Assignment 5: Although this looks like a long assignment, you have gathered information on many of these species in previous assignments. So in this assignment you are being asked to revisit that material, and extend your understanding of the biology of these species, as well as learn about other important unicellular species that infect humans. 45 pts.

1. The statement was made that fungi are more closely related to animals than plants. How do you know this from looking at the relationship tree on the tree of life website?

Guide + CDC site+ 180-183 (chapter 8)

2. a. What is the connection between Acanthamoeba parasites and keratitis? b. Who are the individuals at risk for keratitis?

3. a. What is GAE? b. What is known about the parasites that can cause this disease and how is it transmitted? 7 pts.

Chapter 8, pgs, 186-188. (http://www.cdc.gov/parasites/babesiosis/)

4. a. What is the connection between deer, ticks and *Babesia microti?* b. Why does your text consider it an emerging pathogen? c. What problems can humans infected with *Babesia microti* exhibit?

Guide + CDC information + animations.

5. Answer the following questions about the Apicomplexa.

a. Describe the major defining characteristics of the group. How is the apical organ used? What is the apicoplast?

b. List two parasites that are members of this group

c. Associate stages of the *Plasmodium* life cycle with the descriptions below. You will need to compare the diagram of the life cycle on the guide with the diagram on the CDC site. 15 points.

In the life cycle of *Plasmodium*, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are cells that infect new human hosts. In the parasites that cause malaria (*Plasmodium),* for instance, the \_\_\_\_\_\_\_\_\_\_\_\_\_ are cells that develop in the mosquito's salivary glands, leave the mosquito during a blood meal, and enter the liver where they multiply. Cells infected with sporozoites eventually burst, releasing \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_into the bloodstream.

In malaria, these cells infect red blood cells and then rapidly reproduce asexually. A merozoite when it invades a red blood cell develops into a ring state known as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_which can become a schizont. Schizonts rupture to produce more merozoites, which infect more red blood cells and continue the asexual cycle. The immune and other responses to circulation damage, cause many of the symptoms of malaria.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_are produced in some of the infected red blood cells of the human hosts but do fuse into a zygote (oocyst) until transmitted into a mosquito.

d, Identify:

The parasite causing the most severe form of malaria.

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The most widespread parasite causing malaria.

*Plasmodium* species with dormant liver stages.

A tertian species of *Plasmodium.*

A quotidian species of *Plasmodium.*

6 a. What genetic factors provide protection against malaria? (6 pts.)

**b. What age groups are most venerable to developing malaria?**

**c. Give two factors that impede the eradication of malaria in areas where it is epidemic.**

7.

**Review the information on Trypanosoma *cruzi* and explore the information about *Trypanosoma brucei* on the CDC website. You already read a good deal about T. *brucei* transmission in your text.**

a. Fill in this table comparing the two species.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Species | Diseases caused | Symptoms | Secondary hosts | How transmitted |
| *Trypanosoma cruzi* |  |  |  |  |
| *Trypanosoma brucei* |  |  |  |  |

8. a. What disease does your textbook feel Darwin battled with most of his life? Why does your text consider *T. cruzi* an emerging disease?

9. How is *Naegleria fowleri* transmitted? 5 pts.

10. Compare the diseases caused by *Toxoplasma gondii, Crytosporidium* and *Giardia* species. .

11. Why is blending considered a problematical practice? 6 pts.

12. How was the source of *Toxoplasmosis* around the city of Victoria confirmed? 3 pts.

13. How did cysts of *Giardia* and *Crytosporidium* avoid being removed out of the water supply for North Battleford? 6 pts.