VIII Phylum Acanthocephala (Chapter 31) 2005

A. Characteristics (Figs. 32-1 & 32-3)
1. ACANTHO = thorn; CEPHALA = head
2. PROBOSCIS
   a. Bears hooks or spines
   b. May be bulb-like
   c. Imbedded in host as an anchor

Photo Slide #1: Scanning Electron Micrograph of an Acanthocephalan Proboscis

3. Trunk
   a. No digestive system
   b. No heart
   c. LACUNAR SYSTEM (p. 494)
      (1) Gives cells access to host fluids
      (2) Probably helps evert proboscis
      (3) Branch throughout body and open onto surface of worm

Photo Slide #2: Lacuna System of the Acanthocephala; Figs. 32.5 & 32.6, p. 498

4. Reproduction (pp. 496-98)
   a. Females usually bigger than males
   b. Only body opening is a posterior gonopore
   c. CEMENT GLANDS
      (1) Male seals off female gonopore after copulation
          (a) Prevents escape of sperm
          (b) Prevents other males from copulating with female

Photo Slide #3: Basic Morphology of the Acanthocephala; Fig. 32.3, p. 496
   (2) Homosexual rape?
      (a) Males have been observed to seal gonopores of other males
      (b) Reduce competition for mates (= form of castration?)

B. Life Cycle

1. Adults
   a. In lumen of vertebrates
   b. Move around digestive tract (proboscis can be removed)

2. Eggs
   a. Some mimic phytoplankton
   b. Eaten by arthropods which become intermediate hosts
      (1) Crustaceans in aquatic systems
      (2) Insects in terrestrial systems

3. CYSTACANTH or ACANTHOR are cysts in intermediate hosts

4. Paratenesis common
   (1) Young cystacanths become cystacanths (not adults) if intermediate host eaten by predator unsuitable for adult stage
   (2) A host species can serve as both definitive and intermediate hosts

4 Flexibility in life cycle increases likelihood that . . .
   (1) Adult stage will occur in top predators of ecosystem
   (2) Species will be widely distributed
5. No asexual reproduction: 1 egg = 1 cystacanth = 1 adult

C. Important species

1. *Macracanthorhynchus hirudinaceus* (p. 502)
   a. Adults infect pigs and sometimes humans
   b. Intermediate hosts are scarab beetles

2. *Polymorphus minutus.*
   a. Adults parasitize chickens and water fowl
   b. Intermediate host is a crustacean amphipod
      (1) Parasitic castration
          (a) Intermediate hosts do not mature
          (b) Intermediate hosts attain a greater size than uninfected
      (2) Behavior of intermediate host changed when infected
          (a) Stay at surface
          (b) Twirl

3. *Neoechinorhynchus*
   a. Occurs in over 40 species of fish
      (1) Most hosts are freshwater
      (2) Found in North America, Europe, & Asia
   b. Evolutionary question: How can this parasite have such a wide distribution, if their hosts live in freshwater habitats that are isolated from one another by salt water?
      (1) Paratenesis enables a great diversity of hosts
      (2) Some hosts migrate in and out of marine and fresh water environments
          (a) Trout
          (b) Salmon