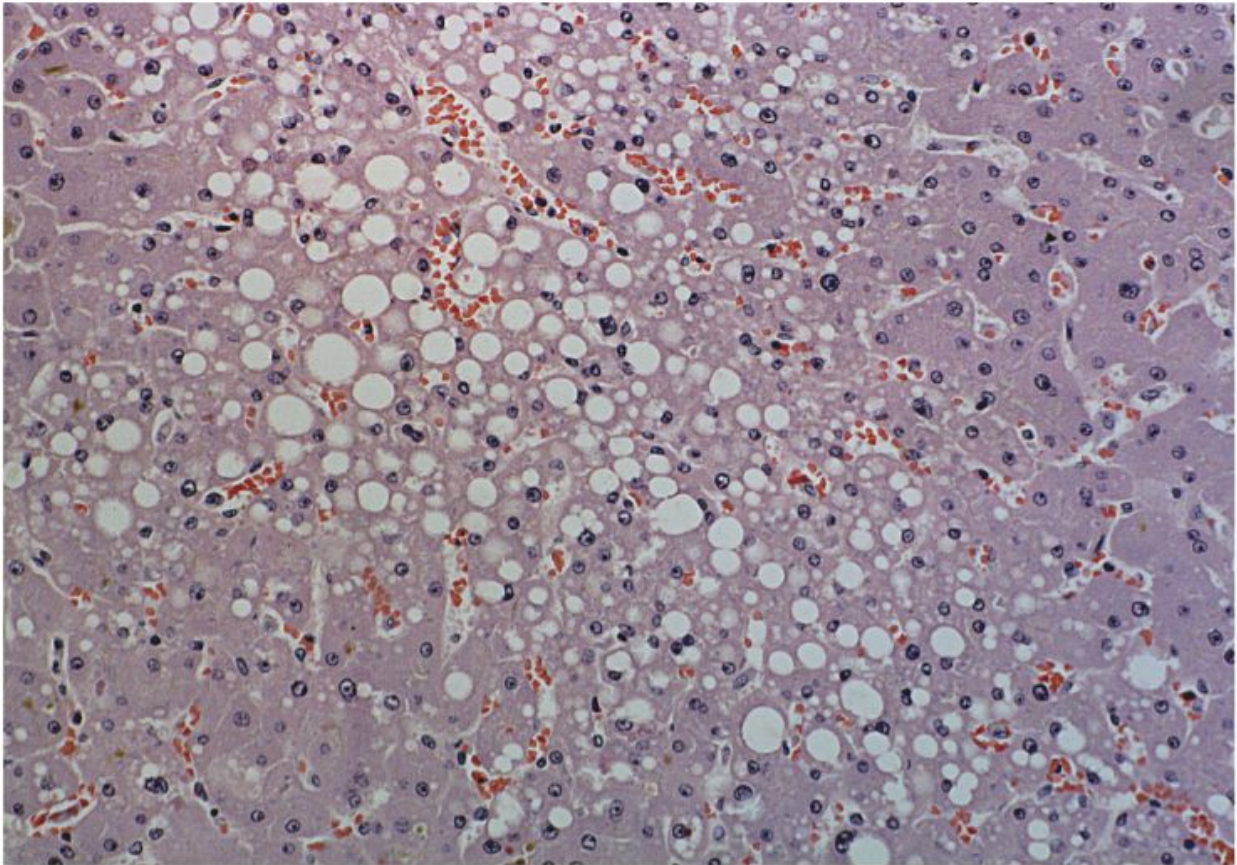


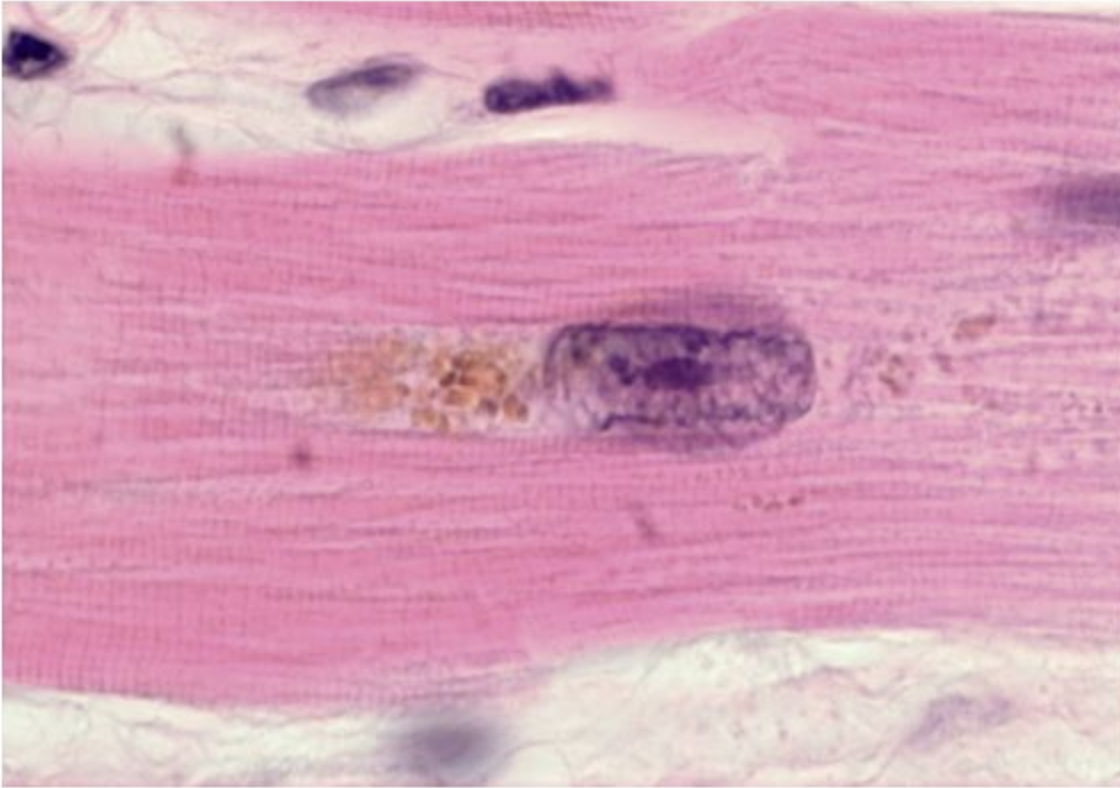
1.



A 46-year-old man has noted increasing abdominal size for the past 6 years. On physical examination his liver span is increased to 18 cm. An abdominal CT scan shows an enlarged liver with diffusely decreased attenuation. Laboratory findings include increased total serum cholesterol and triglyceride levels, increased prothrombin time, and a decreased serum albumin concentration. The representative microscopic appearance of his liver is shown in the figure. Which of the following activities most likely led to these findings?

- A Drinking beer
- B Ingesting aspirin
- C Injecting heroin
- D Playing basketball
- E Smoking cigarettes

2.



