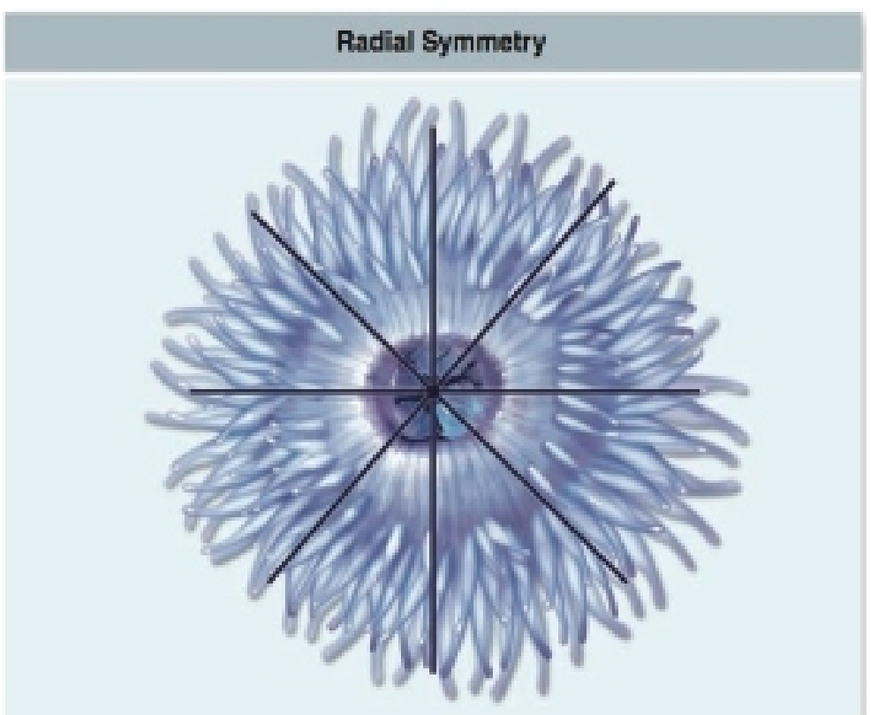
Exam 2 Study Guide

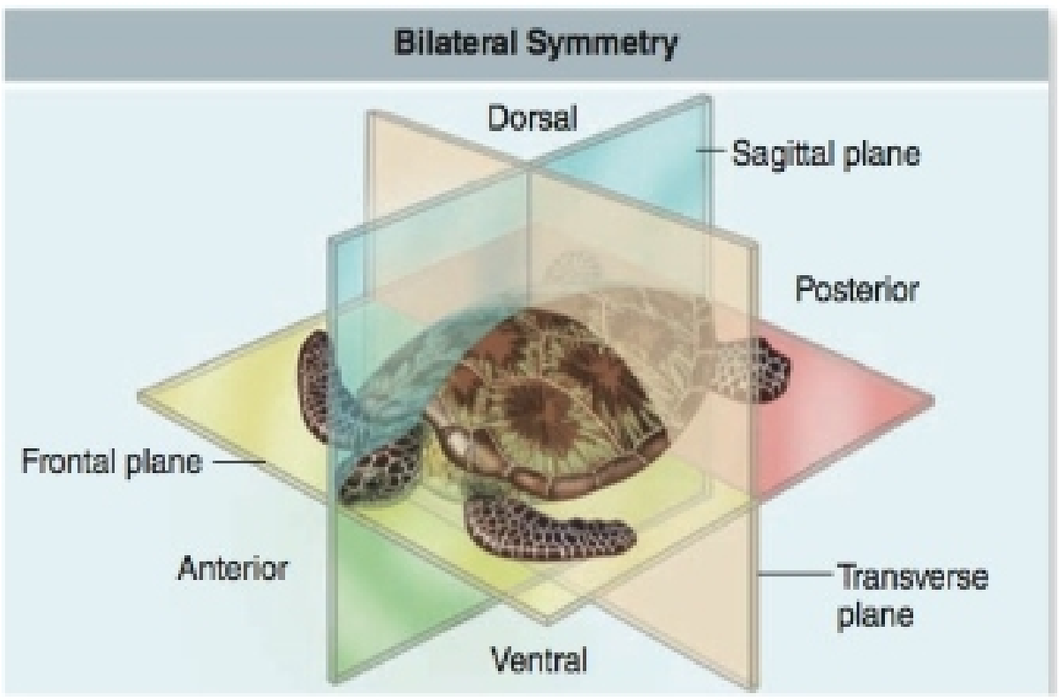
The Animals

<u>Intro to Animals & Primitive Invertebrates – Chapter 33</u>

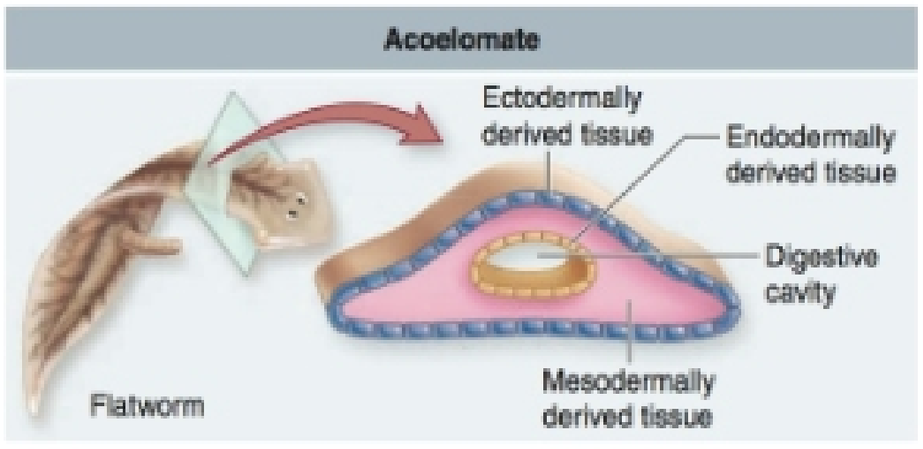
1. Identify three features that characterize all/most animals.
    - Heterotrophy – obtain energy and organic molecules by ingesting other organisms
    - Multicellularity – many have complex bodies
    - No cell walls – lack rigid cell walls and are usually flexible
    - Active movement – move more rapidly and in more complex ways
    - Diversity of form – vary greatly in form, ranging in size from microscopic to enormous
    - Diversity of habitat – grouped into 35-40 phyla, most occur only in the sea, many in fresh water, some on land
    - Sexual reproduction – most animals reproduce sexually, animal eggs = immobile
    - Embryonic development – zygote → undergoes a series of mitotic divisions → ball of cells
    - Tissues – cells of most animals are organized into structural and functional units called tissues
2. Categorize various body plans
    - Evolution of Symmetry
        - Sponges lack definite symmetry
        - Eumetazoa – symmetry defined along an imaginary axis drawn through the animal's body
        - Types of symmetry
            - Radial
                - Body parts arranged around central axis
                - Can be bisected into two equal halves on any 2-D plane



- Bilateral
    - Body has right and left halves
    - Only the sagittal plane bisects animal into two equal halves
    - Advantages
        - → Cephalization – evolution of definite brain area
        - → Greater mobility



- Evolution of Tissues
    - Parazoa (sponges) lack defined tissues + organs
        - Ability to disaggregate and aggregate cells
    - Eumetazoa (all other animals) have distinct and well defined tissues
        - Have irreversible differentiation for most cell types
- Evolution of a body cavity
    - Eumetazoa has 3 germ layers
        - Ectoderm – outer (body coverings and nervous system)
        - Mesoderm – middle (skeleton and muscles)
        - Endoderm – inner (digestive organs and intestines)
    - Acoelomate → no body cavity



- Pseudocoelomate → body cavity between mesoderm and endoderm