

Review questions from September 02

Today we began lecture by reviewing the characteristics of, and relationships among, the Deuterostomes. What taxa are sister group to the chordates? Which traits are chordate synapomorphies (shared derived characters)? Which trait is not, and what other groups is it present in?

We then went on to describe the unique features of vertebrates. In order to get a grasp on the evolutionary significance, or importance, of each of these features, you should ask yourself the “what, who, when, where, how, and why” questions that we posed in lecture. For instance, in trying to decipher “how” a feature evolved, we should determine what its evolutionary precursors were, and what type of evolutionary or developmental transformation took place.

We embarked upon our survey of vertebrates by delving into the most ancestral living groups, hagfish and lampreys. We discussed their biology (in terms of diversity & distribution, life history, reproduction, and morphology), and how they compare to one-another along each of these lines. We discussed the ecological impact that lampreys have had in the Great Lakes. What are two aspects of their biology that predispose them to such types of impacts? What started the problem? What “solved” the problem?

Which characteristics of the head skeleton do lampreys and gnathostomes have in common? How about lampreys and hagfish? We then re-visited the unique features of vertebrates to help us determine relationships among these three major groups of vertebrates. Which groups form sister taxa under the traditional view? How about under the new hypothesis? Which characters are synapomorphic to all three groups under both scenarios? Which set of features are unique to gnathostomes?

***Disclaimer:** these review questions are not necessarily comprehensive, nor are they meant to be. They are meant to supplement your lecture notes as you review them, and alert you to the ways in which you should be thinking about the material, and formulate questions to test yourself. Exams will not be limited to the material highlighted in these review questions, so your lecture notes should be your primary reference.*