Chapter 25
Animals: The Invertebrates

I. Overview of the Animal Kingdom

A. General Characteristics of Animals

1. Animals are _____ (diploid) with tissues arranged into organs and organ systems.

2. Animals are _____.

3. Animals require _____ for aerobic respiration.

4. Animals reproduce _____, and in some cases asexually, or both.

5. Most animals are _____ during at least part of their life cycle.

6. Animal life cycles include a period of embryonic development; germ tissue levels give rise to adult organs.

B. Diversity in Body Plans

1. Animals with backbones are _____; those without a backbone are invertebrates.

2. Body Symmetry and Cephalization

3. Type of Gut

4. Body Cavities

5. Segmentation

II. Phylum Porifera - Sponges

A. Sponges are mostly _____animals of widely varying size and shape.

B. Sponges have an _____ body with no true tissues, no organs.

1. Special cells ( ) trap food particles.

C. Reproduction

III. Phylum Cnidaria
A. Habitat
- 1. Mostly marine; few freshwater

B. Characteristics

C. Body Plans and Life Cycle

D. Examples

IV. Acoelomate Animals

A. Animals from flatworms to humans have _____.

1. An organ is a grouping of tissues arranged to perform a specialized function.

B. Phylum Platyhelminthes (Flatworms)

C. Examples
1. Planaria
Characteristics

_____.

_____ – tiny branched tubes that regulate body fluid volume and composition.

2. *Clonorchis* (Chinese Liver Fluke)

-
-
- Intermediate host – snails and fish

- 3. Tapeworms
  - Internal parasites of vertebrates
  - Lack a digestive tract – take in _____ food
  - Attach to _____ wall
  - Older segments contain and break off
  - Eggs leave the body in the feces
  - Intermediate host picks up the feces
  - Humans eat _____ pork, fish or beef

V. Phylum Nematoda (Roundworms)

A. Characterisitcs

- 1. some are _____, some are parasitic
- 2. _____ symmetry
- 3. _____ digestive tract
- 4. pseudocoelomates
- 5. usually tapered at both ends

B. Examples

1. Pinworm

2. *Ascaris*
   - Orient, Germany -Uncooked veggies from this region can pose a threat
   - Found in association with poor personal hygiene, poor sanitation, and in places where human feces are used as fertilizer

- Symptoms
  - Malnutrition, underdevelopment
  - _____, _____, asthma, insomnia

VI. Protostomes and Deuterostomes

A. Protostomes

Mollusks, annelids, and arthropods

Early embryonic cell divisions are "_____"; called spiral cleavage

In the ball shaped early embryo, the first indentation becomes the _____.

B. Deuterostomes: echinoderms and chordates

- The zygote divides symmetrically; this is called _____ cleavage
- The first opening becomes the _____; the mouth develops from a second opening.

VII. Phylum Mollusca

A. Characterisitics

- 1. bilateral symmetry
- 2. _____.
- 3. coelomates
- 4. common features include: head, _____, _____, mantle, gills, and radula

VIII. Phylum Annelida

A. Characteristics

- 1. _____ evidenced on the surface as "rings"
- 2. _____ symmetry
- 3. _____ (bristles) which project directly from the body – may be few or many in number

B. Examples

IX. Arthropods

A. Arthropod Diversity

1. Largest and most diverse phyla
2. Divided into four subphyla
   - Trilobites: now extinct
   - _____: horseshoe crabs, spiders, scorpions, ticks, and mites
   - _____: copepods, crabs, lobsters, shrimps, barnacles
   - _____: centipedes, millipedes, insects.

B. Characteristics

1. Hardened exoskeleton:

   a. _____ is a combination of protein and chitin
   Flexible, lightweight, and protective

   b. Barrier to _____ loss

   c. Restrict _____ and must be shed periodically (molting process)

2. Jointed appendages

   - a. _____ become specialized for feeding, sensing, locomotion, sperm transfer and spinning silk.

3. Fused and modified segments:

   - a. Segments become more _____, reduced in number, and grouped together.

4. Respiratory structures

   - a. Special tubes called _____ supply oxygen directly to body tissues for land arthropods
   - b. Allows high _____ rates and sustained activity

5. Specialized sensory structures

6. Division of Labor

- _____ – process of change from larva to adult.

C. Subphylum Chelicerata

1. Includes horseshoe crab and arachnids

2. Mites can be serious pests of plants and animals
_____ disease and Rocky Mountain spotted fever

3. The chelicerate body bears _____ legs plus a pair of chelicerae to pierce prey and a pair of pedipalps to manipulate the food (or sperm transfer).

D. Subphylum Crustacea

1. Shrimps, crayfishes, crabs, barnacles.

E. Subphylum Uniramia
A. Millipedes are cylindrical, slow-moving vegetarians.

B.

C. Insects
- 1. Body is divided into _____ regions: head (sensory and feeding); thorax (locomotion by six legs, tow pairs of wings) and abdomen.

- 2. _____ process metabolic waste and aid in water retention.

- 3. Great success – metamorphosis and flight

X. Phylum Echinodermata

- A. Characteristics
  - 1. Coelomates

  - 2.

  - 3.Adults are _____ symmetrical; larvae are bilateral.

  - 4. Sea stars can evert their stomachs when feeding.

- B. Water Vascular System
  - 1. Operates the tube feet by contracting each one to achieve a suction useful in locomotion and prey capture

- End of Chapter 25