# Chapter 26-Animalia I

1. Overview of the Animal Kingdom

A. Branches of the Animal Kingdom

1. Invertebrates

1. Do NOT have a spinal column (\_\_\_\_\_)
2. Insects and sea creatures
3. \_\_\_\_\_ animals are invertebrates

2. Vertebrates

1. Have a \_\_\_\_\_ (backbone)
2. Mammals and Birds

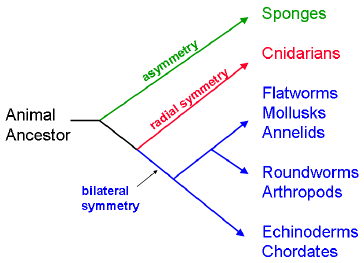
3. \_\_\_\_\_: Study of Animals

B. Characteristics of Animals

1. M\_\_\_\_\_
2. E\_\_\_\_\_
3. No cell \_\_\_\_\_
4. Ingestive Heterotrophs (take in food and \_\_\_\_\_ digest it)
5. Go through \_\_\_\_\_ stage of development
6. Most adult animals are diploid and reproduce \_\_\_\_\_ by eggs and sperm
7. are produced by meiosis
8. are the only \_\_\_\_\_ cells
9. \_\_\_\_\_ fuse during \_\_\_\_\_ to form a \_\_\_\_\_.
10. The zygote divides into cells.
11. The zygote divides by \_\_\_\_\_ to form a \_\_\_\_\_ ball of cells called a \_\_\_\_\_.
12. One side of the blastula folds in and cells become rearranged to form a \_\_\_\_\_. The gastrula forms \_\_\_\_\_ Embryonic Layers
13. \_\_\_\_\_ – forms a lining of the future \_\_\_\_\_ tract.
14. \_\_\_\_\_ – forms an \_\_\_\_\_ layer that will give rise to the \_\_\_\_\_ and \_\_\_\_\_ system.
15. \_\_\_\_\_ – forms a middle layer that will give rise to \_\_\_\_\_ and most internal \_\_\_\_\_.
16. Maturation
17. After the gastrula stage, many vertebrate animals develop directly into \_\_\_\_\_.
18. Invertebrate and some vertebrate animals do NOT develop directly into adults.
19. Some animals, such as the sea star, develop into one or more \_\_\_\_\_ stages.
20. A Larva is an \_\_\_\_\_ individual that looks \_\_\_\_\_ from the \_\_\_\_\_ animal.
21. A larva undergoes a major change in body form, \_\_\_\_\_. It becomes a mature adult that can \_\_\_\_\_.
22. Animal Diversity

* 1. According to the Bible (Genesis 1:20-31)
  2. According to Evolution
     1. Animals are believed to have descended from an \_\_\_\_\_.
     2. Most of today’s phyla of animals are believe to have appeared for the first time in the geological column during a period called the “\_\_\_\_\_.”

1. Animal Body Plan
2. Presence of True \_\_\_\_\_
   * + 1. Presence or absence of true tissues separates animals into two groups:
          1. \_\_\_\_\_ (simplest animals): \_\_\_ true tissues
          2. Animals \_\_\_\_\_ true tissues
3. Tissues are an integrated group of cells that share a common \_\_\_\_\_ and a common \_\_\_\_\_.
   1. For example, epithelial, connective, nervous or muscle tissue).
4. Body Symmetry
5. \_\_\_\_\_ is the arrangement of body parts around a \_\_\_\_\_ or axis.
6. \_\_\_\_\_ occurs when the body can’t be divided into \_\_\_\_\_ parts (sponges).
7. \_\_\_\_\_ Symmetry:
8. Occurs when body parts are arranged around a \_\_\_\_\_ point lie spokes on a wheel (jellyfish, sea stars, sea urchins).
9. Most animals with radial symmetry are \_\_\_\_\_ (attached) or \_\_\_\_\_ (move very little).
10. \_\_\_\_\_ Symmetry
11. Occurs when animals can be divided into \_\_\_\_\_ along a single plane.
12. Organisms will have \_\_\_\_\_ and \_\_\_\_\_ sides that are mirror images of each other.
13. Animals with bilateral symmetry are usually \_\_\_\_\_ and have \_\_\_\_\_ and \_\_\_\_\_ ends.
14. Show \_\_\_\_\_ (tendency to concentrate \_\_\_\_\_ organs and a \_\_\_\_\_ at the head or anterior end)



1. \_\_\_\_\_ Development
   * + 1. 2 or 3 Germ Layers
2. In animals with \_\_\_\_\_, the blastula folds in on itself to generate the \_\_\_\_\_.
3. Gastrulas of \_\_\_\_\_ (jellyfishes and their relatives) have two germ layers:
4. \_\_\_\_\_: outside
5. \_\_\_\_\_: inside
6. All other animals with true tissues have a third tissue layer: \_\_\_\_\_: Between the ectoderm and endoderm.

