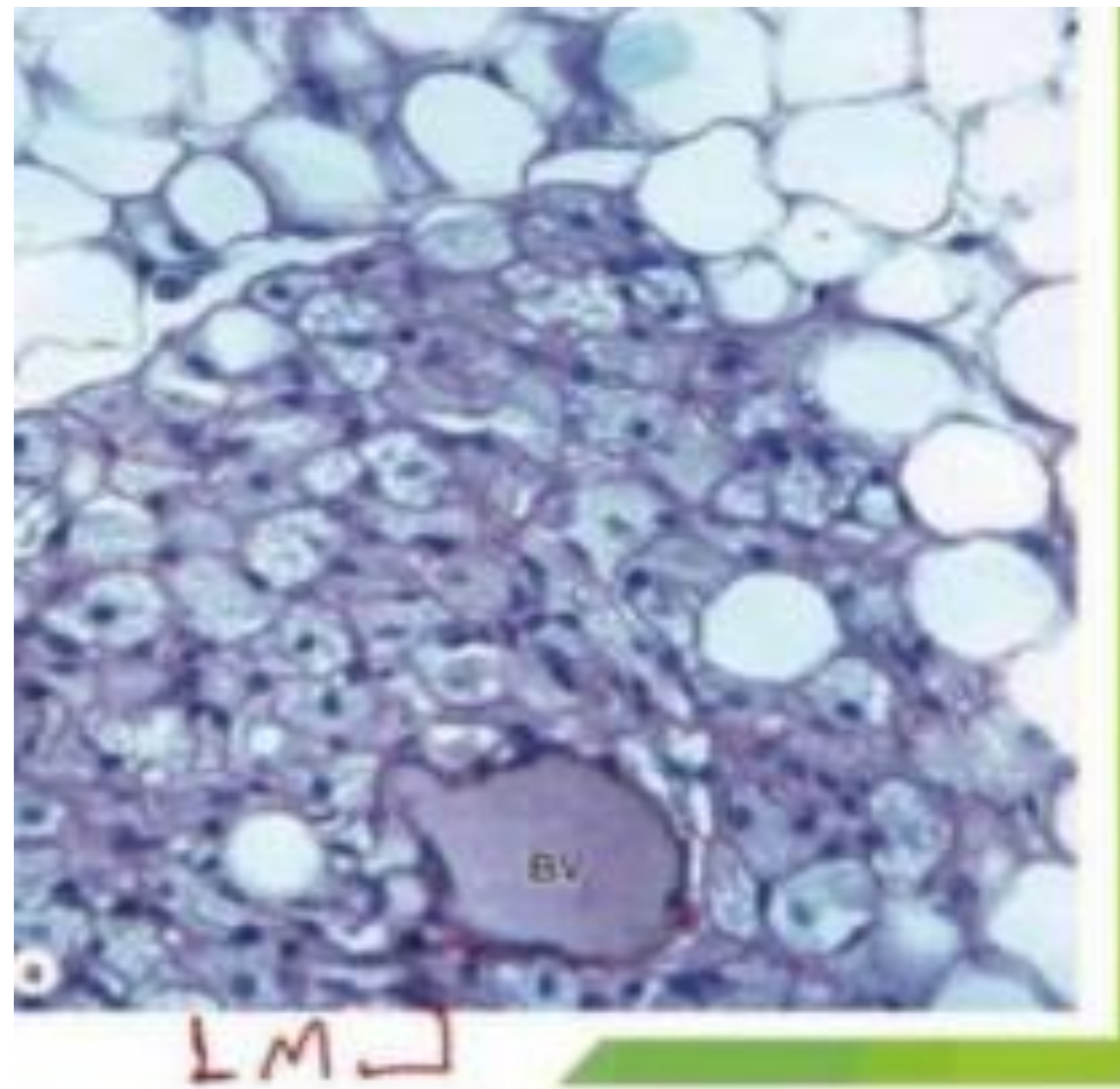


Question : We can find this type of tissues in all of the following except?