At autopsy, the heart of a 63-year-old man weighs only 250 g (normal 330 g) and has small right and left ventricles. The myocardium is firm, with a dark chocolate-brown color throughout. The coronary arteries show minimal atherosclerotic changes. An excessive amount of which of the following substances, shown in the figure, would most likely be found in the myocardial fibers of this heart?

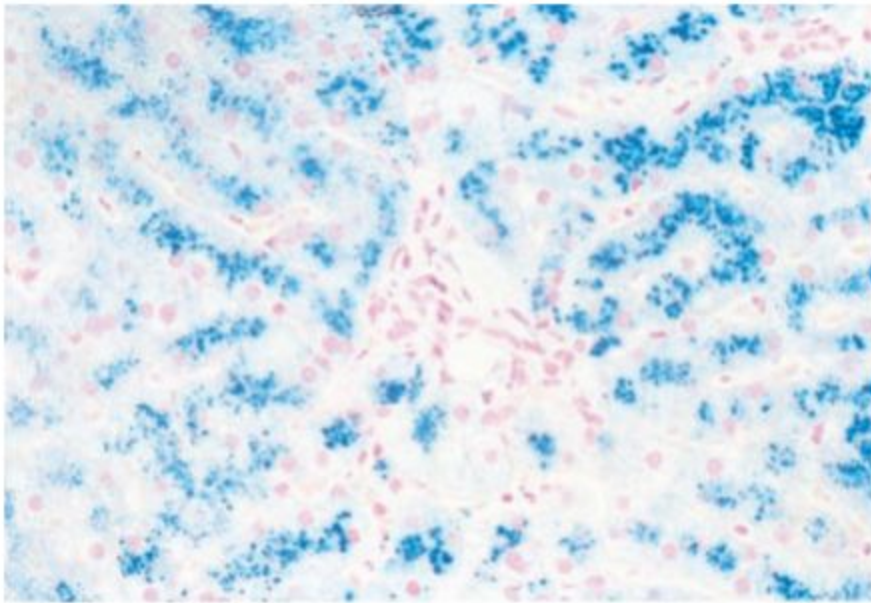
- A Bilirubin
- B Glycogen
- C Hemosiderin
- D Lipofuscin
- E Melanin

3. An experiment analyzes cells for enzyme activity associated with sustained cellular proliferation. Which of the following cells is most likely to have the highest telomerase activity?

- A Endothelial cells
- B Erythrocytes
- C Germ cells
- D Neurons
- E Neutrophils

4.