2. Germ layers: form all of the body’s tissues and organs. The gastrula forms three Embryonic Layers

1. endoderm – forms a lining of the future \_\_\_\_\_ tract.
2. \_\_\_\_\_ – forms an outer layer that will give rise to the \_\_\_\_\_ & \_\_\_\_\_ system.
3. mesoderm – forms a \_\_\_\_\_ layer that will give rise to \_\_\_\_\_ and most internal \_\_\_\_\_.
4. Animals with 3 tissue layers are divided into 2 groups: \_\_\_\_\_ and \_\_\_\_\_.
   1. Protostomes
5. If the Gastrula’s first indentation forms into a \_\_\_\_\_.
6. Example: \_\_\_\_\_, \_\_\_\_\_
   1. Deuterostomes

If the Gastrula’s first indentation forms into the \_\_\_\_\_.

Example: \_\_\_\_\_, \_\_\_\_\_

1. Body Cavity (\_\_\_\_\_)
   * + 1. Most animals with 3 tissue layers have a Body Cavity or Coelom:
2. Fluid-filled \_\_\_\_\_ between the outer body wall (ectoderm) and the digestive tube (endoderm) in which the internal \_\_\_\_\_ are suspended.
3. This body cavity helps protect the suspended organs from \_\_\_\_\_.
   * + 1. Embryonic development: body cavity (helps protect organs from injury).

3. Types of Organisms

1. \_\_\_\_\_ (No Coelom)

* Animals that have no internal, fluid-filled body cavity separating its body wall from its digestive tract. E.g. Platyhelminthes (\_\_\_\_\_)

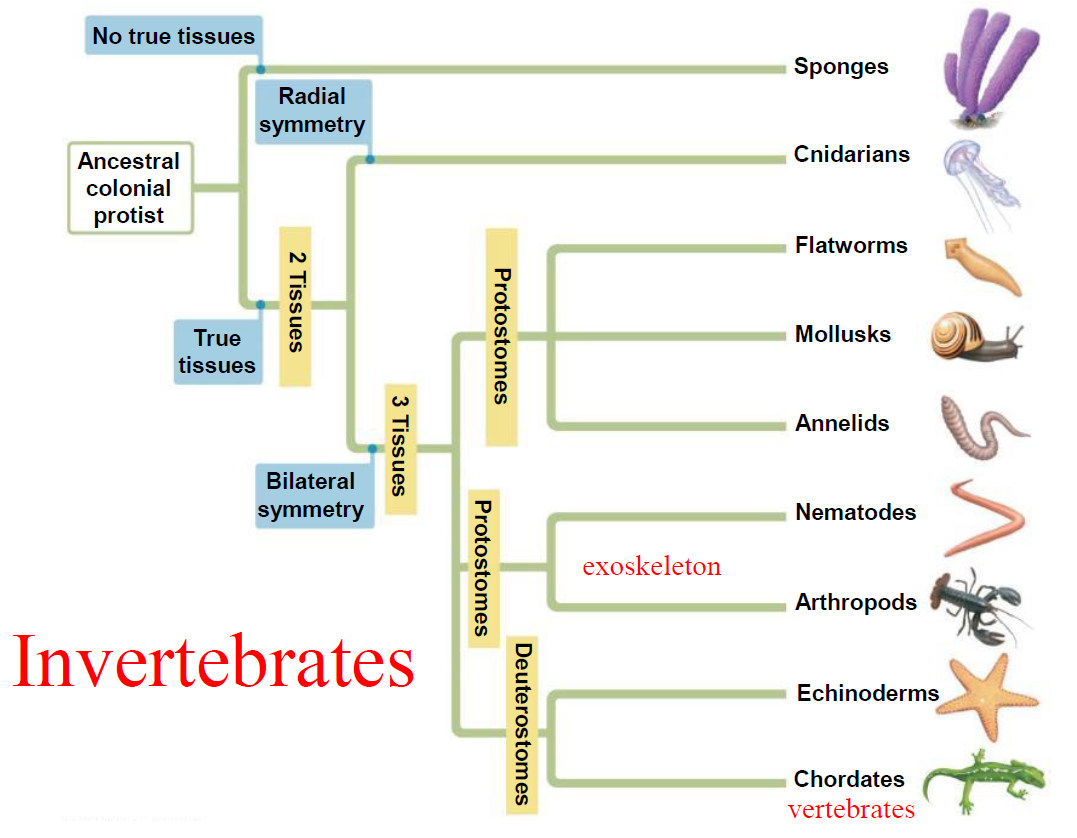
1. \_\_\_\_\_

* Organisms with body cavity lined with patches of mesoderm, but not derived from the mesoderm, as in a true coelom, or body cavity. E.g. \_\_\_\_\_ (round worms)

1. \_\_\_\_\_

* Organisms with a body \_\_\_\_\_, (“True Coelom”) that is derived from and lined with \_\_\_\_\_.

