

Live Science Lesson Week Beginning 22.02.21

Comparing Human and Animal Skeletons

Common Names of Bones

Collar bone

Knee

Skull

Jaw bone

Spine

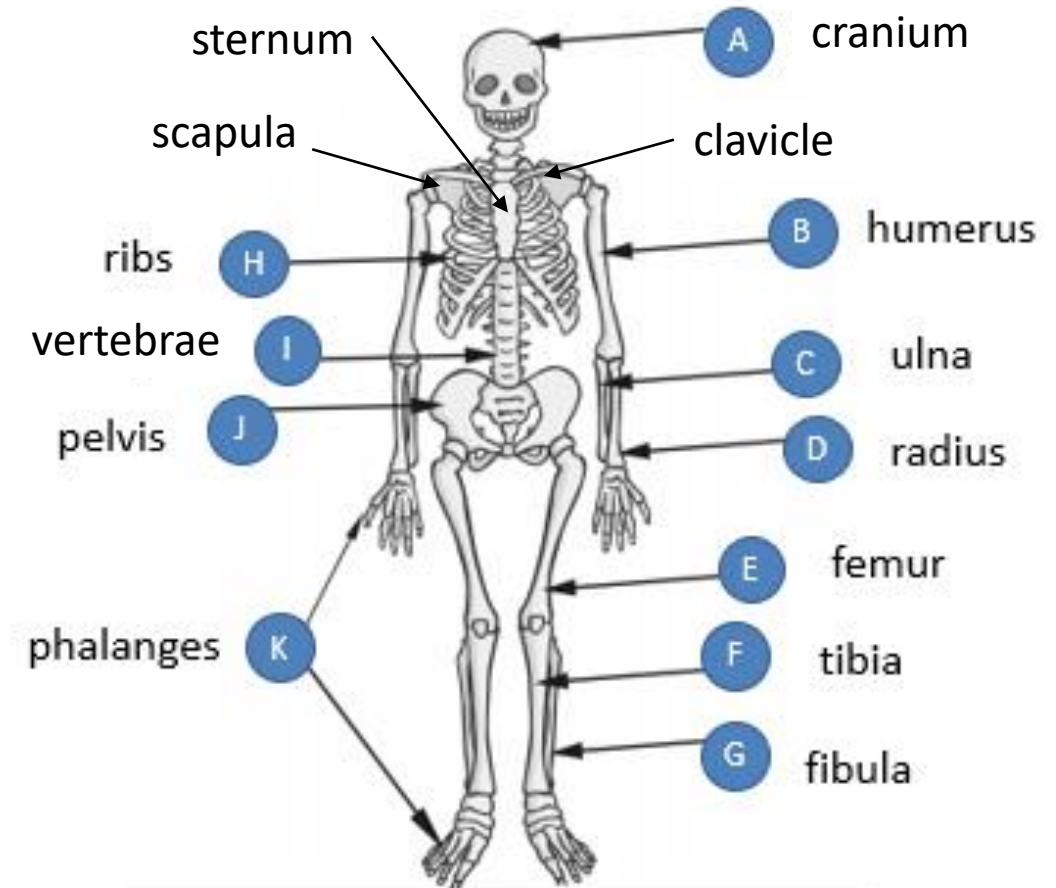
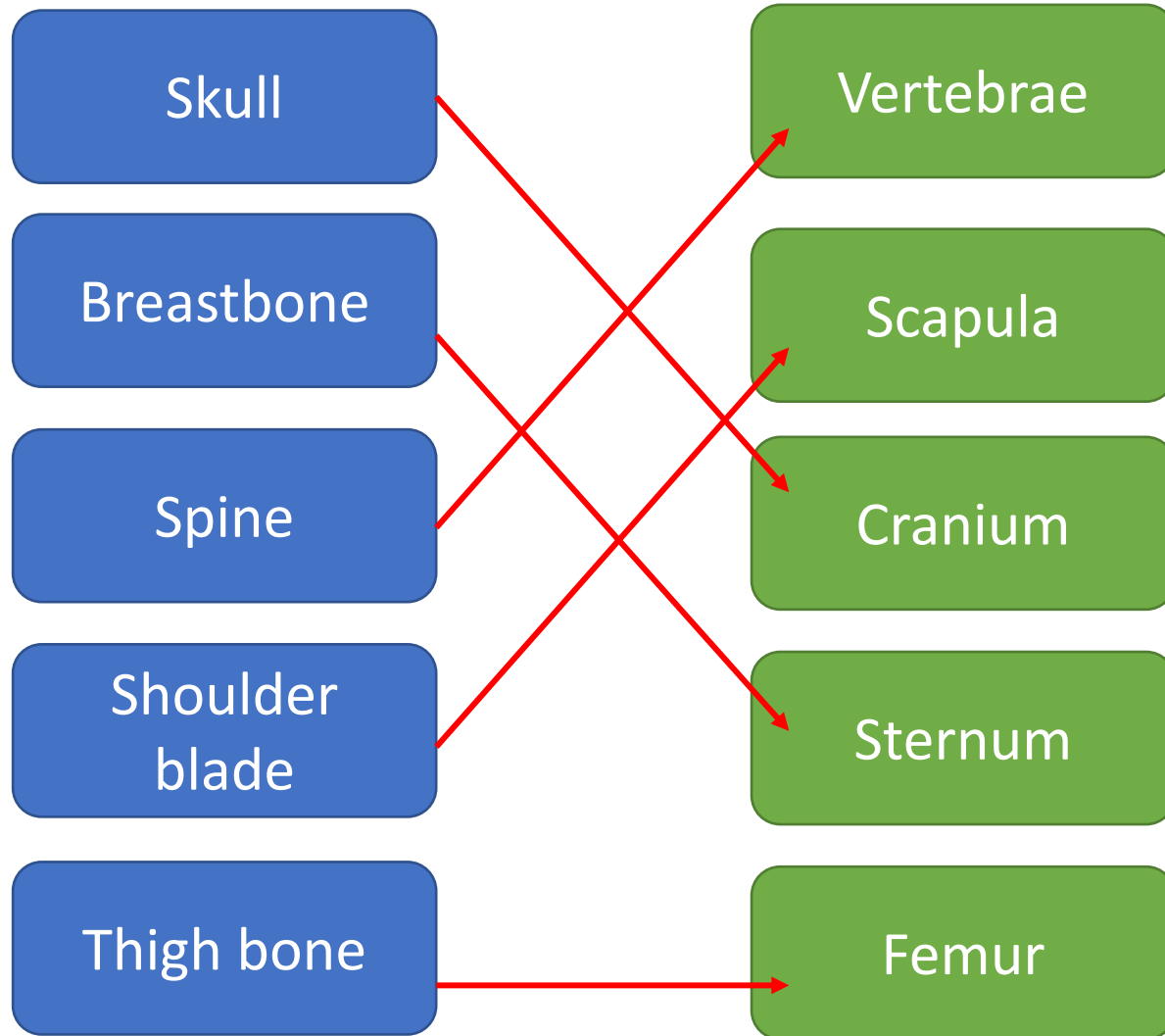
Thigh bone

