

Topic of the lesson

HUMAN EMBRYOLOGY

Theoretical Questions for Lesson

1. Subject and tasks of Human embryology. Medical embryology. Interaction between ontogenesis and phylogenesis. Periods of Human embryology.
2. Sex cells. Structure and function of male and female gametes. Basic stages of their development. Meiosis as mechanism of sex cell formation. Its tendency.
3. Fertilization in Human, its biological value, phases. Conditions, which are necessary for normal fertilization.
4. Capacitation, acrosome reaction, penetration of spermatozoon into ovum, formation of male pronucleus.
5. Cortical reaction of oocyte, end of meiosis, formation of female pronucleus.
6. In vitro fertilization of Human ova and embryo. Its medical and social value. Zygota as unicellular organism.
7. Cleavage of Human embryo, its characteristic. Structure and location of embryo during cleavage. Types of blastomeres. Morula. Blastocyst formation.
8. Embryoblast and cytotrophoblast. Implantation, its mechanisms, stages, chronology, peculiarity in Human.
9. Delamination. Structures which form as result of delamination.
10. Germs of extraembryonic organs. Precursors of extraembryonic organs: epiblast, hypoblast. Gastrulation.
11. Formation of embryonic mesoderm.
12. Neurulation and formation of axial complex of germs.

Literature

1. Shapovalova Ye.Yu., Trotsenko B.V., Georgievskaya L.S. General histology (&Nerve system). – 2005. – P. 61-75.
2. Shapovalova Ye.Yu., Trotsenko B.V., Georgievskaya L.S., Bondarenko V.V. General histology. – 2004. – P.69-85.
3. Sadler T. W. Langman's Medical Embryology. – 2000. – P. 3-115.

Situation tasks

1. Due to the impact of the mutagen (drug) on the pregnant woman's body, the embryo did not segmented the mesoderm into somites. What tissue development in the process of histogenesis will be disturbed?
2. Due to the effect of mutagen (drug) on the pregnant woman's body, in a newborn a neonatologist determined multiple malformations. Determine

which embryonic rudiments were damaged if the anomalies affected: 1) bone tissue; 2) myocardium; 3) alveoli of the lungs; 4) the brain?

3. In the female body for various reasons during fertilization, the following processes can be disrupted: 1) capacitation; 2) denudation; 3) acrosomal reaction; 4) cortical reaction. All these disorders can lead to infertility. Explain the physiological significance of each of the above processes. After all, their knowledge can help in the treatment of female infertility.

4. The researcher embryologist made a histological section of the fallopian tube of the rabbit and saw in its cavity a structure that had the shape of a bubble. The vial consisted of a cavity and a multicellular wall. At the same time, the inner and outer cell mass was determined in the wall. Name this structure. Name both cell masses. Name the layers in the outer cell mass. What process does the inner cell mass undergo on the 7-14th day after fertilization and what is the result of this process?