1. Invertebrates
   1. Characteristics
      1. “Simplest” animals
      2. Contain the \_\_\_\_\_ number of different \_\_\_\_\_.
      3. Do \_\_\_ have a backbone.
      4. Includes \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.
   2. Phyla Chart Summary



V. Phylum \_\_\_\_\_ (Sponges)

A. Characteristics

1. The Porifera may be defined as an \_\_\_\_\_ or somewhat radially symmetrical, multicellular organism with a cellular grade of an organization \_\_\_\_\_ true \_\_\_\_\_ and organs.
2. Simplest of all animals

* Lack true tissues and organs

1. \_\_\_\_\_, mostly marine
2. Lack body symmetry (\_\_\_\_\_)
3. Hollow, \_\_\_\_\_ bodies
4. \_\_\_\_\_: generally remain anchored to their substrate.

B. Anatomy & Features

1. Body wall has outer layer of flattened cells and inner layer of flagellated “\_\_\_\_\_ cells”.
2. Between these two layers is a jelly-like matrix that has many types of cells embedded in it (amoebocytes). These cells digest food, store and transport nutrients, etc.
3. Porifera do \_\_\_\_\_ have a \_\_\_\_\_ system.
4. Porifera have no coelom (\_\_\_\_\_).
5. Porifera have no real body layers but they do have 2 cell layers;
6. an outer layer that makes up the \_\_\_\_\_
7. an inner layer that makes the inner \_\_\_\_\_.
8. Porifera have specialized cells called choanocytes (\_\_\_\_\_ cells).  Collar cells with cytoplasm covered flagella that help to provide water’s flow.
9. \_\_\_\_\_ are cells that perform similar tasks of a circulatory system and store nutrients.
10. \_\_\_\_\_ Feeders
11. Movement of flagella on collar cells produces a current of water into the sponge’s central cavity.
12. Food particles are trapped and distributed to other cells.
13. \_\_\_\_\_ and \_\_\_\_\_ exit through a large hole at the top.
14. Porifera have both \_\_\_\_\_ and \_\_\_\_\_ reproduction.
15. \_\_\_\_\_
16. Possess & release \_\_\_\_\_ eggs and sperm into the water (\_\_\_\_\_ reproduction).
17. Sponges can reproduce asexually by \_\_\_\_\_ … the unique ability of regeneration, a form of \_\_\_\_\_ reproduction. E.g. injury
18. “\_\_\_\_\_”
19. \_\_\_\_\_ are microscopic crystalline structures that give \_\_\_\_\_ and form.
20. Some spicules have toxic \_\_\_\_\_ that help deter predators or catch \_\_\_\_\_.

VI. Phylum \_\_\_\_\_ (Includes hydras, jellyfish, coral, sea anemones)

A. Characteristics

1. Aquatic (mostly marine)
2. \_\_\_\_\_ symmetry
3. Body Plans: 2 Tissue Layers
4. \_\_\_\_\_ 🡪 protective & sensory
5. Endoderm 🡪 nutritive, glandular, \_\_\_\_\_
6. \_\_\_glea 🡪 nerve network
7. Gastrovascular cavity 🡪 2-way digestion
8. \_\_\_\_\_
9. \_\_\_\_\_ surrounded by tentacles.
10. \_\_\_\_\_: (stinging cells)

B. Feeding Habits

1. Food is grabbed by tentacles and paralyzed with \_\_\_\_\_ to sting predators and prey.
2. \_\_\_\_\_ (stinging cells) found in the Tentacles. Each has a Nematocyst that has a coiled, harpoon-like stinger that shoots out when triggered.

C. Life Forms

1. \_\_\_\_\_: mouth directed upward; hydra, Coral
2. \_\_\_\_\_: mouth directed downward; Jellyfish

D. Digestion

1. Cnidarians have an \_\_\_\_\_ digestive system with only \_\_\_ opening; the gastrovascular cavity serves as both a mouth and an anus.
2. Cnidarians carry out \_\_\_\_\_ digestion, where enzymes break down the food particles and cells lining the gastrovascular cavity absorb the nutrients.
3. An advantage of extracellular digestion is the capacity to eat \_\_\_\_\_ food particles.

E. Reproduction

1. Cnidarians reproduce both \_\_\_\_\_ and \_\_\_\_\_.
2. Some species can produce both eggs and sperm in the same organism. These organisms are called simultaneous \_\_\_\_\_ and release gametes into the ocean in egg-sperm bundles.
3. Some species are also either male or female and produce either eggs or sperm.