Shoulder
blade

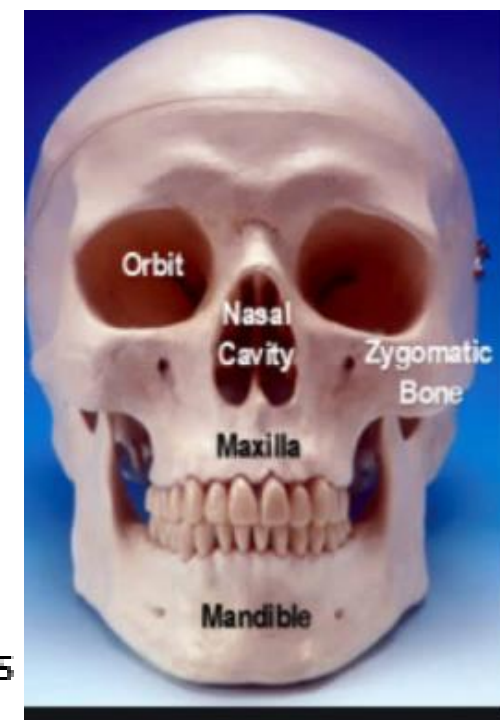
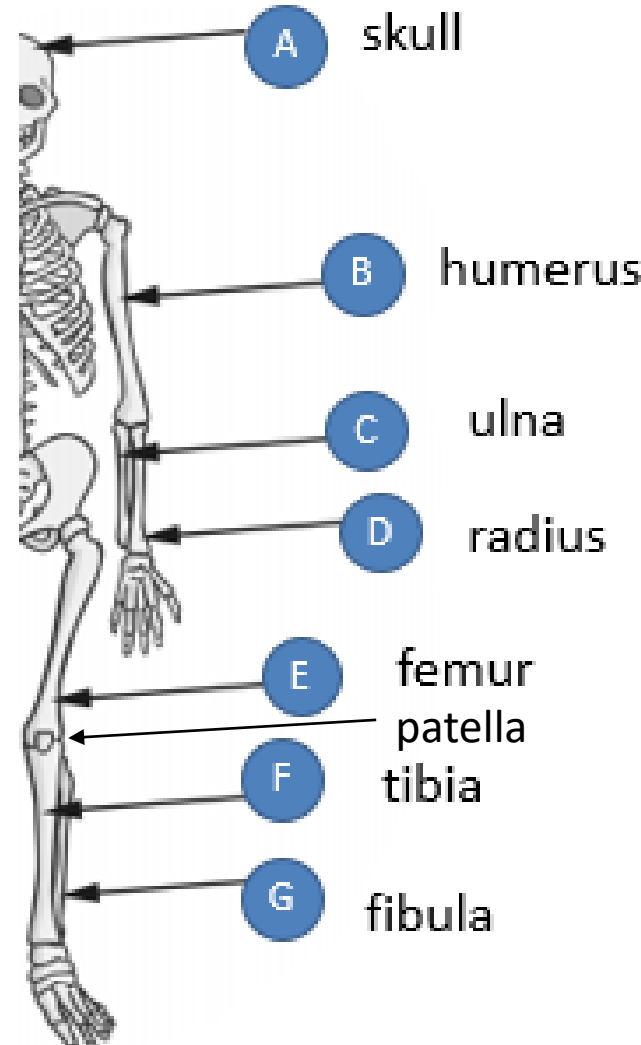
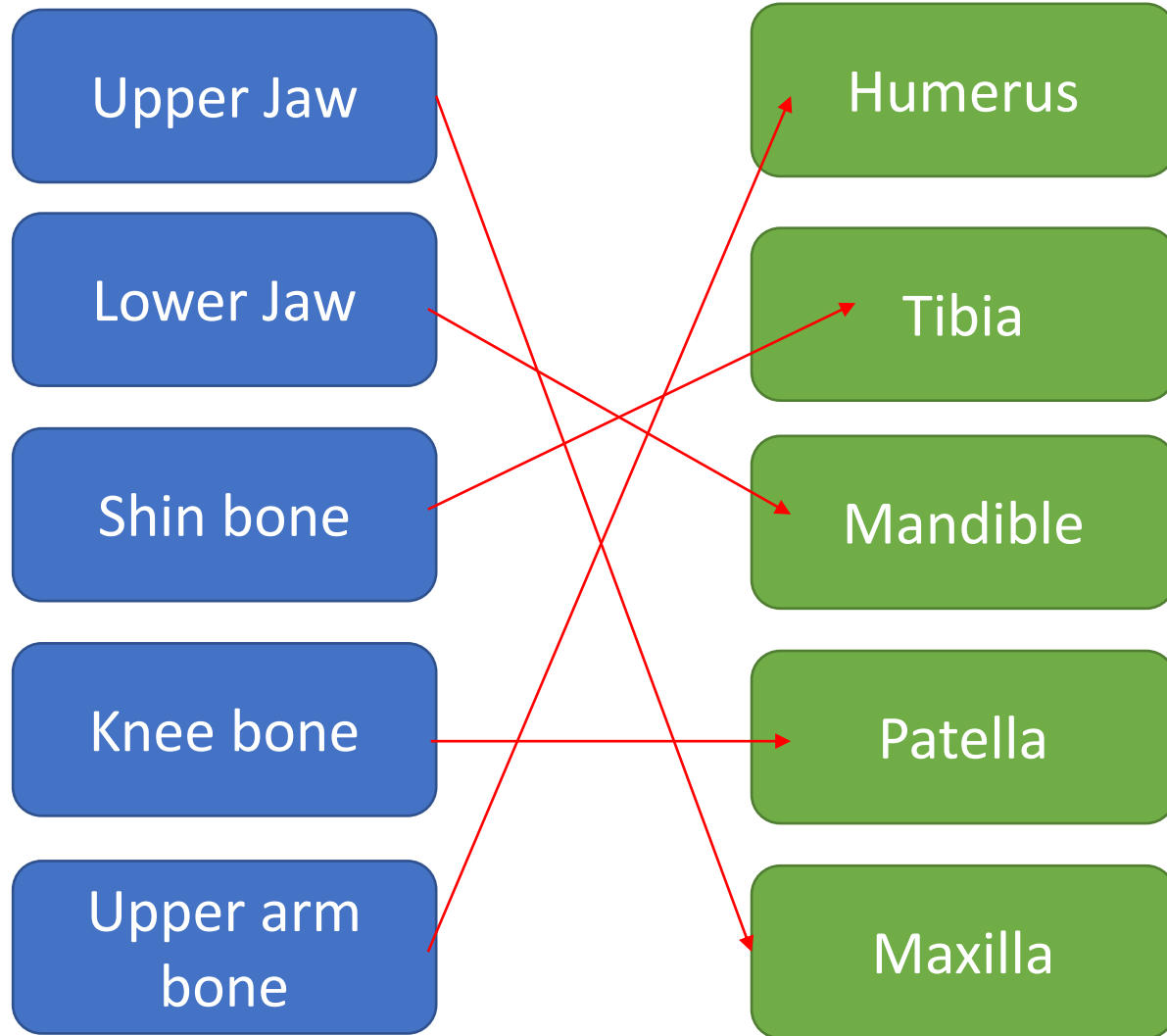
Breast bone