- A) Lymph nodes
- B) Liver
- C) Spleen
- D) Brain
- E) Adrenal gland



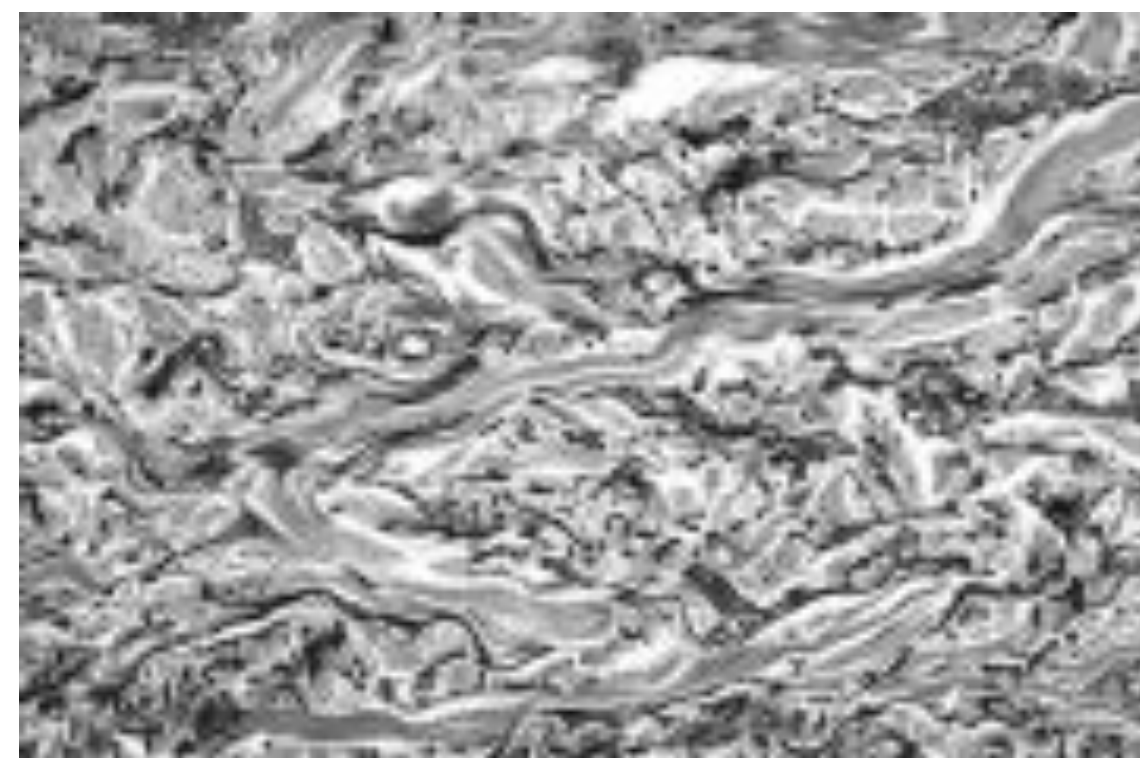
Question : What type of tissue immediately surround the
bv ?



Ans: -brown adipose tissue

Question : The following tissue is considered :

- a. epithelial tissue.
- c. dense irregular connective tissue
- b. dense regular connective tissue
- d. loose connective tissue



Ans: C

Question : Which of the following GAGs is not found in the skin:

- A) Chondroitin 4-sulfate.
- B) Chondroitin 6-sulfate.
- C) Chondroitin 8-sulfate.
- D) Dermatan sulfate.
- E) None of the above.

Question : One of the following is from the fixed cells in the connective tissue:

- A) Adipocyte
- B) Plasma
- C) Goblet
- D) Mast

Question: which of the following has the least ground substance:

- A. Dense regular CT
- B. Dense irregular CT
- C. Elastic CT
- D. Loose CT
- E. Reticular CT

Question: Chondroitin 4 and 6 sulfates are found the most in:

- A. skin
- B. Aorta
- C. Cartilage
- D. Bone
- E. lens

Question: The incorrect statement about fibroblasts is:

- A. Rich in smooth endoplasmic reticulum
- B. Rich in rough endoplasmic reticulum
- C. Abundant mitochondria
- D. Well developed Golgi apparatus

Question: Monocytes derived and has immune functions in lymph nodes are:

- A. Kupffer cells
- B. Dendritic cells
- C. Langerhans
- D. Dust cells
- E. Osteoclasts

Question: collagen type I and II are:

- A. Both fibril
- B. Fibril, anchoring
- C. Fibril, sheet forming

Question: Choose the FALSE statement regarding to mast cells:

- A. Synthesis and release of bio active molecules
- B. Synthesize histamine only
- C. They are white blood cells
- D. They are transient cells in CT
- E. None of the above

Question: Choose the FALSE statement regarding to plasma cells:

- A. Derived from B-lymphocytes
- B. They don't exhibit processes
- C. They are abundant in mitochondria
- D. They are active cells
- E. They synthesize ECM components

Question: Euchromatin is:

- A. Finely dispersed chromatin in active cells
- B. Finely dispersed chromatin in inactive cells
- C. Coarse chromatin in active cells
- D. Coarse chromatin in inactive cells
- E. None of the above

الحمد لله

اللهم لك الحمد حتى ترضى، ولك الحمد إذا رضيت، ولك الحمد بعد الرضا. اللهم اجعل ما درستہ حجة لي لا عليّ، وانفعني بما علمتني، وبارك لي في وقتي وجهدي، واجعل علمي طريقًا لرضاك وخدمة عبادك، اللهم ارزقني التوفيق والسداد فيما بقي، ووفقني لما تحب وترضى.

For any feedback, scan the code or click on it.



Corrections from previous versions:

Versions	Slide # and Place of Error	Before Correction	After Correction
V0 → V1			
V1 → V2			

Additional Resources:

رسالة من الفريق العلمي:

Reference Used:

(numbered in order as cited in the text)

1. First reference
2. Second reference
3. ...

Extra References for the Reader to Use:

1. Video
2. Webpage
3. ...

آية أو حديث شريف..

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أو أي اشي بدك توصله لدارس الملف