A 45-year-old man presents with increasing abdominal girth and yellow discoloration of his skin and sclera. Physical examination reveals hepatomegaly and jaundice. A Prussian blue stain of a liver biopsy is shown in the image. What is the major intracellular iron storage protein in this patient's hepatocytes?



- (A) Bilirubin
- (B) Haptoglobin
- (C) Hemoglobin
- (D) Hemosiderin
- (E) Transferrin

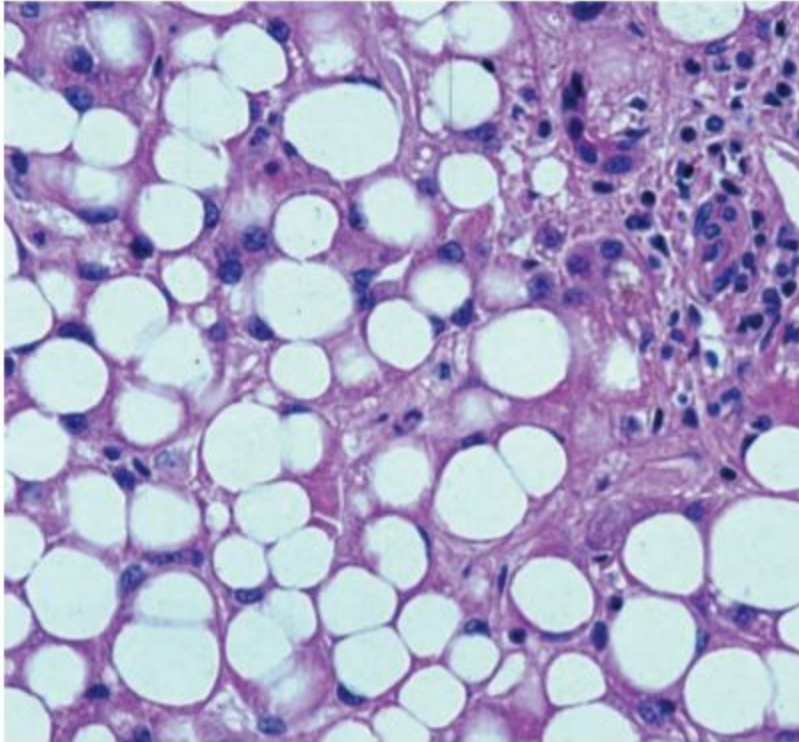
سؤال مريض شوي تحملوني

5. A 45-year-old woman has had worsening dyspnea for the past 5 years. A chest CT scan shows panlobular emphysema. Laboratory studies show a deficiency of α 1-antitrypsin (AAT). Her AAT genotype is PiZZ. A liver biopsy specimen examined microscopically shows abundant PAS-positive globules within periportal hepatocytes. Which of the following molecular mechanisms is most likely responsible for this finding in her hepatocytes?

A Decreased catabolism of AAT in lysosomes

- B Excessive hepatic synthesis of AAT
- C Impaired dissociation of AAT from chaperones
- D Inability to metabolize AAT in Kupffer cells
- E Retained misfolded AAT in endoplasmic reticulum

6. The illustration is from a liver biopsy of a 34-year-old woman with a long history of alcoholism. Which of the following is the best explanation for the changes shown here?



- (A) Accumulation of triglycerides within hepatocytes
- (B) Apoptosis with replacement of damaged cells by lipid-laden macrophages
- (C) Bilirubin accumulation with mobilization of fat by bile salts
- (D) Enzymatic fat necrosis with digestion of liver parenchyma by released enzymes
- (E) Irreversible damage to mitochondria

7. A 45-year-old man is referred because of a recent diagnosis of hereditary hemochromatosis. Which of the following is a correct statement about this disorder?

- (A) Damage to organs results from abnormal deposition of lead
- (B) It can cause skin pigmentation
- (C) Most cases are due to spontaneous mutations
- (D) Skin hyperpigmentation is due to bilirubin accumulation
- (E) The TIBC is characteristically increased

8. A 60-year-old woman with breast cancer and widespread bony metastases is found to have calcification of multiple organs. The calcifications are best described as

(A) dystrophic with decreased serum calcium.

(B) dystrophic with increased serum calcium.

(C) metastatic with decreased serum calcium.

(D) metastatic with increased serum Calcium.

9. A 69-year-old woman has had a chronic cough for the past year. A chest radiograph shows a 6-cm mass in the left lung. A needle biopsy specimen of the mass shows carcinoma. A pneumonectomy is performed, and examination of the hilar lymph nodes reveals a uniform, dark black cut surface. Which of the following factors most likely accounts for the appearance of these lymph nodes?

A Aging effects

B Bleeding disorder

C Cigarette smoking

D Liver failure

E Multiple metastases

10. A 22-year-old woman from Albania has a congenital anemia requiring multiple transfusions of RBCs for many years. On physical examination, her skin has a bronze color. Liver function tests show reduced serum albumin. Which of the following findings would most likely appear in a liver biopsy specimen?