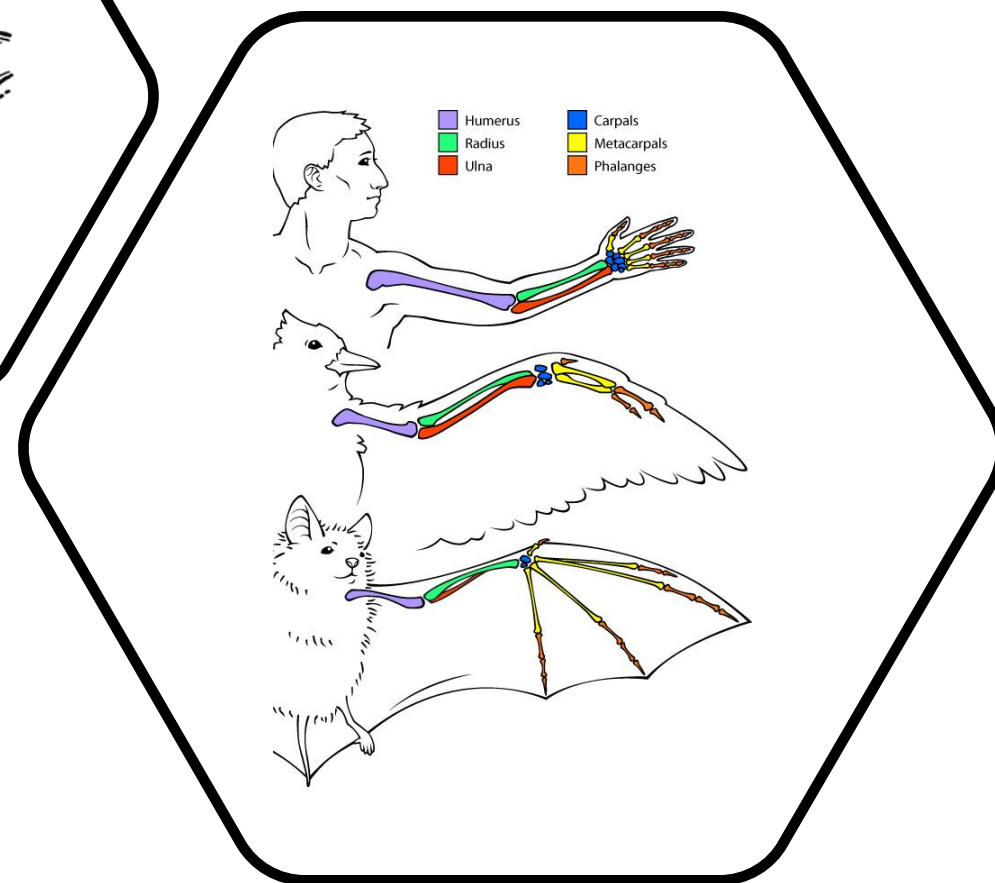
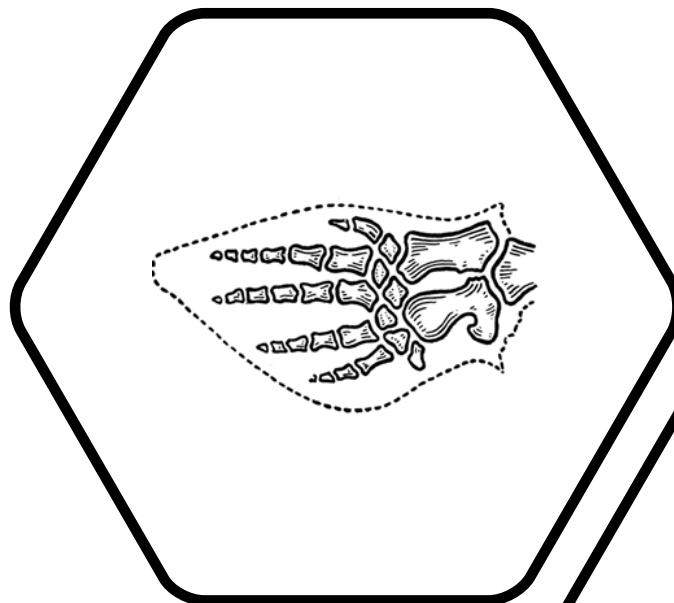
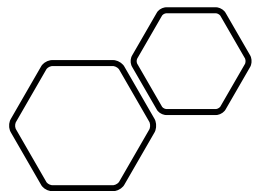
Shin bone

