

Lecture no. 5 – Introduction to embryology III

Elaboration of questions is voluntary, and you needn't to hand them in. But they can help you for better understanding and orientation. Use the presentation uploaded into the Study materials folder in the IS, recommended literature or electronic atlases available in the webpages of the Department. You can also use any information resource from the internet, but in that case, please use in the same time your critical thinking. If you have questions to the topic, please use the Discussion groups in the IS.

1. Define the meaning of the following phenomena and explain how they are associated with each other: pluripotency, reprogramming, cloning, activation of zygotic genome.
2. What are the embryonic stem cells?
3. When does the zona pellucida occur on the embryo for the first time?
4. Use any information source and define at least some molecules that are involved in the process of implantation of blastocyst to uterine mucosa. Describe their mode of action.
5. Does the uterine mucosa have some specific features at the time of blastocyst implantation? If the answer is yes, then how are these features characterized and regulated?
6. Describe the appearance of human embryo at the time of beginning of implantation.
7. Describe the difference between extraembryonal and embryonal mesoderm. What mechanism is involved in development of embryonal mesoderm? Adhere to only recent information sources.
8. Explain the term extraembryonal structure. Name (list) all the extraembryonal structures. Select two and describe their structure, development and function.
9. Explain how the process of decidualization is related to the development of chorionic villi. Define decidua basalis, capsularis and parietalis. Are these structures somehow related to the development of placenta? If the answer is yes, then describe this relationship in more detail.
10. What is amniochorion? Describe its composition.
11. Are the chorionic villi maternal or fetal components of the placenta? Explain the reasoning of your answer.
12. Explain the term placenta hemochorialis. Describe the structure of chorionic villi.
13. Describe the flow of blood in placenta. On both mother and fetal side.
14. Describe the structure of umbilical cord (umbilicus). What embryonal components contribute to its development?
15. What embryonal structures may develop in monozygotic twins depending on the mechanism (developmental stage) of their origin.