COMPARATIVE ANATOMY

Thursdays, September 12-December 12 (no class October 17 or November 28; 12 weeks)
9:30am-11:30am
Ages 14+
Students learn characteristics of protist, invertebrate and vertebrate phyla, basic anatomical terms, microscopy, and safety and dissection procedures as they investigate a range of organisms. Focus is on comparing anatomical features and physiological processes (respiration, digestion, circulation, etc) across various phyla. Dissections are included in this course, however, students do not have to actively participate in the dissections if they prefer not to. All lab costs are included in registration fee. Course enrollment is limited to 12 students.
Instructor: Tonya Shearer, PhD
Location: STEM Lab (suite 21)
Course fee: $330 OR $30/lab
10% off early registration discount through July 31
10% off sibling discount available beginning August 1

LAB SCHEDULE:

Kingdom Protista – Thursday, September 12
Students study and compare the anatomical structure and physiology of microscopic aquatic protists, including *Amoeba*, *Paramecium*, *Euglena* and *Volvox*.

Phyla Porifera and Cnidaria – Thursday, September 19
This week, we investigate the relatively primitive body plans of sponges, coral, anemones and jellyfish, and identify anatomical features used to classify organisms into these animal phyla.

Phyla Platyhelminthes, Annelida and Nematoda – Thursday, September 26
The Worm Lab. Students compare the characteristics of three groups of worms (flatworms, segmented worms and roundworms), and their anatomical differences as we dissect representatives of two worm phyla.

Phylum Arthropoda – Thursday, October 3
Students compare the anatomy of two arthropod classes, Insecta and Crustacea, through observations of living specimens and dissections of preserved grasshoppers and crayfish.

Phylum Mollusca: Class Bivalvia and Gastropoda – Thursday, October 10
In this lab, students study the anatomical similarities and differences in two classes of molluscs, Bivalvia and Gastropoda, to investigate the diversity in body plans and modes of locomotion within this phylum.

Phylum Mollusca: Class Cephalopoda – Thursday, October 24
Another mollusc class is investigated this week, Cephaolopoda, and compared to the body plans and organ systems of other molluscs. Differences in the visual system within this phylum are investigated.

Phylum Echinodermata – Thursday, October 31
Students investigate the external and internal anatomy of echinoderms, including the radially symmetrical body plan observed in most representatives of this phylum. Comparisons of the feeding mechanisms and digestive system are also made within and across invertebrate phyla.

Phylum Chordata: Class Amphibia – Thursday, November 7
In our first vertebrate lab, students study the external and internal anatomical features of a grass frog, *Rana forreri*. Each organ system is investigated and compared to invertebrate systems observed in previous labs.

Phylum Chordata: Class Osteichthyes – Thursday, November 14
Students study bony fish to observe anatomical adaptations allowing them to survive in marine and aquatic habitats. Fish dissections allow students to observe adaptations such as gills and the swim bladder.

Phylum Chordata: Class Chondrichthyes – Thursday, November 21
This week, we compare cartilaginous fish anatomy with bony fish as we investigate how these classes of fish differ from each other. Microscopy and dissection techniques are used to investigate the anatomy of a spiny dogfish shark.

Phylum Chordata: Class Mammalia (nervous and musculoskeletal systems) – Thursday, December 5
In this lab, we investigate the mammalian nervous system by identifying parts of a preserved sheep brain and using microscopes to observe nerve cells. In addition, students conduct chicken wing dissections to study the anatomical structure of muscles, ligaments, tendons and bone.

Phylum Chordata: Class Mammalia (circulatory, urinary and digestive systems) – Thursday, December 12
In our final lab of the course, students investigate the anatomical structure of a mammalian heart, kidney and stomach through dissection and microscopy. We conclude with a general overview of anatomical features, physiological processes and physical adaptations across the phyla we investigated throughout the semester.