Take a few minutes to match up the common names with the scientific names..

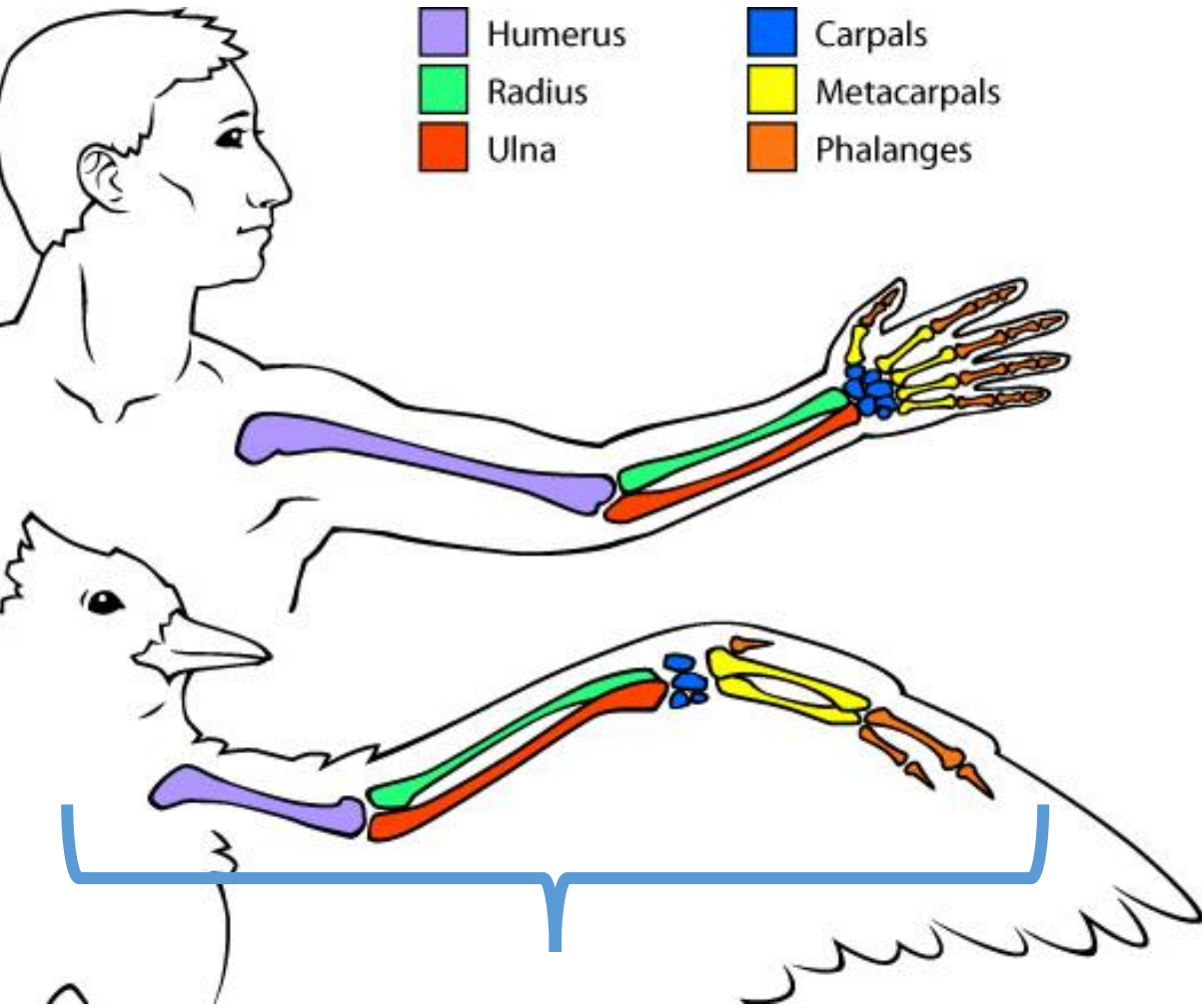


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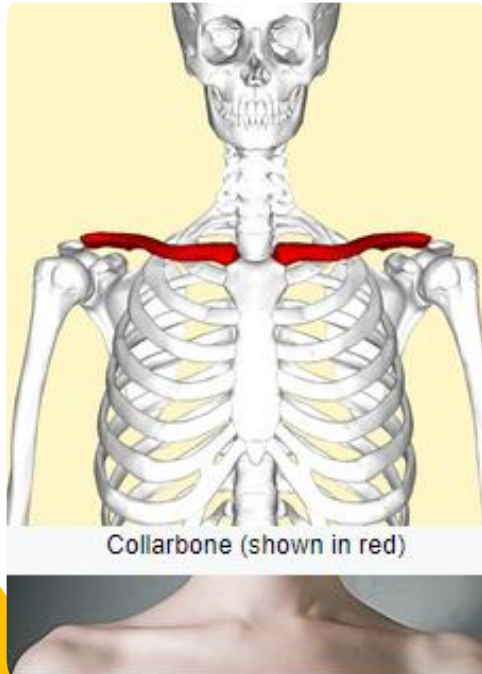




- **Humans and other animals share the same distant ancestors, so our bones are very similar to theirs in form and function.**
- **These images show the similarities between hand and arm bones of humans and those of whales, birds and bats.**



- We will focus on **similarities and differences** between the human and avian (bird) skeleton.
- This is a bird's **forelimb** (front limb).
- As you can see from the diagram, a bird's forelimb is its **wing** and contains the same types of bones as a human arm and hand.
- A human has five digits in its hand whereas birds have three digits in their wings.



