Study Guide

EEB 4724- Exam 2

Fall, 2014

**Phylum Platyhelminthes**: general features of the phylum (e.g. acoelomate, etc.); configuration of digestive system; phylogenetic relationships among major groups.

**Basal platyhelminth orders** (Polycladida, Tricladida, Dalyellioida, Temnocephalida): synapomorphies, example taxon for each group, host associations/life-style, distinctive features. What are the "Turbellaria"? Are they monophyletic?

**Subphylum Neodermata**: synapomorphy; what is a neodermis? How does it differ from an epidermis? Be able to illustrate its basic components. Be able to reconstruct phylogenetic relationships among neodermatan classes and subclasses. With respect to life-cycles, know stage infective to each host.

**Class Trematoda**: position in platyhelminth phylogenetic tree; component groups.

**Subclass Aspidogastrea**: general morphology, host associations, larval stage.

**Subclass Digenea**: general features, synapomorphies; reproductive strategies for minimizing impact of hazards associated with transfer between hosts; generalized digenean life-cycle: larval forms, sequence and general host associations; what is simultaneous polyembryony? Where does it occur in digenean life-cycle?

**Liver flukes**: know 4 species (note that site in host of *Fasciolpsis buski* is an exception); for each species know: general geographic distribution, whether zoonotic infection, hosts, diseases caused, pathogenicity, epidemiology, diagnosis of infection in definitive host, understand paths various worms take to and from liver in definitive host; life-cycle of *F. hepatica*; life-cycle of *Clonorchis sinensis*. Special behavior of cercariae of *C. sinensis* maximizing chances of encountering 2nd intermediate host; life-cycle of *Dicrocoelium dendriticum* and its unusual features (terrestrial; modification of host behavior, etc.).

**Lung flukes**: *Paragonimus westermani*: life-cycle, typical definitive hosts (including reservoir hosts), diagnosis, diseases caused, general geographic distribution, epidemiology, pathogenicity associated with human infections, as an example of a zoonotic infection; prevention of infection? Control strategies? *Nanophyetes salmincola*: as vector of *Neorickettsia helminthoeca* in dogs, disease caused, epidemiology, consequences of infection in dogs.

**Blood flukes**: dioecy and physical relationship between males and females; gynecophoral canal-what is it? 3 primary species of *Schistosoma* in humans; for each know: general geographic distribution, site in definitive host, diagnosis, zoonosis or not, life-cycles, egg morphology, antigen cloaking to avoid host immune response; details of pathogenicity of infection (i.e., of 3 phases/stages of disease); granuloma and pseudotubercle formation; mechanism by which eggs move to exit portal; 4 strategies of control of Schistosomiasis and associated problems; bird schistosomes: habitats, disease caused in humans and its explanation.

**Gut flukes**: Greatest diversity of all flukes; especially in marine teleosts; *Leucochloridium*: unusual features of life-cycle (terrestrial, tail-less cercariae in sporocyst, sporocyst morphology and “behavior” for enhancing transmission).

**Class Monogenea**: general features (monoxenous, etc.), synapomorphy, sources of food, host associations, typical sites in/on hosts, specificity (host and site); factors that may account for general absence from aquatic birds (and mammals?), larval form; 2 superorders and their general features (e.g., haptor morphology).

**Superorder Monopisthocotylea**: *Dactylogyrus vastator*: life-cycle, pathogenicity and its circumstances and reasons for economic importance; *Gyrodactylus* spp. and sequential polyembryony.

**Superorder Polyopisthocotylea**: *Polystoma* spp. - unusual features of life-cycle, small vs. large adults and their sites occupied in/on stages of their anuran hosts, association with growth and reproductive hormones of host; internal rather than external migration of relative in spadefoot toads in Arizona.

**Class Cestoda**: (i.e., tapeworms), synapomorphies, structure and 2 potential functions of microtriches; monozoic vs. polyzoic cestodes (differences?); distinguish proglottized from non-proglottized cestodes; what is a proglottid? General features and general hosts of orders Amphilinidea and Gyrocotylidea, and subclass Eucestoda; basic eucestode morphology (scolex, strobila, immature, mature, and gravid proglottids); apolytic vs. anapolytic tapeworms; generalized aquatic cestode life-cycle (typical number of hosts, etc.); generalized terrestrial cestode life-cycle (typical number of hosts, etc.); cestode larvae: hexacanth, oncosphere, coracidium, procercoid, plerocercoid, cysticercoid, cysticercus (of various types—simple, coenerus, hydatid) and eucestode groups covered that exhibit each. 2 orders of eucestodes covered, host associations, basic morphology and specialized structures of the scolex (suckers, bothria, bothridea, tentacles, etc).

2 orders of eucestodes in humans:

**Order Diphyllobothriidea**: General features (e.g., aquatic life-cycles, uterine pores); life-cycle of *Diphyllobothrium latum*, how humans acquire infection, symptoms, diagnosis, pathogenicity; what is a paratenic host? Example in this life-cycle.

**Order Cyclophyllidea**: General features, life-cycles terrestrial, etc.; basic larval types: cysticercoids, 3 types of cysticerci—basic morphology and host associations of each; 3 species of importance to humans. *Taenia solium* vs. *T. saginata* (similarities? differences? hosts, diagnostic features, size, life-cycles, larval stages, etc.); life-cycle *T. solium*; humans as intermediate and definitive hosts; in each case: disease, symptoms, pathogenicity, treatment, diagnosis. *Echinococcus granulosus*: life-cycle, epidemiology (urban and sylvatic forms); role humans play in life-cycle, pathology associated with hydatid infection, treatment (phases in removal of hydatids), consequences of hydatid cysts bursting.