Study Questions 2 (through Arthropod 1)

1. Name the three embryonic germ layers found in all triploblastic animals.
2. What is a coelom? Which Phyla that we have discussed thus far have a true coelom?
3. Define cephalization. What is the name of the most primitive Phylum we have discussed that displays cephalization?
4. How is the digestive system of a Turbellarian similar to the digestive system of a Hydrozoan? Describe one way that they are different.
5. What is the function of flame cells?
6. How is the nervous system of a flatworm (Phylum Platyhelminthes) different from that of a Cnidarian?
7. Which two classes of flatworms are entirely parasitic? Describe some adaptations for parasitism that are found in these classes.
8. What are some of the major differences between Nemertine worms (Phylum Nemertea) and flatworms (Phylum Platyhelminthes)? In what major way are these two phyla similar?
9. What is a pseudocoelom? What are some of the functions of the pseudocoelom in Phylum Nematoda?
10. Nematodes have move in a characteristic whip like fashion. What aspect of their anatomy is responsible for this type of movement?
11. Describe the general structure of the Nematode nervous system. How is it different from the nervous system of Platyhelminthes?
12. What is unique about Nematode muscle cells?
13. What is unique about the way Nematode sperm move?
14. Many Nematodes are parasitic. Describe some adaptations that Nematodes have for parasitism.
15. What characteristics of the Nematode Caenorhabditis elegans make such an important model organism for the study of developmental genetics?
16. List two functions of the Rotifer corona.
17. Many rotifers produce two different types of eggs (mictic and amitic). How are these different from one another? Be sure to discuss what happens when each type of egg is fertilized (or if it can be fertilized).

18. What is parthenogenesis?

19. What are the two evolutionary benefits of sexual reproduction? Given these benefits, what is so surprising (and interesting) about Bdelloid rotifers?

20. Describe the major differences between development in protostomes and deuterostomes.

21. How does the coelom form in Annelids? What are some of the functions of the coelom in Phylum Annelida?

22. What is metamerism? How is metamerism different from the type of segmentation that is found in Class Cestoda?

23. What are setae? List two functions of setae.

24. What organs are responsible for excretion in Annelids?

25. What is the name of the appendages found in class Polychaeta? What are two functions of these appendages?

26. Describe epitoky. In what class does this phenomenon occur?

27. Name the structure that is unique to the digestive system of Oligochaetes. What is the function of this structure?

28. Class Hirudinea is very different from the rest of the Annelids. Describe some of these differences.

29. Why are leeches not able to move in the same way as other Polychaetes?

30. Define metamerism and describe why it is evolutionarily important.

31. What three processes are responsible for regional specialization in metameric animals?

32. Arthropods and Annelids are both eucoelomate protostomes. List three other morphological characteristics of Arthropods that suggest that they are closely related to Annelids.

33. Define serial homology and give an example.

34. What characteristics of Arthropods are thought to have led to their success?

35. What is tagmatization?
36. The bodies of Chelicerates (subphylum Chelicerata) are divided into two tagmata. What are these called?

37. How many tagmata are the bodies of Crustaceans divided into? What are their names?

38. You are a scientist on a research vessel in the Gulf of Mexico. You collect an undescribed species of animal in a plankton net. The animal has the following obvious characteristics: long antennae, a single eye located anteriorly, and two sacs of what appear to be eggs projecting posteriorly from the body. What class do you think that this animal is in?

39. Which Class of Crustaceans is entirely hermaphroditic?

40. Traditionally, Annelids and Arthropods were hypothesized to be closely related to one another. What kind of evidence was this hypothesis based on? Is this hypothesis consistent with RNA data? If not, which group of animals that we have discussed are Arthropods probably most closely related to?