

NATURAL HISTORY MUSEUM ASSIGNMENT

Answer the following questions based upon a visit to the Denver Museum of Nature and Science.

1. ENTRYWAY: Examine the *Tyrannosaurus rex* skeletal cast in the entryway. What are two characteristics synapomorphic of archosaurs **visible on this cast**? What are two additional characteristics uniquely shared by *T. rex* and modern birds (likely absent in crocodylians) **visible on this cast**?
2. MAIN ATRIUM (HANGING FROM CEILING): Examine the skeleton of the bowhead whale, *Balaena mysticetus*, (it may be a right whale, *Eubalaena glacialis*) hanging from the ceiling. What are three mammalian synapomorphies **visible on this skeleton**? (i.e., Whales are somewhat atypical mammals what are three skeletal characteristics that you could use to identify a whale skeleton as unambiguously belonging to a mammal?)
3. PREHISTORIC JOURNEY – DIVERSITY IN THE SEA: Examine the skeletal cast of the large placoderm, *Dunkleosteus* sp., in the plexiglass case. As the third major groups of gnathostomes (Chondrichthys, Osteichthys, and Placodermi), placoderms are particularly distinctive. Identify two distinct differences between placoderm demal bones and those of osteichthyans **visible on this skeletal cast**.
4. PREHISTORIC JOURNEY – FORESTS AND FLIGHT: Examine the skeletal cast of the fin backed amniote, *Dimetrodon* sp. This group of organisms is closely related to mammals. List the pectoral girdle bones **visible on this skeletal cast**. Identify at least one obvious similarity between these organisms and living mammals **visible on this skeletal cast**.
5. PREHISTORIC JOURNEY – TIME OF THE DINOSAURS 1: Examine the skeletal casts of a variety of dinosaurs. Do all dinosaurs have all the cranial fenestras typical of archosaurs? Provide the names of three dinosaurs with the name of the cranial fenestra(s) that is/are absent.
6. PREHISTORIC JOURNEY – TIME OF THE DINOSAURS 3: Examine the skeletal mounts of the large fish, *Xiphactinus* sp. Is this likely a teleost? What skeletal characteristics allow you to say that?
7. PREHISTORIC JOURNEY – TROPICAL ROCKIES: Examine the range of mammal skeletal specimens on display. Name at least four skeletal characteristics **visible on these skeletal mounts** that allow you to clearly identify these as mammals.
8. PREHISTORIC JOURNEY – EXPANDING GRASSLANDS: Examine the mammoth skeletons and skulls on display. Which teeth (incisors, canines, premolars, or molars) form the tusks? What anatomical characteristic allows you to make this determination?
9. HALL OF LIFE – HOW LIFE BEGINS: Examine the materials on human development. Evaluate how well or how poorly this part of the exhibit explains basic human anatomical development. Be specific.
10. HALL OF LIFE – ENTIRE EXHIBIT: Walk through the entire exhibit. Provide a thoughtful and specific critique (about a paragraph) of how the exhibit teaches about and entertains concerning human anatomy. Mention specific demonstrations/activities/exhibits. Provide one or more specific suggestions for how the exhibit could improve its treatment of anatomical material. (What could they add, change, etc.?).