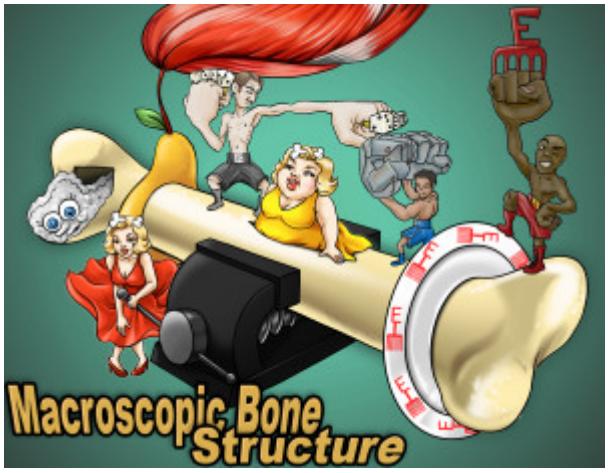
Macroscopic Bone Structure

Bones can be macroscopically broken down into two types of bone, three main sections, and unique cells that exist inside bone. Compact bone is strong, compact, and exists between the periosteum and the marrow cavity. Typically, yellow bone marrow is composed of fat and is inactive. It is found in the hollow interior of the long cylindrical section of long bones. The other type of bone is spongy bone, found at the ends of long bone. Spongy bone gets its name from a lattice structure and has cavities filled with marrow. Red bone marrow, composed of hematopoietic stem cells, typically exists in the spongy areas of long bones and flat bones. Hematopoietic stem cells are the precursors to all blood cells. Long bones are the typical bones of the appendicular skeleton and have long cylindrical middle sections. The epiphysis is the dilated end of the long bone, and an epiphyseal plate separates the ends from the diaphysis which is the cylindrical shaft. The metaphysis is the wide area between the epiphysis and diaphysis that grows during childhood. Finally, the periosteum is a fibrous sheath that surrounds and protects the bone and also is the site for muscle attachment.



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Characteristics

Compact Bone
Vice Compacting Bone
Compact bone is strong, compact, and located in between the periosteum and marrow cavity, typically in the cylindrical part of long bones.

Yellow Bone Marrow
Yellow and Fat Bone Marilyn-Monroe
Yellow bone marrow is primarily composed of fat, is inactive, and can be converted to red marrow if supplies are depleted.

Spongy Bone
Sponge Bone
Spongy bone has a sponge-like appearance due to its lattice structure. It typically is found at the end of long bones and contains red marrow.

Red Bone Marrow
Red Bone Marilyn-Monroe
Red bone marrow is composed of hematopoietic stem cells which are responsible for the generation of all blood cells in a process called hematopoiesis.

Long Bone
Long Bone
Long bones are typically found in the appendicular skeleton and have long cylindrical shafts with two dilated ends.

Epiphysis
E-pick-fist
The epiphysis is the dilated end of long bones and has a spongy bone core inside the compact bone exterior.

Epiphyseal Plate
E-pick Plate
The epiphyseal plate separates the epiphysis and diaphysis.

Diaphysis
Dice-fist
The diaphysis is the long, cylindrical shaft in the middle of the long bone. It has a marrow cavity within it containing marrow cells.

Metaphysis
Metal-fist
The metaphysis is the wider part of the long bone in between the epiphysis and diaphysis that grows during childhood.

Periosteum
Pear-stem
The periosteum is a fibrous sheath surrounding the long bone that protects it and is the site for muscle attachment.