**Angiosperm sexual reproduction: Study guide and readings**

**Required readings: None**

1. In the alternation of generations, what is meant by “n” and “2n”?
2. What is the difference between the “n” and the “x” in defining ploidy level?
3. What are homologous chromosomes?
4. What is a locus?
5. What are alleles?
6. What is a gene?
7. If you had to guess the number of genes in a diploid plant, which of the following numbers would be most correct?
8. 3,000
9. 30,000
10. 3,000,000
11. Give two advantages and two disadvantages for sexual reproduction in angiosperms.
12. Be able to name, and identify on a diagram, three critical female reproductive structures in a perfect angiosperm flower.
13. Be able to diagram and explain the steps between a megaspore mother cell and the 8 nuclei in an embryo sac.
14. Briefly describe the function and fate of the antipodals, the synergids, and the egg.
15. Be able to draw a general diagram of the 8-nucleate embryo sac and label the nuclei.
16. Considering the male reproductive structures in a perfect angiosperm flower, one stamen is connected to one anther, which can contain approximately how many pollen grains?
    1. 1
    2. 10
    3. 100
    4. 1,000
    5. 10,000
17. What is different, in terms of the fate of the four products of meiosis, between the developing megaspores and microspores, and what implications does this have for genetic analysis?
18. If a plant is heterozygous at many loci, would it be possible for it to produce a tetrad of microspores, each with a different combination of alleles?
19. If a plant is heterozygous at many loci, would it be possible for the two sperm in a pollen grain to be genetically different?
20. What tissue is the site of pollen recognition?
21. Is there a genetic component to pollen recognition?
22. Explain how the egg can be 2n and the endosperm 3n.
23. What implications are there, in terms of the genetics of the embryo and endosperm, as to which parent is the female and which is the male?
24. Explain how a seed can be a genetic mosaic, in terms of which alleles are represented (e.g. maternal, paternal, or maternal + paternal).
25. Allele dosage in the endosperm more a matter of genetic interest and importance for breeding during segregating generations than a commercial concern in released varieties. Why is that?
26. Two growers of corn have adjacent properties. One planted yellow feed corn and the other grows white sweet corn. The sweet corn producer complains that her crop has been ruined by the feed corn producer – the normally 100% white ears now have several yellow, starchy kernels in each year. The feed corn producer argues that the sweet corn producer bought contaminated F1 seed. What is your opinion?