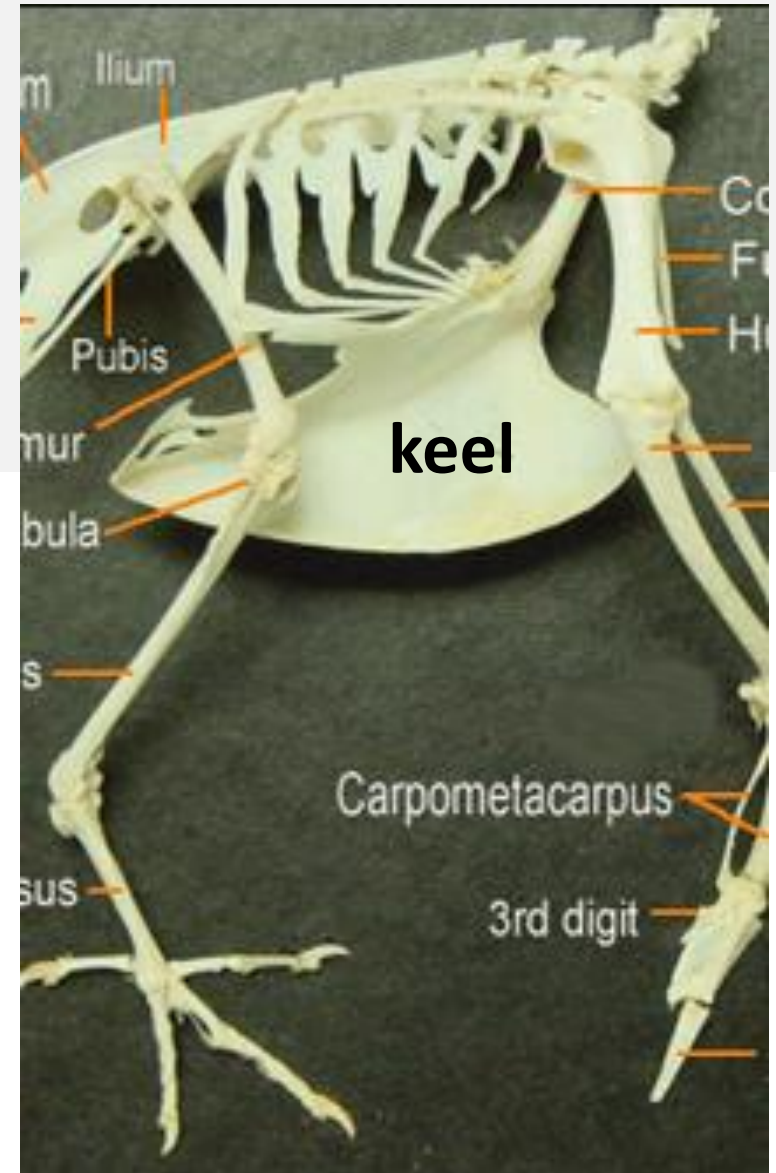
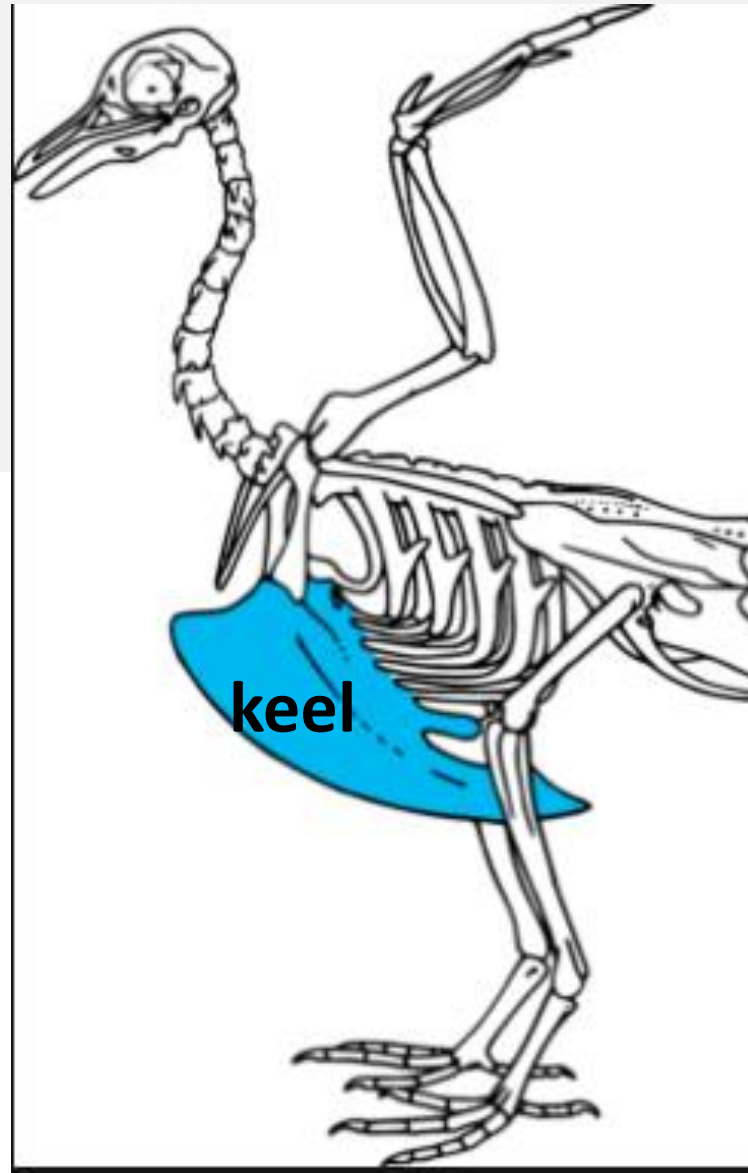
The collarbone

