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1. **THE RELEVANCE OF COMPARATIVE ANATOMY TO EVOLUTION**

Comparative anatomy is an important tool which helps determine evolutionary relationships between organisms and whether or not they share common ancestors. Comparative anatomy is an important evidence for evolution. Anatomical similarities between organisms support the idea that these organisms evolved from a common ancestor

Comparative anatomy is one of the strongest forms of evidences of evolution as it involves comparing structural similarities of organisms to determine their evolutionary relationships. Organisms with similar anatomical features are assumed to be relatively closely related evolutionarily, and they are assumed to share a common ancestor and a a result of this study of evolutionary relationships, anatomical similarities and differences are important factors in determining and establishing classification of organisms . Some organisms have anatomical structures that are very similar in embryological development and form, but are different in their functions they are called homologous structures. Since these structures are so similar, they indicate an evolutionary relationship and a common ancestor of the species that possess them. An example of homologous structures is the the embryological development and anatomical similarities in form are striking. By comparing the anatomy of these organisms scientists have determined that they share a common evolutionary ancestor and in an evolutionary sense, they are relatively closely related

As stated above, Comparative anatomy is an important tool which helps to determine evolutionary relationships between organisms and whether or not they share common ancestors. Thus, the fact that all vertebrates have four limbs and gill pouches at some part of their development indicates that evolutionary changes have occurred over time hence resulting in the diversity seen today.

1. **TYPES OF COMPARATIVE ANATOMY**

* Homologous structures: these are structures in organisms that are similar in embryological development and form, but very different in the functions they carry out. An example is the forelimb of mammals, the forelimbs of humans, whales, dogs and bats all are very similar in structure, this is because each possess the same amount of bones which are arranged in almost the same way while they have different external features and also function in different ways.
* Analogous structures: these are structures that function very similarly in organisms but morphologically and developmentally, these structures are very different and because they are so different, they do not indicate an evolutionary relationship or that two species have a common ancestor unlike the homologous structures. An example is a bird’s wings and wings of a dragonfly, both perform the same function which is flight in the organism but when these structures are examined anatomically they are very different as the wing of a bird has bones inside of it and I covered with feathers on the outside While the wing of the dragonfly has none of these structures
* Vestigial structures: these are anatomical features that are still present in an organism although there is often reduction in size even though they no longer serve a function. Example Whales which evolved from land mammals, have vestigial hind leg bones in their bodies. While they no longer use these bones in their marine habitat, they do indicate that whales share an evolutionary relationship with land mammals. Humans have more than 100 vestigial structures in their bodies.