

## Comparing Human and Avian Skeletons

The avian (bird) skeleton has many features that resemble the human skeleton. The arm bones of the human consist of the humerus, the radius and the ulna. These bones are also found in the bird but at the end of the arm, whereas humans have five digits in their hands, birds have three digits in their wings. The human leg consists of a long femur and two bones of the lower leg, however, in the bird skeleton these two bones: the tibia and fibula are fused together (the drumstick). The head of both birds and humans is protected by a large cranium and in the facial bones, the upper jaw of the human, and the upper beak of the bird are both composed of a bone called the maxilla. The lower jaw, and lower beak are composed of a bone called the mandible. Unlike humans, birds have no teeth in their jaws. The main difference between the human and bird skeleton is that the bird's skeleton is adapted for flight - the bones of humans are dense and filled with bone marrow, but most of the bones of a bird are hollow which allows air to flow into bones increasing the oxygen supply. The lack of bone marrow makes these bones lighter. The bird's forelimbs are wings and they must have a strong support system. The collarbone of the bird is fused to form the furculum, or wishbone, and a bird's sternum is large and positioned under the body. The ridge of a bird's sternum is called a keel and large flight muscles attach to this bone. At the base of a bird's spine several vertebrae are fused to form a bone called the pygostyle which humans do not possess. The pygostyle forms a strong structure for the attachment of muscles and tail feathers which are critical to take off and landing.

1. Which fused bones form the drumstick?
2. Which bone is the wishbone?
3. Which 2 bones make up the beak?
4. What are a bird's forelimbs?
5. The tail feathers attach to which bone?
6. List 4 differences between the skeleton of a bird and a human.
7. List 2 ways in which the bird skeleton is adapted for flight.

