

Review questions from September 04

Today in lecture we began by reviewing four major vertebrate features; what are these, and what did they originate from? We then segued into how we use the fossil record to determine the order of appearance of different traits, so that we can determine their historical functions.

We discussed two Cambrian (~530 MYA) fossils, *Haikouella* and *Myllokunmingia*. Which vertebrate features do they possess? Which do they lack? Based on their characteristics, what would be the most appropriate phylogenetic placement of each of these organisms, in the contexts of both traditional and new hypotheses? **(Note that the textbook conclusion that *Myllokunmingia* is more closely related to hagfish than it is to lampreys or gnathostomes is WRONG.)**

We then moved onto Conodont fossils, and discussed the evolution of “hard parts” in terms of their derivation, diversity, and functional significance. What are the three major components of external armor? Which of these comprise the skeleton, and which comprise the teeth, in gnathostomes? What are the functions of dermal armor? How do ostracoderms differ from placoderms? Placoderms are associated with the origin of which major evolutionary features?

Describe how jaws originated from a jawless ancestor, in terms of their components and original and derived uses. Why do we think jaws originally evolved—to provide what function?

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.