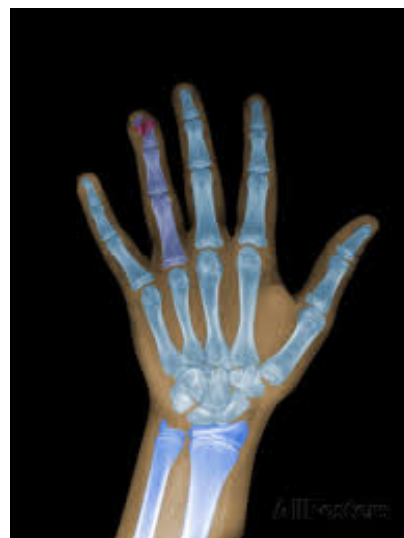


# May 29, 2019

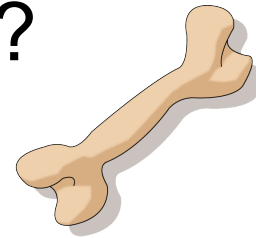
1) Structures of Bones

## Warm-Up

The human hand, including the wrist, contains  andReveal-Rec bones.



## Are bones living?



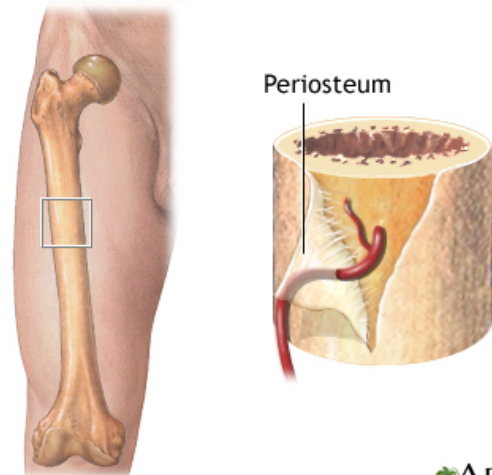
It is common to think bones are not living, but bones are very much living. You are constantly removing old bone tissue and replacing it with new bone tissue. Bones are full of blood, nerves, cells and proteins, making it an extremely complex living tissue.



## Structure of Bones

Bones have different shapes, but all have a similar structure.

Bones are covered in a thin, tough membrane called the **periosteum**. The periosteum contains blood vessels and supplies the bone cells with blood, which contains food and oxygen.



ADAM.

