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BIOM 427.01: General Parasitology

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BIOM 427 General Parasitology

Fall semester, 2014

Instructor: Dr. W.O. Granath,
HS 306; 243-2975
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Lecture: Tu, Th 8:10-9:00 AM, Room: HS 411

Textbook: L.S. Roberts and J. Janovy. 2013. Foundations of Parasitology, 9th edition.

"Fun Book": Desowitz, R.S. 1987. New Guinea Tapeworms and Jewish Grandmothers - Tales of Parasites and People. (Required reading for all students).

Lecture exams: Three 1 hour exams with the third test being administered on finals day. Also, the third exam will be partially comprehensive. (See lecture topics for subjects to be covered by each exam.)

Term paper: REQUIRED for graduate students, optional for undergraduates. On any parasitological topic of your choice. SEE ME INDIVIDUALLY for topic approval and/or advice in selecting a topic. Format will be discussed in class.
DEADLINE: 5:00 PM THURSDAY DECEMBER 4-POSITIVELY NO EXCEPTIONS!

Grading: Graduate Students:
Lecture exams=30% X 3 exams=90%
Term paper=10% X 1 =10%
100%

Undergraduate Students:
Lecture exams=33.333% X 3 =100%
Optional term paper - 6%

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 (l.o. =learning outcome)

<u>Date</u>	<u>Topic</u>	<u>Readings</u>
Aug. 26	General information, introduction to parasitology l.o.: Goals and expectations of class will be explained.	Ch. 1

	28 Symbiosis and parasitism l.o.:Be able to describe the 3 types of symbiotic relationships and be able to give an example of each.	Ch. 1, 2, 3
Sep.	2 Introduction to parasitic protozoa; phylum Apicomplexa: gregarines and coccidia l.o.:Be able to describe the basic morphology and physiology of parasitic protozoa.	Ch. 4, 8
	4 Coccidia (cont'd) l.o.: Be able to describe and diagram the life cycles of tissue dwelling coccidians and be able to describe the prevention and pathological features of <i>Toxoplasma gondii</i> .	Ch. 8
	9 Malaria l.o.: See next lecture.	Ch. 9
	11 Malaria (cont'd) l.o.:After these 2 lectures you should be able to describe the biology of malaria in detail including the life cycles of the 4 species of <i>Plasmodium</i> infecting humans, their pathology, prevention and treatment.	Ch. 9
	16 Piroplasms; phylum Zoomastigina: flagellate protozoa - trypanosomes l.o.:Be able to describe the biology of <i>Babesia beigemina</i> and the general characteristics of hemoflagellates.	Ch. 9, 5
	18 Trypanosomiasis and leishmaniasis l.o.:Be able to name and describe the life cycles and pathologies of major hemoflagellate parasites including <i>Trypanosoma cruzi</i> , <i>T. brucei brucei</i> , <i>T. b. rhodesiense</i> , <i>T. b.gambiense</i> , <i>Leishmania donovani</i> , <i>L. tropica</i> and <i>L. braziliensis</i> . (Likely to be continued in next lecture)	Ch. 5
	23 Leishmaniasis (cont'd), giardiasis, trichomonads; phylum Sarcodina: parasitic amoebae l.o.:Be able to name and describe the life cycles and diseases caused by major lumen-dwelling parasitic protozoans including the amoebae, flagellates and ciliates. (Continued in next lecture)	Ch. 5, 6, 7
	25 Amoebae (cont'd); phylum Ciliophora: parasitic ciliates; phyla Microspora and Myxozoa: parasites with polar filaments l.o.: See previous lecture.	Ch. 7, 10, 11
	30 Phylum Platyhelminthes, class Monogenea: monogenetic trematodes; class Trematoda: aspidogaster and digenetic trematodes l.o.: Be able to diagram the life cycles of the Monogenea and Aspidogastrea and give an example of each.	Ch. 13, 19, 14, 15
Oct.	2 Exam I; covers introductory lectures and protozoa	
	7 Digenetic trematodes (cont'd): schistosomes l.o.:See next lecture.	Ch. 16

- 9** Digenetic trematodes (cont'd): schistosomes (cont'd) Ch. 16
 I.o.: After these 2 lectures you should be able to diagram, in detail, the life cycles of *Schistosoma mansoni*, *S. japonicum*, *S. mekongi* and *S. haematobium* and be able to describe the pathological features of each.
- 14** Digenetic trematodes (cont'd): echinostomes, plagiorchids and opisthorchids Ch. 17, 18
 I.o.: Be able to describe/diagram the life cycles of the liver flukes *Fasciola hepatica*, *Dicrocoelium dendriticum* and *Clonorchis sinensis*, and the lung fluke, *Paragonimus westermani*.
- 16** Class Cestoidea: proteocephalan, caryophyllidean and pseudophyllidean tapeworms Ch. 20, 21
 I.o.: Be able to describe/diagram the basic life cycle and morphological features of cestodes including the tegument, scolices and the different metacestodes.
- 21** Pseudophyllidean (cont'd) and cyclophyllidean tapeworms Ch.
 21
 I.o.: Be able to diagram the life cycles and give examples of proteocephalan, caryophyllidiean and pseudophyllidean tapeworms.
- 23** Cyclophyllidean tapeworms (cont'd); Phylum Acanthocephala: thorny-headed worms Ch. 21, 32
 I.o.: Be able to diagram the life cycles of the major species of cyclophyllideans of animals and humans and be able to describe the general life cycle of acanthocephalans.
- 28** Phylum Nematoda: roundworms, general considerations Ch. 22
 I.o.: Gain a general understanding of the morphology, biology and development of parasitic roundworms.
- 30** Class Secerentea: rhabditoids and strongylids (hookworms and relatives) Ch. 24, 25
 I.o.: Understand alternation of generations and the biology, transmission and pathology of hookworm infection.
- Nov. 4** Election Day, no class.
- 6** Ascarids (intestinal roundworms, pinworms) and spuriids (filarial worms and relatives) Ch. 26, 27, 30, 29
 I.o.: Be able to diagram the life cycles of ascarids, pinworms and filarial nematodes and describe their pathologies.
- 11** Veterans Day, no class.
- 13** Spuriids (cont'd); class Adenophorea: trichinella, whipworms and relatives Ch. 29, 23
 I.o.: Be able to diagram the biology of trichinella and whipworms noting the unique life history aspects of both.

- 18** Phylum: Arthropoda: introduction; parasitic crustaceans and insects Ch. 33,34,36
 l.o.: Understand the basic morphology and development of arthropods and some common crustacean and insect ectoparasites and the parasites they can transmit.
- 20** Exam II; covers the helminthes
- 25** Parasitic insects (cont'd); parasitic arachnids: ticks and mites Ch. 38,39,41
 l.o.: Understand the biology of ticks and mites and the diseases they can transmit.
- 27** NO CLASS – THANKSGIVING
- 29** Parasite ecology: introduction to basic concepts; seasonal cycles; density-independent factors Ch. 2, handouts
 l.o.: Understand basic ecological principles as applied to parasites and be able to differentiate between parasitism and predation.
- Dec. 4** Density-independent (cont'd) and density-dependent factors; Mathematical models Ch. 2, handouts
 In parasite ecology/epidemiology
 l.o.: Understand some common density independent and dependent factors that affect parasite populations and communities and be able to give examples of each. Understand and be able to give examples of the utility of mathematical models in predicting epidemiological phenomena as it pertains to parasitic diseases.
- 9** Final exam 10:10 - 12:10. Covers arthropods, ecology (80%) and material from previous sections (20%).