A Amyloid in portal triads

B Bilirubin in canaliculi

C Glycogen in hepatocytes

D Hemosiderin in hepatocytes

E Steatosis in hepatocytes

11.



A 72-year-old man died suddenly from congestive heart failure. At autopsy, his heart weighed 580 g (normal 330 g) and showed marked left ventricular hypertrophy and minimal coronary arterial atherosclerosis. A serum chemistry panel ordered before death showed no abnormalities. Which of the following pathologic processes best accounts for the appearance of the aortic valve seen in the figure?

- A Amyloidosis
- B Dystrophic calcification
- C Hemosiderosis
- D Hyaline change
- E Lipofuscin deposition

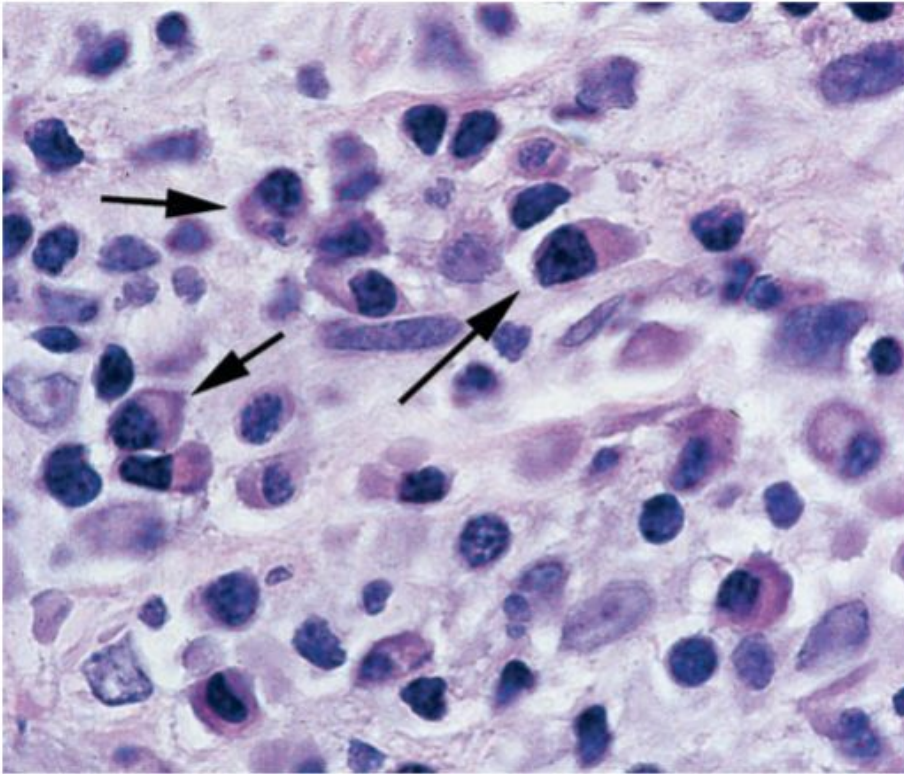
12. A 70-year-old man with hypercalcemia died suddenly. At autopsy, microscopic examination showed noncrystalline amorphous deposits of calcium salts in gastric mucosa, renal interstitium, and alveolar walls of lungs. Which of the following underlying conditions would most likely explain these findings?

- A Chronic active hepatitis
- B Diffuse parathyroid hyperplasia
- C Disseminated tuberculosis

- D Generalized atherosclerosis
- E Normal aging process
- F Pulmonary emphysema

13.

14 A 41-year-old woman complains of excessive menstrual bleeding and pelvic pain of 4 months. She uses an intrauterine device for contraception. Endometrial biopsy (shown in the image) reveals an excess of plasma cells (arrows) and macrophages within the stroma. The presence of these cells and scattered lymphoid follicles within the endometrial stroma is evidence of which of the following conditions?



- (A) Acute inflammation
- (B) Chronic inflammation
- (C) Granulation tissue
- (D) Granulomatous inflammation
- (E) Menstruation

14. A 68-year-old coal miner with a history of smoking and emphysema develops severe airflow obstruction and expires. Autopsy reveals a “black lung,” with coal-dust nodules scattered throughout the parenchyma and a central area of dense fibrosis. The coal dust entrapped within this miner’s lung was sequestered primarily by which of the following cells?

- (A) Endothelial cells**
- (B) Fibroblasts**
- (C) Lymphocytes**
- (D) Macrophages**
- (E) Plasma cells**

1. a
2. d
3. c
4. d
5. e
6. a
7. b
8. d
9. c Remember cigarettes have carbon -> exogenous substance
10. d Remember the liver is involved in iron metabolism
11. b
12. b
13. b
14. d