BIOM 428 General Parasitology Laboratory

Fall semester, 2015

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Lab: Tu, Th 9:10-11 AM, Room: HS 404

Textbook: L.S. Roberts and J. Janovy. 2013. Foundations of Parasitology, 9th edition (you will need to bring this to lab each week).

Lab Book: Will be distributed during lab period. (Also, a loose leaf notebook and drawing paper will be very useful).

Lab tests: Three lab practicals. Each will cover approximately one-third of the semester's topics. (See lab topics for subjects to be covered by each practical.)

Grading: Lab tests=30% X 3 tests = 90%
Participation = 10%
100%

ATTENTION:

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University.

All students need to be familiar with the Student Conduct Code. The Code is available for review online at http://www.umt.edu/SA/VPSA/index.cfm/page/1321.

SYLLABUS (I.o. =learning outcome)

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Sep. 1, 3</td>
<td>No Labs</td>
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<tr>
<td>8</td>
<td>General information; check-in, use of microscopes; survey of parasites (powerpoint). I.o. Goals, scope and expectations of class will be explained.</td>
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<td>10</td>
<td>LAB 1 - Symbiosis: mutualism - termite flagellates, endocommensalism - <em>Opalina</em> in frogs, endoparasitism - <em>Trichomonas</em> in mice. I.o.: Observe, diagram and describe the 3 types of symbiotic relationships and be able to give an example of each.</td>
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<td>15</td>
<td>LAB 2 - Phylum Apicomplexa: gregarines, <em>Eimeria, Toxoplasma</em> I.o.: Observe, diagram and be able to recognize the life cycle stages of insect gregarines, eimerian parasites and <em>Toxoplasma</em>, and be able to diagram their biology.</td>
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17 LAB 3 and 4 - Phylum Apicomplexa (continued): malaria.
I.o.: Observe, diagram and be able to recognize the life cycle stages of the 4 human-infecting species of *Plasmodium*, and be able to diagram their biology (continued into next lab).

22 LAB 3 and 4 - Phylum Apicomplexa (continued): malaria, Babesia.
I.o.: Continue with goals from previous lab and also observe, diagram and be able to recognize the life cycle stages of *Babesia*, and be able to diagram its biology.

24 LAB 5 - Phylum Zoomastigina, hemoflagellates: *Trypanosoma* including living insect stages, *Leishmania*.
I.o.: Observe, diagram and be able to recognize the life cycle stages of common *Trypanosoma* and leishmanial parasites including their living insect stages, and be able to diagram their biology.

29 LAB 6 - Phylum Zoomastigina, intestinal flagellates: *Giardia*, *Trichomonas*, *Chilomastix*.
I.o.: Observe, diagram and be able to recognize the life cycle stages of the common intestinal flagellates of humans, and be able to diagram their biology.

Oct. 1 LAB 7 - Phylum Sarcodina: *Entamoeba* and related genera; Phylum Ciliophora: *Balantidium*; Phylum Myxozoa: *Myxosoma*.
I.o.: Observe, diagram and be able to recognize the life cycle stages of the common intestinal amebic and ciliates parasites of humans, and be able to diagram their biology; be able to recognize a common myxozoan of fish.

6 Catch-up and review.

8 Laboratory exam I: Protozoa

13 LAB 8 - Phylum Platyhelminthes, trematodes: monogenetic trematodes and *Aspidogaster*, digenetic trematode larval stages - miracidia, sporocysts and rediae.
I.o.: Observe, diagram and be able to recognize the life cycle stages of common fish monogenes, molluscan aspidogasters and digenean larval stages (continued in next lab).

15 LAB 9 and 10 - Phylum Platyhelminthes, trematodes (continued): digenetic trematode larval stages - living cercariae, cercarial types, metacercariae; adult digenetic trematodes- *Schistosoma*.
I.o.: Continue learning digenean larval stages as well as the adult stages of 3 human-infecting schistosome species.

20 LAB 9 and 10 - Phylum Platyhelminthes, trematodes (continued): digenetic trematode larval stages - living cercariae, cercarial types, metacercariae; adult digenetic trematodes- *Schistosoma*.
I.o.: Continue with learning objectives of previous lab and be able to diagram the life cycles of the 3 human-infecting schistosome species.

22 LAB 11 - Phylum Platyhelminthes, trematodes (continued): adult digenetic trematodes (continued) - *Echinostoma*, *Fasciola*, *Opisthorchis*, *Heterophyes*.
I.o.: Observe and diagram the adult stages of common lung, liver and intestinal flukes, and be able to diagram their biology.
27 LAB 11 and 12 - Phylum Platyhelminthes, trematodes (continued) and cestodes: pseudophyllidean tapeworms.
I.o.: Observe and diagram the adult stages of common lung, liver and intestinal flukes, and be able to diagram their biology. Observe, diagram and be able to recognize the life cycle stages of the broad fish tapeworm and a mosquito fish tapeworm.

29 LAB 13 - Phylum Platyhelminthes, cestodes (continued): cyclophyllidean tapeworms.
I.o.: Observe, diagram and be able to recognize the life cycle stages of representative cyclophyllideans (which will be continued in the next lab) and be able to diagram their biology.

Nov. 3 LAB 13 and 14 - Phylum Platyhelminthes, cestodes (continued): cyclophyllidean tapeworms.
I.o.: See previous lab.

5 Catch-up and review

10 Laboratory exam II: Platyhelminthes.

12 LAB 15 - Phylum Acanthocephala.
I.o.: Observe, diagram and be able to recognize the life cycle stages of common acanthocephalans and be able to diagram their life cycles.

17 LAB 16 - Phylum Nematoda: rhabditid and strongyloid nematodes.
I.o.: Observe, diagram and be able to recognize the life cycle stages of common strongylids and be able to diagram their life cycles.

19 LAB 17 - Phylum Nematoda (continued): trichostrongyloid and ascarid nematodes.
I.o.: Observe, diagram and be able to recognize the life cycle stages of common trichostrongyloids and be able to diagram their life cycles. By dissecting adult Ascaris, be able to identify the gross anatomical features.

24 LAB 18 - Phylum Nematoda (continued): ascarid nematodes (continued).
I.o.: Observe, diagram and be able to recognize the life cycle stages of common ascarid nematodes and be able to diagram their life cycles.

26 Thanksgiving, no class.

Dec. 1 LAB 19 Phylum Nematoda (continued): spiurid and trichinellid nematodes.
I.o.: Observe, diagram and be able to recognize the life cycle stages of common spiurid and trichinellid nematodes, and be able to diagram their life cycles.

3 LAB 20 - Phylum Arthropoda: survey of medically important arthropods.
I.o.: Survey representative arthropods and be able to identify them by common name and be able to name a parasite or microbe (if any) that they can transmit.

DEC 8 Catch-up and review.

10 Laboratory exam III: Acanthocephala, Nematoda, Arthropoda.