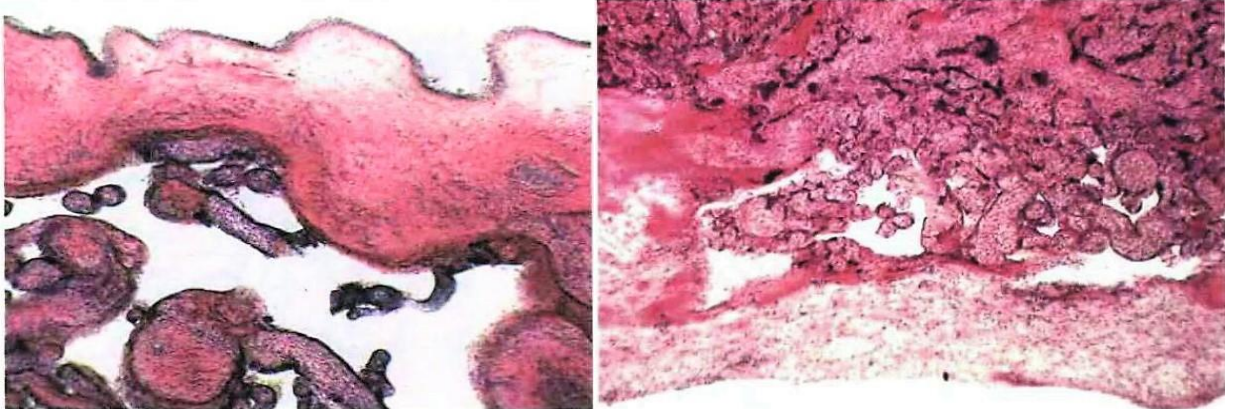


Examples of tasks of the All-Russian interdisciplinary "Kaleidoscope of Knowledge" Olympiad with international participation

1. There are two pictures in front of you. Take a close look at them and answer the following questions:



1. Determine which part of the placenta is shown in pictures 1 and 2.
2. What structural formations are part of the fetal part of the placenta?
3. What is the maternal part of the placenta?
4. List the functions of the placenta.
5. Disorder of which of the functions will cause fetal death with placental abruption?

2. Set the sequence of excitation of the heart chambers

1. Excitation of the ventricles. The QRS complex is registered.
2. The plateau phase, all ventricular cells are depolarized, there are no sites with different potentials in the ventricles, the ST segment is recorded.
3. Arousal engulfs the atria. The prong of R. is registered.
4. The excitation passes through the atrioventricular node. Electrical activity is weak, it cannot be registered from the surface of the body, on an ECG at this time PQ is recorded.
5. Ventricular repolarization, until the ventricles are completely depolarized, the T wave is registered.

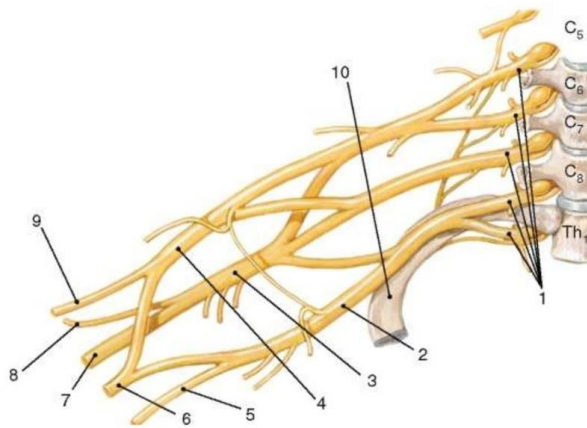
3. Correlate the hereditary disease and the metabolic process disrupted by it  
Disease:

1. Phenylketonuria
2. Albinism
3. Alkaptonuria

Impaired metabolic process:

1. Synthesis of melanin pigment
2. Conversion of homogeneic acid to maleylacetoacetate
3. Conversion of phenylalanine to tyrosine

4. Name anatomical structures No. 9 in Latin



5. Answer the questions:

1. Name the outstanding Renaissance physician and researcher who corrected about 200 errors in Galen's anatomy and created the first anatomical atlas.
2. In 1612, Galileo Galilei presented an invention to the Polish King Sigismund III, which called "occhiolino" (ital. "occhiolino", means "little eye"). Name the invention.
3. In 1826, the physiologist and anatomist Charles Bell described a model of the so-called "nerve ring/circle". Now we call it a term introduced by the English physiologist M. Hall. Name this term.

ANSWERS:

1.

1) Picture 1- fetal part, picture 2 – maternal part

2) Amniotic membrane, chorionic plate

3) The maternal part of the placenta is a modified mucous membrane of the uterus, which is rejected during childbirth

4) The main functions of the placenta: respiratory, transport, excretory, endocrine, participation in the regulation of myometrial contraction

5) Impaired respiratory function will lead to hypoxia and fetal death

2. 3,4,1,2,5

3. 1-3, 2-1, 3-2

4. n. musculocutaneus

5.

1) Andreas Vesalius

2) Microscope

3) Reflex arc

4) Alchemy

5) N.F. Filatov