Anatomy of a Life Form, Grades 5 – 12*

Program Description:

Comparative anatomy provides a direct experience with animal structures and encourages students to learn how structure relates to function. This class begins with a brief discussion about organs and systems and their interdependency. The lesson includes a squid dissection. Students are encouraged to consider how the structure of an organism relates to the way its body needs to function.

A more advanced investigation, anatomy in space, is available for grades 7–12. What happens to your bones in space? Students take a closer look at the human skeleton while learning about the effects of microgravity on bones. Students learn to identify disarticulated bones by observing features and size differences. They learn to make height calculations using measurements from one of their long bones. They also look at the cellular level of bone structure in prepared bone tissue slides.

Vocabulary:

anatomy	fins	ink sac	pen
cells	gills	internal	siphon
chromatophores	gonad	lens	stomach
external	heart	mantle	tentacles

Possible Class Activities:

- Introduction: What is anatomy?
- A vocabulary exercise, listing the smallest unit of a life form to the largest.
- Mystery organ — What does it look like? Where do you think it came from?
- Dissection instructions
- Dissection of a life form (squid)
- Closure: What did we find out? This is the time to review highlights of today's investigations and acknowledge any questions that may have arisen as a result.

Pre-Visit Activities (in your classroom):

- Explain reasons for field trip (discuss theme).
- Stress following directions exactly and listening carefully. Dissection labs require a great deal of concentration for best results.
- Review human body organs and systems.
- Introduce vocabulary if appropriate.
- Compare the external features of familiar animals like frogs, newts, and insects. Count

and record how many arms, legs, wings, eyes, etc.

Post-Visit Activities:

- Explore live crayfish and observe their external features.
- Examine bones and notice differences in structure.
- Try dissecting a variety of fish from the market.
- Obtain owl pellets and encourage students to assume roles as scientists on an archeological dig with the task of identifying and reconstructing the recovered bones.
- Use the activity book Blood and Guts: A Working Guide to Your Own Insides by Linda Allison for a broad selection of activities related to anatomy. Visit one of the Web sites for further explorations.

Web Site Reference(s):

Frogs on the Web: Use a mouse to do what? Madeira Schools seventh grade students are using The Interactive Frog Dissection Program that was designed for use in high school biology classrooms.
http://madeira.hccanet.org/JrSrHS/Frog/Frog.html

Virtual Dissections: Follow step-by-step simulated dissections of squid, clams, and even cow's eyes.
http://biology.miningco.com/education/biology/msub21.htm

State of California Science Standards :

Life Sciences
Fifth Grade

2. Plants and animals have structures for respiration, digestion, waste disposal, and transport of materials. As a basis for understanding this concept, students know:

a. many multicellular organisms have specialized structures to support the transport of materials.

b. how blood circulates through the heart chambers, lungs, and body and how carbon dioxide (CO2) and oxygen (O2) are exchanged in the lungs and tissues.

d. the role of the kidney in removing cellular wastes from blood and converting them into urine, which is stored in the bladder.

Seventh Grade

5. The anatomy and physiology of plants and animals illustrate the complementary nature of

structure and function. As a basis for understanding this concept, students know:

a. plants and animals have levels of organization for structure and function, including cells, tissues, organs, organ systems, and the whole organism.

b. organ systems function because of the contributions of individual organs, tissues, and cells. The failure of any part can affect the entire system.

c. how bones and muscles work together to provide a structural framework for movement.

Ninth through Twelfth Grades

9. As a result of the coordinated structures and functions of organ systems, the internal environment of the human body remains relatively stable (homeostatic), despite changes in the outside environment. As a basis for understanding this concept, students know:

b. how the nervous system mediates communication between different parts of the body and interactions with the environment.