

Lab 1

Introduction, Systematics & Classification, Hemichordates, Craniates, Chordates, and Lampreys

Purpose:

Familiarize yourself with the relationships between hemichordates, urochordates, cephalochordates, craniates, and chordates.

Understand the defining features of both chordates and craniates and which of these each different phylum and subphylum has.

Understand terminology regarding classification and basic anatomy.

Introduction, Systematics & Classification (pp. 1-5):

Understand classification of organisms, evolutionary and cladistic systems, difference between homologous and homoplastic characteristics, and anatomical terms. It is especially important to understand how to recognize a monophyletic group, and how to interpret character evolution on a cladogram (e.g., Fig. 1-1). No omissions from this section.

Phylum Hemichordata (pp. 9-11):

Know external anatomy (proboscis, cilia, stalk, mouth, collar, pharyngeal slits, trunk, anus) of the acorn worm. Omit pterobranchs. Know characteristics used in its classification (i.e. why Hemichordata and not Chordata?).

Phylum Chordata: Subphylum Urochordata (pp. 15-18):

Do your best to identify as many structures as possible in the slides. With regard to the practical exams, emphasis should be placed upon structures that are clearly visible and distinguishable in slides and models. However, remember that all slides are unique, and some may show different structures from others because of their different relative positions on the slide. Be sure to examine all of the slides. Be able to identify the structure/function of the mouth, atriopore, pharyngeal slits, endostyle, atrium, mantle, stomach, intestine, and anus. Omit larval structures.

Phylum Chordata: Subphylum Cephalochordata (pp. 21-26):

Learn the general anatomy of amphioxus (also known as lancelet or *Branchiostoma*), using the model and slides. Be able to identify the structure/function of the atriopore, wheel organ, buccal cirri, pharynx, pharyngeal bars, pharyngeal slits, rostrum, hepatic/midgut diverticulum, intestine, myomeres, myosepta, notochord, photoreceptors, dorsal fin, fin ray boxes, vestibule, nerve cord, velum, velar tentacle, ovary, testis, endostyle, metapleural fold, midgut, and the ventral fin.

Phylum Chordata: Subphylum Vertebrata (p. 99):

You will not be tested on natural history information or time periods, since you will likely learn this in the lecture class. However, I strongly recommend that you read it, because it will help you better understand these organisms and their evolution.

Lamprey (pp. 101-118):

Know all external and oral anatomy (dorsal and caudal fins, eyes, nostril, pineal organ, lateral line system, mouth, buccal-funnel, buccal papillae, toothlike organs, gill slits, tongue with teeth). Omit the integumentary system and skeletal system sections. Be able to identify/know the function of the general internal anatomy (olfactory sac, pineal organ, spinal cord, notochord, brain, hypophyseal sac, eye, tongue with teeth, lingual cartilage, kidney, liver, pharynx, dorsal aorta, heart, internal gill slits, myoseptum, myomere, intestine) in adult lampreys, and certain structures/functions (spinal cord, notochord, brain, eye, oral hood, oral lobes, velum, subpharyngeal gland, gill pouch, heart, esophagus, liver, intestine, olfactory vesicle, nostril, gill filaments, gill pouch, myoseptum, myomere, dorsal aorta, epibranchial groove, pharynx, external gill slit) in the ammocoete (larval form).