Study Guide
EEB 283- Exam III
(Fall 2011)

Phylum Nematoda: range of habitats; synapomorphies and other distinctive features of the phylum; phylum monophyletic but parasitic groups are not; blastocoelom- what is it?; nervous system, outermost body layers (surface coat, cuticle, hypodermis - what are they? what do they do?), excretory system, arrangement of musculature- what is unusual?, digestive system- filariform vs. rhabditiform esophagus and implications for feeding, reproductive system: dioecious, configuration of organs in male and female systems, understand specialized structures of male system (e.g. spicules, copulatory bursa, etc.); generalized life-cycle; two classes (Rhabditea vs. Enoplea)

Class Rhabditea- synapomorphy, orders included

Order Oxyurida- common name and its derivation; typical hosts; general and distinguishing features (e.g., male with only 1 spicule, haplodiploidy, form of esophageal bulb); site generally inhabited by adults in hosts; *Enterobius vermicularis*: host; life-cycle, stage infective to humans; mechanism for facilitating transfer between hosts; diagnosis; geography; pathogenesis; treatment.

Order Ascaridida- typical hosts; general and distinguishing features, sites generally inhabited by adults in host; *Ascaris lumbricoides* and *Ascaris suum*- typical hosts, general features, prevalence, two explanations for high prevalence; life-cycle of *Ascaris suum*, stage infective to pigs (and humans)? Pathogenesis of larvae, pathogenesis of adults; diagnosis; McDonald College *Ascaris suum* incident; *Toxocara cati* and *Toxocara canis*- normal hosts, placental transmission, as zoonotic agents of visceral larval migrans- what is it? Pathogenesis; how are infections acquired? Anisakid infections- how are they acquired by humans? disease caused; pathogenesis; geography.

Order Strongylida- common name and its derivation; recognize generally has tissue phase; general and distinguishing features (copulatory bursa); Family Ancylostomidae- distinguishing features (e.g., buccal capsule, buccal capsule teeth), 2 species normally found in humans, distinguishing features, symptoms of 3 stages of infection, infective stage and how infection is contracted in humans, sites occupied, symptoms and pathogenesis of hookworms in normal hosts, diagnosis of hookworm infection; 2 species normally found in dogs, distinguishing features; life-cycle of *Ancylostoma caninum*. Creeping eruption-what is it? what causes it? how is infection contracted? sites occupied, symptoms and pathogenesis of hookworms in abnormal hosts. Lungworms: *Parelaphostrongylus tenuis*- sites occupied in normal hosts; site(s) occupied and pathogenesis in abnormal hosts. Basic geographic distribution of all of above.

Order Spirurida- most diverse group; Suborder Spirurina (Superfamily Filaroidea)- synapomorphy. For 4 species of consequence to humans (and/or their pets): generalized life cycle, typical intermediate hosts, typical definitive hosts, sites normally inhabited by adults (and other stages if relevant) in definitive hosts, diagnosis, pathogenesis, general geography, and treatment in definitive host. In addition, for *Dirofilaria immitis*- common name, details of life-cycle, stages infective to mosquito and to dog; diagnosis of infection in dog? Why are adults only found in right side of heart? diagnosis of infection in mosquito? *Wuchereria bancrofti*- elephantiasis- what is it? periodicity of microfilaria; pathogenesis (acute and obstructive phases); *Onchocerca volvulus*- River blindness- what is it? Why/how does blindness result? *Loa loa*- common name. Suborder Camallanina- *Dracunculus medinensis*- how are infections acquired? mode of exit from definitive host; intermediate host and its relationship to control; possible relationship to the medical caduseus.

Class Enoplea- synapomorphy, order(s) included

Order Trichurida- *Trichuris trichiura*- common name and distinctive aspect of morphology, typical hosts, life-cycle, stage infective to humans, pathogenesis, diagnosis, treatment; "*Trichinella spiralis*"- features for distinguishing among some species in this complex, typical hosts, geography; *Trichinella spiralis*: disease caused, life-cycle (sylvatic vs. urban variations), unusual feature of life-cycle (same animals serves as both intermediate & definitive host), specific cells parasitized within host (intracellular parasite as adult); nurse cells- what are they? How are they formed? 3 phases of pathogenesis associated with disease; diagnosis; treatment.

Phylum Acanthocephala- general and distinguishing features, dioecious, sexually dimorphic, ~diversity; are free-living species known? Heteroxenous; typical definitive hosts and site occupied in these hosts; free-living phylum to which closely allied? Humans typically parasitized?

