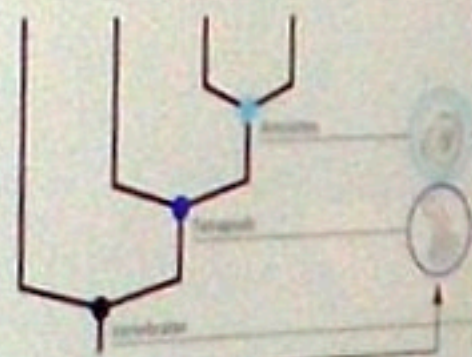
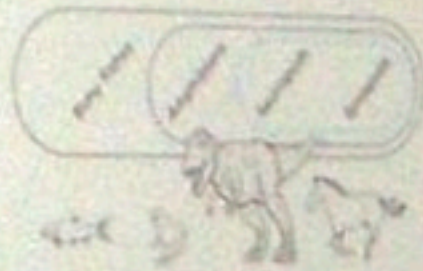


Why are the halls arranged to show evolutionary relationships?

These halls exhibit animals, both living and extinct, that represent the evolutionary history of vertebrates. All living things have evolved as a result of inherited changes and diversification over vast periods of time. Understanding this is essential to our understanding of the world around us and where we fit in it. People trace their family history by compiling a family tree. In a similar way, evolutionary history can be reconstructed by compiling evolutionary trees. At this museum, evolution is a major area of research. Therefore, we decided to organize these halls as an evolutionary tree of vertebrates.

What is the best way to reconstruct evolutionary history?

To build evolutionary trees, a method called cladistics is used, in which scientists look for patterns of features in different animals. The distribution of features forms a set of **nested groups** with smaller groups contained within larger ones. For example, the group **"tetrapods"** (animals with 4 limbs) is contained within the larger group **"vertebrates"** because tetrapods, like other vertebrates, have a backbone and a braincase. The backbone and braincase are advanced features for the group called vertebrates. Each group, or **clade**, is recognized by a set of such advanced features inherited from a common ancestor. A clade contains all the descendants of the common ancestor.

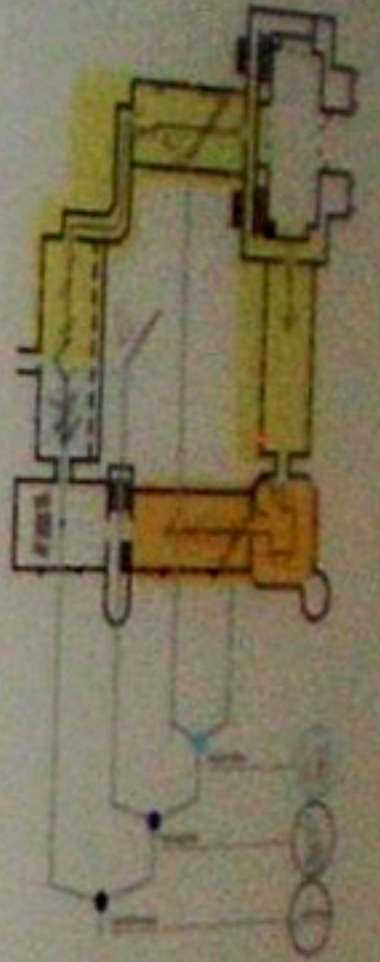


What is a cladogram?

A cladogram is a reconstruction of the evolutionary history of a group of animals, based on the distribution of newly evolved ("advanced") features. Cladograms are drawn as branching diagrams, with the advanced features noted at the appropriate branching points.

What is an advanced feature?

As animals evolve, they develop new features, or characteristics. The descendants often diverge and form other groups, but they all inherit the advanced feature. An advanced feature can be any attribute of an animal, from the shape of its bones and muscles to its genetic chemistry and DNA. The term "advanced" is relative; it does not necessarily mean that the feature is better or more efficient than the previous feature that it evolved from (or that it provided it).



How do the halls represent evolutionary relationships?

A cladogram superimposed on the floor plan creates the main path through the exhibit. Closely related animals are displayed together in the halls. The adjacent panel explains how to follow the cladogram as you walk through the halls.

Why use cladistics?

Although cladistics is a relatively new method of classifying organisms, it is now widely used. Cladistics is a method of classification that is based on the evolutionary relationships between organisms. It is a method of classification that is based on the evolutionary relationships between organisms. It is a method of classification that is based on the evolutionary relationships between organisms.