Assignment 10

1. Multiple-choice (1 point)
The life cycle of fungi (such as bread mold) differs from the life cycle of animals in that

- only fungi have a dominant diploid stage
- only fungi produce haploid gametes
- only fungi have a dominant haploid stage
- fungi do not have meiosis in their life cycle
- fungi never reproduce asexually

2. True/False (2 points)
The following statements refer to a comparison of reproduction in ferns vs. flowering plants. Indicate whether each statement is true or false.

_____ Both ferns and flowering plants produce spores at some point in their life cycles.
_____ Only ferns have a gametophyte as part of their life cycle.
_____ Only flowering plants produce pollen grains.
_____ Both a tree and a large fern plant are diploid sporophytes.

3. Multiple-choice (1 point)
Which of the following is true regarding the results of the sea urchin fertilization experiment?

- Only the eggs of *Lytechinus pictus* were fertilized.
- Only the eggs of *Strongylocentrotus* were fertilized.
- The eggs of both species were fertilized.
- None of the eggs were fertilized.
- The experiment did not support species specificity in egg-sperm interaction.

4. Image upload (1 point)
Watch the video on fusion of pronuclei in sea urchins. Stop the video on a frame that clearly shows the egg and sperm nuclei fusing. Capture an image (screen shot) and label pronuclei and the fertilization membrane. Upload your labeled image to WebAssign in .jpg or .png format.

5. Multiple-choice (1 point)
Which of these aquatic eggs have the most uniform distribution of yolk within the cytoplasm?

- Frog eggs
- Sea urchin eggs
- Zebrafish eggs
- All of these eggs have similar yolk distribution.
- None of these eggs contain yolk.
6. Matching (2 points)
View this image and match the indicated sperm structures with their functions.

____ provides ATP for energy
____ provides motility for swimming
____ houses the sperm DNA
____ contains enzymes that digest a path through egg coverings

7. Image upload (1 point)
Watch the video on gastrulation in sea urchins. Stop the video on a frame that clearly shows the blastopore. Capture an image (screen shot) and label the blastopore and mesoderm cells. Upload your labeled image to WebAssign in .jpg or .png format.

8. Multiple-choice (1 point)
The anus of a pluteus larva develops from

- cells that detach and move to the interior of the gastrula
- an opening that forms when an invagination reaches the opposite side of the gastrula
- the original site of invagination (blastopore)
- ectoderm on the dorsal side of the larva
- the pluteus larva lacks an anus since it does not have a digestive tract

9. Matching (2 points)
View this image and match the embryonic stage to its name.

____ neurula
____ early cleavage
____ gastrula
____ blastula

10. Matching (2 points)
View this image and place the following embryonic stages of Zebrafish development in correct order from earliest to latest.

____ earliest stage
____ second earliest stage
____ third earliest stage
____ latest stage
11. Multiple-choice (1 point)
Development of mammalian embryos differs from that of the frog and sea urchin in that

- only mammalian embryos have equal-sized cells during cleavage
- only mammalian embryos have a protective covering around the embryo
- only mammalian embryos have a blastula stage
- only mammalian embryos form a trophoblast and inner cell mass
- only mammalian embryos skip the gastrula stage

12. Matching (2 points)
View this image and match the flower to its description.

___ Flower(s) with both sexes, pollinated by insects
___ Male flower(s), pollinated by insects
___ Female flower(s), pollinated by insects
___ Flower(s) pollinated by the wind

Choose from:
A only
B only
C only
D only
E only
F only
A and D
A and F
B and E
B and F

13. Image upload (1 point)
View the pollen slide. Capture an image at appropriate magnification and label a pollen grain, pollen tube, and sperm nucleus.

14. Essay (2 points)
Write a short essay that explains why the zygote of flowering plants is diploid (2N), but the endosperm is triploid (3N). As part of your answer, indicate where the 5 sets of chromosomes come from during double fertilization.
15. Image upload (2 points)
Examine the **wheat seed slide**. Capture an image and label the **cotyledon**, **embryonic root**, **embryonic shoot and leaves**, and **seed coat**. Upload your labeled image to WebAssign in .jpg or .png format.

16. Multiple-choice (1 point)
Observe this image of a wheat seed. Which structure is a starch grain within the endosperm?

- structure A
- structure B
- structure C
- structure D
- none of these

17. True/false (2 points)
Answer the following questions by writing the words **true** or **false** in the blanks.

- ____ The function of fruit is to supply nutrients to the growing embryo.
- ____ White flour is made from only the endosperm component of wheat seeds.
- ____ The cotyledons of dicot embryos absorb most of the nutrients stored within the seed.
- ____ Roots grow by rapid cell division with no cell growth.

18. Image upload (2 points)
Examine the **shoot tip slide**. Capture an image at appropriate magnification and label the **apical meristem**, **growing cells**, and **new leaves** (the smallest leaves). Upload your labeled image to WebAssign in .jpg or .png format.

19. Multiple-choice (1 point)
Which of the following structures is a xylem vessel within a developing leaf?

- structure A
- structure B
- structure C
- structure D
- none of these