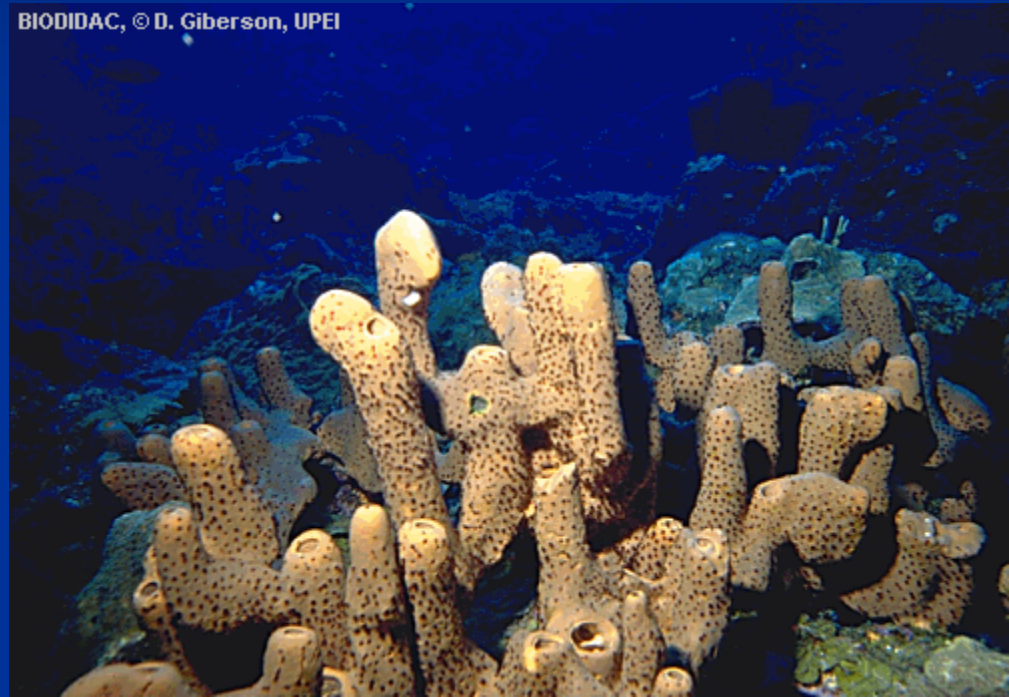# Invertebrates

Porifera

- Examples: sponges
- Characteristics:
  - Name means pore-bearer
  - Lack symmetry
  - Lack true tissues
  - Adults are sessile (do not move)
  - Can regenerate
  - Filter feed
- Structures:
  - Skeleton is made of spicules

BIODIDAC, © D. Giberson, UPEI
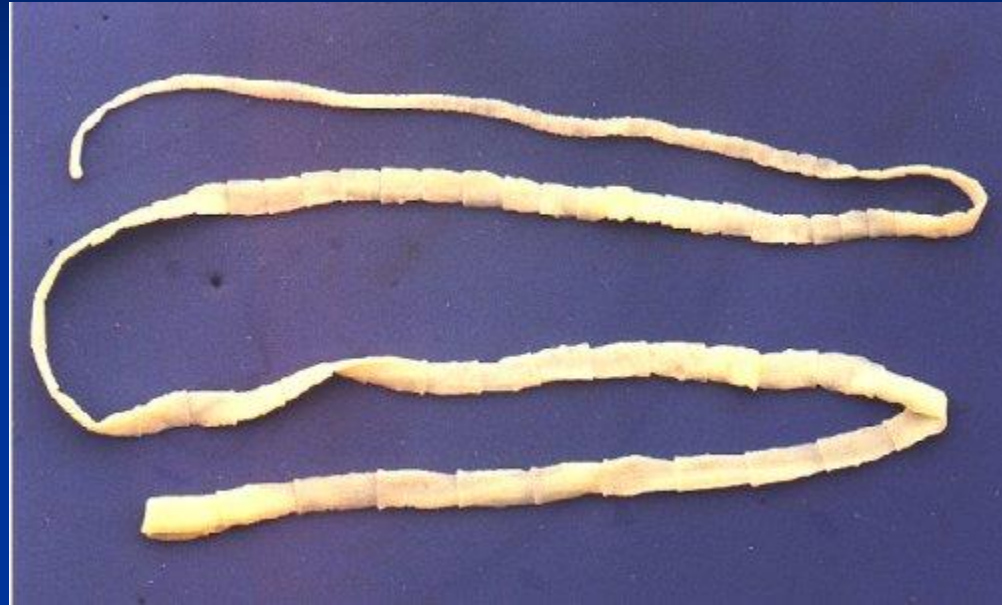
Cnidaria

- Examples: jellyfish, sea anemones, hydra, coral
- Characteristics:
    - Radially symmetrical
    - Only 2 germ layers (ectoderm, endoderm)
    - One opening digestive tract
    - Body plan: medusa or polyp
- Structures:
    - Nerve net
    - Cnidocytes (stinging cells) and nematocysts (trigger) for defense
    - Gelatinous
    - Tentacles surround the mouth

Platyhelminthes

- Example: flukes, tapeworms
- Characteristics:
  - Simplest animals with bilateral symmetry and cephalization
  - 3 germ layers
  - Digestive tract with one opening
  - Some are parasitic (flukes, tapeworms)
- Structures:
  - Flat and ribbon like body
  - Lack true segments

Nematoda

- Examples: Roundworms, hookworms
- Characteristics:
  - Bilaterally symmetrical
  - 3 germ layers
  - Cephalization (sensory organs and nerve cells located at anterior end of the body)
  - Digestive tract with two openings
  - Parasitic
  - *C. elegans* – used for developmental biology research
- Structure:
  - Long, slender bodies tapered at both ends
  - Covered by protective layer called a cuticle

Rotifera

- Examples: Rotifers
- Characteristics:
  - Bilaterally symmetrical
  - 3 germ layers
  - Digestive tract with two openings
  - Transparent
  - Almost all live in freshwater
- Structure:
  - Crown of cilia around the mouth

Mollusca

- Examples: Mollusks (clams, snails, octopus, squid, mussels)
- Characteristics:
  - Name means "soft"
  - Bilaterally symmetrical
  - 3 germ layers
  - Digestive tract with two openings
- Structures:
  - Rasping tongue called radula
  - Most have external shells made of calcium carbonate
  - Gills

Annelida

- Examples: Earthworms, leeches
- Characteristics:
  - Name means "little rings"
  - Bilaterally symmetrical
  - 3 germ layers
  - Digestive tract with two openings
- Structures:
  - Segmented worms
  - Closed circulatory system

Arthropoda

- Examples: Shrimp, crab, spiders, scorpions, ticks, millipedes, centipedes
- Characteristics:
  - Name means jointed foot
  - Bilaterally symmetrical
  - 3 germ layers
  - Digestive tract with two openings
  - Molt
- Structures:
  - Segmented bodies with paired, jointed appendages
  - Chitinous exoskeleton
  - High degree of cephalization
  - Most have compound eyes

Echinodermata

- Examples: Sea stars, sand dollars, sea urchins, sea cucumbers
- Characteristics:
  - Name means spiny skin
  - Pentaradially symmetrical
  - Regenerate
- Structures:
  - Nerve ring
  - Tube feet