- **Humans have two collarbones** (clavicles).
- These are shown in red in the diagram.
- Birds are the only creatures to have collarbones which are fused to form one collarbone – often called a **wishbone**.
- Wishbones are so-called because they are traditionally broken for good luck, with the winner holding the biggest part and making a wish.



The Keel

- The keel is shown in blue in the diagram.
- This bone is an extension of the sternum (breastbone).
- Humans have a sternum but **not** a keel.
- The keel is the main site of attachment for large flight muscles.

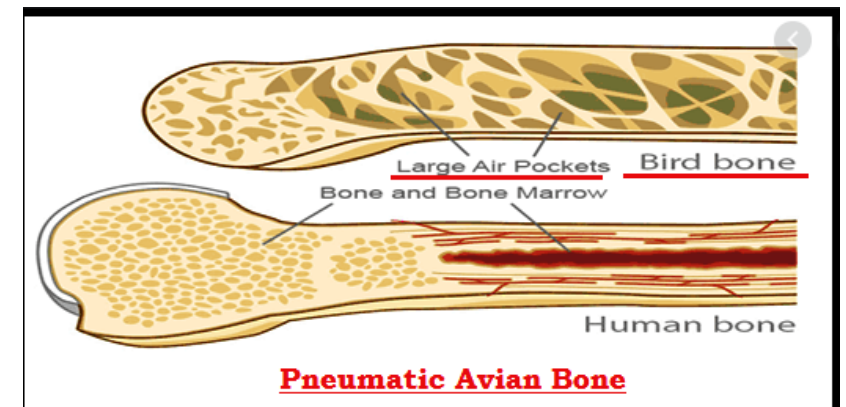


Video – how are bird skeletons adapted for flight?

<https://www.youtube.com/watch?v=TkxAdE0qd7k>

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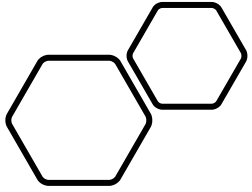
- Are all of a birds bones hollow? **No, some bones contain bone marrow to produce new blood cells.**
- If there is no marrow in a birds bones, what are the air spaces used for? **To store air that is breathed in.**
- Are bird skeletons actually lighter than the skeletons of mammals the same size? **No, but they are lighter than if they contained bone marrow.**
- Some water birds do not have hollow bones. Why might this be an advantage? **To help the birds dive for food.**



Recap

- What is the common name for the fused collar bones of a bird?
- Name two creatures with similar 'hand' bones to a human.
- What is the common name for the mandible?
- The keel is an extension of which bone?
- What is the scientific name for the skull?
- How are bird bones designed to help flight?
- Why are other animals' skeletons similar to human skeletons?

- **The wishbone**
- **Whale, bat, bird, etc.**
- **Lower jaw-bone.**
- **Sternum/breast-bone**
- **Cranium**
- **Bones are strong but hollow and light, storing air.**
- **We all evolved from a common ancestor.**



Complete and return by Thursday 25th February.

Independent online task...

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.