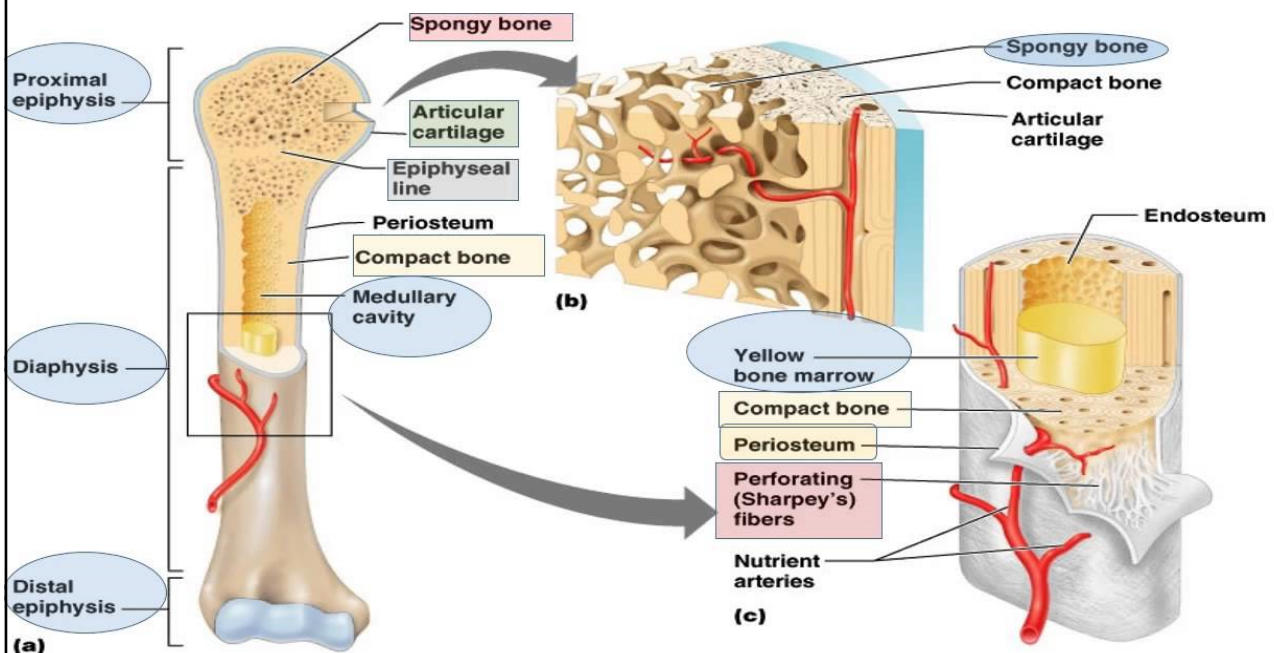
## Structure of Bones cont



The dense part of the bone is the **compact bone**.

Made of living bone cells, mineral deposits and protein fibers.

Calcium makes bones hard and gives them strength.



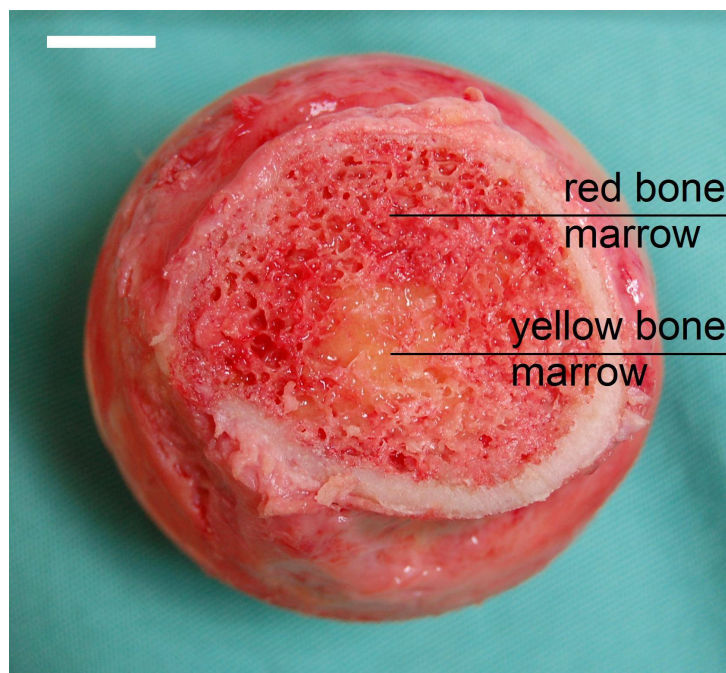
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Structure of a Typical Long Bone

## Structure of Bones cont

The end of bones is made up of **spongy bone**. Spongy bone adds strength without adding weight.

The spaces in spongy bones are filled with **bone marrow**. Bone marrow is a soft tissue that is either red or yellow in color. New blood cells are made in the red bone marrow, the yellow bone marrow contains mostly fat.



# Joints



Bones do not bend, therefore in order to have movement we require joints. With the help of muscles, joints work like mechanical levers, allowing us to move with little force.

A joint is a place where two or more bones meet.

A ligament connects bones together using a tough band of tissue.

When bones move at joints ligaments get stretched.

There are fixed joints, partially moveable joints and movable joints.

## Joints cont

fixed joints : do not move at all i.e. joints in skull

partially moveable: have a little movement i.e. breastbone, ribs and sternum move a little when breathing in and out

moveable: permit movement in one or more directions, these joints can be broken down into 4 types. Hinge, ball and socket, pivotal and gliding.

## Joints cont



Hinge Joints allow for movement backwards and forwards in one direction i.e. elbow, knee

Ball and Socket joints permit movement in all directions i.e. shoulder, pelvis

Pivotal Joints allow both side to side movement and up and down movements i.e. skull and vertebra

Gliding joints allow the bones to slide along each other i.e. wrist



