Nematoda

Round worms

Feeding and Parasitism
Nematoda

- Have pseudocoelom
- Live in many environments
- Parasitic
- Important decomposers
- Covered with cuticle
- *Trichinella spiralis* see fig 18.8B
Nematode Diets and Mouths

microbivore  plant parasites  predators
Trichinella spiralis

Figure 18.8

• Juvenile worms live in undercooked pork
• You eat them - the develop into adults in your intestines
• They find their way into your heart muscle and other muscle causing damage
• Cook your meat!
Phylum Mollusca

Soft bodied animals with shells
And
diverse body forms
Phylum Mollusca

- Name means “soft-shelled nut”
- Snail, clams, oysters, octopuses and squids
- Feeding habits:
  - Scrapers and suspension feeders (rarely, carnivores)
Important Mollusk Features

Campbell 18.9

- **muscular foot** - posterior, ventral, locomotory
- **mantle** - dorsal epidermis that makes the shell
  - also encloses the body in a **mantle cavity**
  - ciliated mantle cavity helps with respiration and sometimes feeding
- **radula** - tongue-like scraper used for feeding
Mollusk Body Designs
Campbell Fig.'s 18.9B-F
Mollusk diversity

chitons
Mollusk diversity

Nautilus

Sea slug

Squid
Giant Squid!

Artituthus can be 30 ft+
Complex Squid Behavior

- shell reduced to pen
- mood and camouflage colors
- ink for concealment
Segmentation

- Most animals have segmented bodies
- Subdivision of body into repeated parts
  - Nervous, circulatory, excretory organs
- Provides flexibility, and mobility
Phylum Annelida

Segmented Worms
Types of annelids

• Earthworms - Terrestrial soil worms
• Polychaetes - Marine sand worms - have appendages
• Leeches - fresh water - parasitic!
  - *Hirudo medicinalis*
Earthworms

- Soil annelids
- Process soil by digesting the organic matter there
- Improve its texture
- See the segments

Campbell 18.10
Polychaetes

segment or repeating body unit has appendages and bristles
Polychaete Diversity

- surface deposit-feeder
- lug worm (deposit-feeder)(filter-feeder)
- paper tube worm (filter-feeder)
- sand worm (carnivore)
Leech Anatomy
Leech Diversity
Arthropoda

The Most Successful Phylum
Diversity of Arthropoda

• > 2,000,000 species (estimated)
  - our worst pests and valuable helpers
Arthropod Characteristics

- jointed appendages
  - Walking, feeding, reproduction
- chitinous cuticle thickened to exoskeleton
- Molting
  - Shed old skin to allow body growth
- SEGMENTS ARE FUSED!
Cuticle

• mainly chitin
  - tough, flexible, covering
  - stiffened with calcium carbonate in some arthropods
  - permeable but resists chemicals
  - waterproofed with waxes in insects

• protection, support, muscle attachment
Campbell fig 18.12A

- Cephalothorax
- Abdomen
- Antennae (sensory reception)
- Thorax
- Head
- Swimming appendages
- Pincer (defense)
- Mouthparts (feeding)
- Walking legs

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Arthropod Groups

- Horseshoe crabs
- Arachnids
- Crustaceans
- Centipedes and millipedes
- Insects
Arthropoda diversity

compare Campbell Fig. 18.12B-E

Arachnids

Millipede

Crustacea

Horseshoe crab
Common Features of insects

- Three part body
  - Head - antenna, eyes, mouthparts
  - Thorax - legs and wings
  - Abdomen
Incomplete Metamorphosis

- Young resemble adults with different body proportions
- Wingpads visible in larvae
Complete Metamorphosis

larval stages specialized for eating and look different from the adult forms

beetle

egg
larvae
pupa
adult

ant

adult
larva
pupa
adult
Insect Diversity

- Dragon and damselflies
- Waterstriders
- Moths
- Mosquitos
- Bees, wasps
- Beetles
Echinodermata

Spiny-skinned
Sea Animals
Apparent Radial Symmetry

Fig. 18.14A

sea star

like spokes of a wheel
Echinoderm Habitat

• entirely marine
• larvae are planktonic and Bilateral
• adults are entirely benthic
  - but most adults can crawl, and tend back toward bilateral symmetry
Water Vascular System

• unique to echinoderms
• used for locomotion and food-gathering

Components:
• Water filled canals
• tube feet
Tube Feet of Sea Star

equipped with:
internal ampulla,
valves,
and many tiny
muscles

connector to
a radial canal
Starfish Anatomy
Campbell Fig. 18.14A

- Pyloric stomach
- Cardiac stomach
- Bony internal skeleton
- Elements of water vascular system
Reproduction

• mostly sexual but sea stars can regenerate severed arms
• some kinds can break apart and re-grow into two

sea star, regenerating arms
Sea Stars or Starfish
Campbell Fig. 18.14A
Sea urchins and Sand dollars
compare Campbell Fig. 18.14C

**sea urchin**

**sand dollar**

some have poisonous spines
Brittle or Serpent Stars

Scavengers and passive suspension-feeders
Feather Stars or Sea Lilies

passive filter-feeders
Sea Cucumbers

- tentacles
- tube feet
- suspension-feeder
- deposit-feeder