Topics for Self-Study: *Meiotic cell division – phases of meiosis – crossing-over – gametogenesis*

Meiosis is a very specific type of cell nucleus division. The term meiosis includes two subsequent divisions: **Meiosis 1** (reductional division) and **Meiosis 2** (equational division) where there is no additional DNA replication in between them. During meiotic cell division the diploid maternal cell (2n) divides into 4 haploid daughter cells (n).

Prophase 1 is very specific (*crossing-over*) and can be further subdivided into: **leptotene** – **zygotene** – **pachytene** – **diplotene** and **diakinesis**

For solving the tasks you will need **OlyVIA** software and following login information:

database: BIOLOGIE_GENETIKA
name: biol_student
password: student

Task 1 (Page 45, Task 7): Choose any one of the samples from grasshopper´s testes (Meiosa sarance) and localize cells captured during meiosis. Choose at least four such cells and draw particular schemes of meiotic phases into your protocol (name each meiotic phase accordingly). Pictures of the phases are localized on the website (Insitute's website → English Classes → Online classroom tools → 7th week); direct link http://biol.lf1.cuni.cz/navody/meiosa/meiosa.htm

Task 2: Describe the differences between spermatogenesis and oogenesis in humans:

Feature	**Spermatogenesis**	**Oogenesis**
Time span of the whole process:		
Number of gametes arising from 1 precursor cell:		
During which period of life is this process active:		
What types of mutation in gametes tend to appear in aged individual		

Task 3 (Page 39, Task 4): Determine the number of chromosomes, bivalents and molecules of DNA (chromatids) in human cell (2n = 46) during different phases of meiotic cell division:

Observed	**Cell**		
Number	Chromosomes	Bivalents	Molecules of DNA
Pachytene			
Diplotene			
Diakinesis			
Anaphase I			
Telophase I			
Prophase II			
Metaphase II			
Telophase II			