

GAMETOGENESIS

BRIEF INSTRUCTIONS

- 1) Listen to the teacher's explanation, resp. go through presentations (study materials) that the teacher has prepared for this lesson (gametogenesis and oogenesis).
- 2) Follow the instructions provide below, prepare your protocol (with theoretical and practical part) on their basis. Prepare the **theoretical part** to a **reasonable extent** so that it serves **for a better understanding of the practical part** (can be processed on a PC).
- 3) If drawings are required in the practical part, handwritten drawings are meant (drawing by hand = effective form of learning ☺).
- 4) Rule: drawing of one microscopic slide = half A4; always provide the information about the magnification at which you observe a tissue/organ; label your drawing in detail;
- 5) Hand over your protocol to the teacher in a next week's lesson.
- 6) Questions and consultations: helanej@sci.muni.cz


THEORY

Here the student prepares a theoretical introduction to the topic.

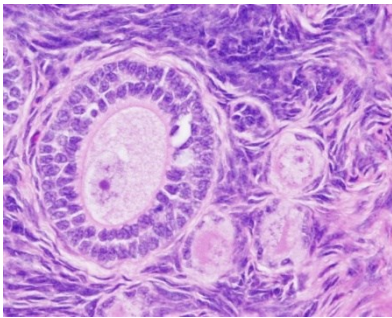



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PRACTICAL PART

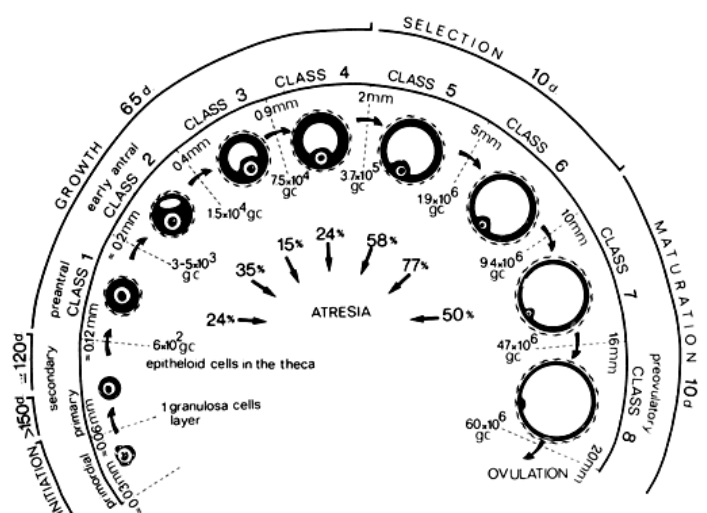
 Exercise 1: Mammalian ovary - a permanent slide

Determine what types of follicles are in the photo. Try to find these structures in the permanent slide that is available to you during the class. Do you find any other structures in the ovary? Draw the ovary in the protocol and describe the microscopic anatomy in detail.



 Exercise 2: Follikulogenesis

Based on the previous information provided by the teacher and the diagram below, try to explain the following terms:

- 1) atresia
- 2) granulosa cells
- 3) antral follicle
- 4) ovulation

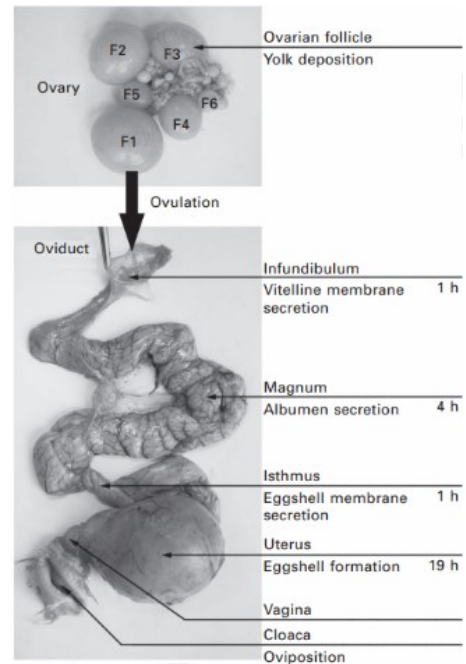



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 Exercise 3: Comparison of human and avian egg cells

Using teaching materials provided by the teacher and suitable internet resources, try to compare avian and human egg cells (focus e.g on the amount of yolk, size ..., origin and development, etc.)

	Birds (<i>Aves</i>)	Humans (<i>Homo</i>)
1.	produced (in most species) only by the left ovary	alternating asymmetric production in both ovaries
2.		
3.		
4.		
5.		
6.		




 Exercise 4: Mammalian testes - a permanent slide

a) Study the permanent slide - draw and describe the microscopic anatomy the mammal testes.

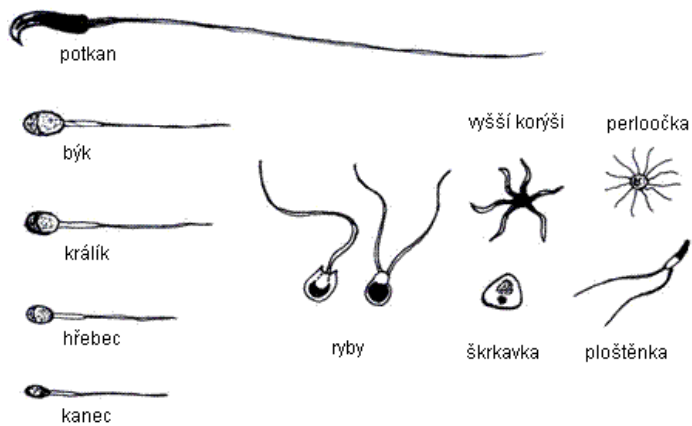


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b) What is the blood-testis barrier? Which cells form the barrier? Try to find them in the observed organ and label the nucleus in your drawing of the testes. What is the function of the barrier? What are the possible consequences of its damage?

 Exercise 5: Sperm smears of various animal species - permanent slides

Study the microscopic slides - sperm smears of various animal species. Draw the observed sperm and describe the structure of the observed sperm in detail.



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 Exercise 6: Fertilization - permanent slides

Study the microscopic slides with fertilized sea urchin eggs. What type of eggs can we observe in sea urchins? Be aware of the difference between the egg size and the sperm size. Draw and describe your observation.

CONCLUSION

(It is voluntary to formulate a conclusion in the case of this lesson)


LITERATURE

- Erickson, G. Global library of women's medicine. 2008. ISSN: 1756-2228. DOI 10.3843/GLOWM.10289
- Hodge R. Developmental Biology: from a Cell to an Organism. 1st edition, 2010. ISBN 978-0-8160-6683-4.
https://cit.vfu.cz/opvk2014/?title=ukoly-rozmnozovani_a_vyvoj&lang=cz.
- <https://www.sciencedirect.com/science/article/pii/B9780123725684000033>.
- Mäkelä JA., Toppari J. Spermatogenesis. In: Simoni M., Huhtaniemi I. (eds) Endocrinology of the Testis and Male Reproduction. 2017. Endocrinology. Springer, Cham. https://doi.org/10.1007/978-3-319-44441-3_13https://embryology.med.unsw.edu.au/embryology/index.php?title=File:Ovary_histology_005.jpg
- Skinner, B., Johnson, E. Nuclear morphologies: their diversity and functional relevance. Chromosoma. 2017, 126. 1-18. 10.1007/s00412-016-0614-5
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