Phylum Nematomorpha- common name; ~diversity; similarities and differences to nematodes; adults free-living, larvae parasitic in what hosts? distinguishing between sexes. Humans typically parasitized?

Phylum Myxozoa- general and distinguishing features, ~diversity; are free-living species known? heteroxenous- typical definitive and intermediate hosts; *Myxobolus cerebralis*- disease, pathogenicity, site occupied; free-living phylum with which it may share close affinities, and the evidence for these relationships.

Phylum Mollusca- primarily free-living; families with glochidia larvae (obligate parasites); hosts parasitized by glochidia.

Phylum Annelida- primarily free-living predators; some ectoparasitic on vertebrates, common name, types of food consumed (blood, tissue fluids, etc.)

Phylum Arthropoda- coelomates, exoskeleton, articulated appendages (most diverse of animal phyla); 3 subphyla (Crustacea, Uniramia, and Chelicerata) with parasitic members and their respective subgroups;

Subphylum Crustacea: Subclass Copepoda: basic features, habitat, nauplius larva; know general morphology of free-living copepod (*Cyclops*) and 6 trends in adaptation to parasitism exhibited by parasitic copepods with genera exemplifying each (be able to compare to the free-living species). Subclass Branchiura- *Argulus*, common name; hosts; morphology, attachment structures, how differ from copepods? Subclass Cirripedia- common name, distinguish a phoretic from a parasitic barnacle, *Sacculina*- morphology of adult and its relationship with its host, general types of animals parasitized by *Sacculina*, method of infection of host, pathogenesis. Subclass Pentastomida- general features; ~diversity; heteroxenous- basic types of intermediate and definitive hosts; Pentastomiasis- 2 forms (visceral and nasopharyngeal) and the general (not specific) etiological agents and pathogenesis associated with each. Order Isopoda- primarily free-living; some species ectoparasitic on skin and gills/mouth of fish, typically with asymmetrical body. Order Amphipoda- primarily free-living; some species ectoparasitic on whales.

Subphylum Uniramia: Class Hexapoda: distinguishing features (e.g., 3 prs legs): Order Mallophaga- common name, diet, all species parasitic as adults, types of hosts, morphological adaptations to parasitism, features distinguishing from anoplurans, basic life-cycle, typical example of mallophagan from domestic fowl. Order Anoplura- common name, all species parasitic as adults, types of hosts, diet, adaptations to parasitism, features distinguishing from mallophagans, 3 forms (2 subspecies; 1 additional species) found on humans- identity, common names, distinguishing characteristics (of species), site on host, pathogenesis of each (and types of diseases vectored if any). Order Siphonaptera- common name, general features (combs, etc.), all species parasitic as adults, morphological adaptations to parasitism, generalized life-cycle; dog, rat flea; diseases vectored by fleas; *Tunga*- what is it? How does its association with its host differ from that of dog, etc. fleas? Order Diptera- why mosquitoes etc. are NOT considered to be parasitic; 1 family parasitic as adults -its common name, adaptations to parasitism, pupiparous- what is it? Dipterans parasitic as larvae; what is myiasis? cutaneous, atrial and intestinal myiasis- provide examples of each; general life-cycle of *Gasterophilus intestinalis*, stage infective to horse, pathogenesis; Order Hemiptera- *Cimex lectularis* common name, general morphology, pathogenesis.

Subphylum Chelicerata: Class Arachnida: Subclass Acari- common name, distinguishing features (e.g. capitulum and idiosoma, etc.); ticks: distinguishing features, all parasitic; general morphology, larvae vs. nymphs and adults, sexual dimorphism; 2 families of ticks (Ixodidae and Argasidae), their common names, general features and differences in feeding strategies; Ixodidae- typical life-cycle, differences among 1, 2 and 3-host ticks; exemplar 3 host tick *Ixodes scapularis*, as vector of etiological agent of Lyme disease (what is that agent?). Tick pathogenesis: diseases caused by ticks themselves (e.g. anemia, exsanguination, etc.); diseases caused by organisms vectored by soft versus hard ticks (what are the organisms? what diseases do they cause?). Mites: 3 important families (Sarcoptidae, Demodicidae, Trombiculidae) of external mites and 1 family (Dermanyssidae) of internal mite- examples of each family and the pathogenesis these taxa can cause.

to be continued
(General Considerations)