

BIOL 1104 Barstow Test # 2

Thursday

January 31

Dr. Barstow stated Exam 2 would be very similar in difficulty and style to Exam 1. Be sure to read the book thoroughly and study review questions in depth in addition to understanding the notes.

Chapter 17–The Evolution of Animals

Zoologists estimate that about a billion billion (10^{18}) individual arthropods populate Earth.

- The blue whale is the largest animal that has ever existed.
- A reptile can survive on less than 10% of the calories required by a mammal of equivalent size.
- Tapeworms can reach lengths of 20 meters in the human intestine.

Biology and Society: You're Going to Treat Me with What!?

- In January 2004, the U.S. Food and Drug Administration (FDA) approved various species to be used as treatment upon humans.
- Doctors were given permission to use blowfly maggots
 - The infected white blood cells were cleaned up by blowfly maggots.
 - Leeches could have medicinal properties.

What is an Animal?

- Animals
 - Eukaryotic, multicellular, heterotrophic organisms that obtain nutrients by ingestion.

- Digest food in some sort of gut.
 - The proteins are broken down and transformed into amino acids. Carbohydrates are broken down to simple monosaturates (glucose).
 - Organisms that have digested other organisms compose what our body is made of. Dinosaurs are included in this cycle. In addition, we cannot exist without photosynthesis and plants.
- Require oxygen for aerobic respiration.
- Circulates to the cells digested food and oxygen.
 - This is done so that it can either be used for energy or to build up more tissue.
 - Our heart, circulatory system, and the use of oxygen are required to bring nutrients through the body.
- Excretes wastes of metabolism.
 - Urea is a waste product of metabolism which must be excreted. Kidneys, in human bodies, perform this function.
- Reproduce sexually—meiosis produces gametes.
 - Figure 17.3 in textbook
- MOST have contractile cells (in our case, muscle cells), as well as nerve cells that control the muscles.
 - All of our movement is coordinated by nerves and our brain, which control the vast majority of our bodily function.
- No cell walls.
 - All organisms have a cell membrane. Plants, prokaryotes, and some protists have cell walls.
 - An amoeba is not classified as an animal because it is not multicellular.

- Must keep cells moist.
 - They have an outer skin that keeps the moisture inside.
- Develop from embryos.
- Most animals reproduce sexually and then proceed through a series of developmental stages.

Characteristics used in classifying animals:

1. Cells: multicellular

- Potential Test Question: Which of these characteristics don't belong?
(if the list includes unicellular, it is wrong)

2. Symmetry: asymmetric, radial, bilateral

- Figure 17.7 in textbook.

A.) Radial Symmetry

- Example: Evenly dividing a flower pot into four equal pieces.

B.) Bilateral Symmetry

- Example: Evenly splitting a shovel in half from top to bottom.

3. Germ layers: none, two-diploblastic, three-triploblastic

- The inner layer (first layer) is called the endoderm.
- The second layer is called the mesoderm.
- The third layer is the ectoderm.
 - If you only have the endoderm and the ectoderm, you are said to be diploblastic. If you have all three (endoderm, mesoderm, and ectoderm), then you are said to be triploblastic. This is important.

4. Digestive cavity: One opening (incomplete), Two openings (complete)
 - If a worm has one opening for mouth and waste, then it has one opening. If a worm has two openings (the mouth and the anus), one on each end of its body, then it has two openings.
5. Development: Protostome (mouth first) or Deuterostome (anus first).
 - All vertebrates use the Deuterostome development.
6. Coelom: Acoelomate, Pseudocoelom, Coelomate.
 - If you were to open up the chest of a human being, there is a covering on top, and below it, there is a space which is called a coelom.
 - In different worms, varying forms of this are present.
 - A.) No body cavity
 - For example: Flatworm
 - B.) Pseudocoelom
 - For example: Roundworm
 - C.) True coelom
 - Lined by mesoderm on both sides (as opposed to a pseudocoelom). This is important to know.
7. Skeleton: Internal, External.
8. Nerve Cord: Ventral, Dorsal.
 - Ventral—nerve cord that runs down the front chest of the species. This is common in invertebrates.
 - Dorsal—running down the back side of the species. Most vertebrates have this.