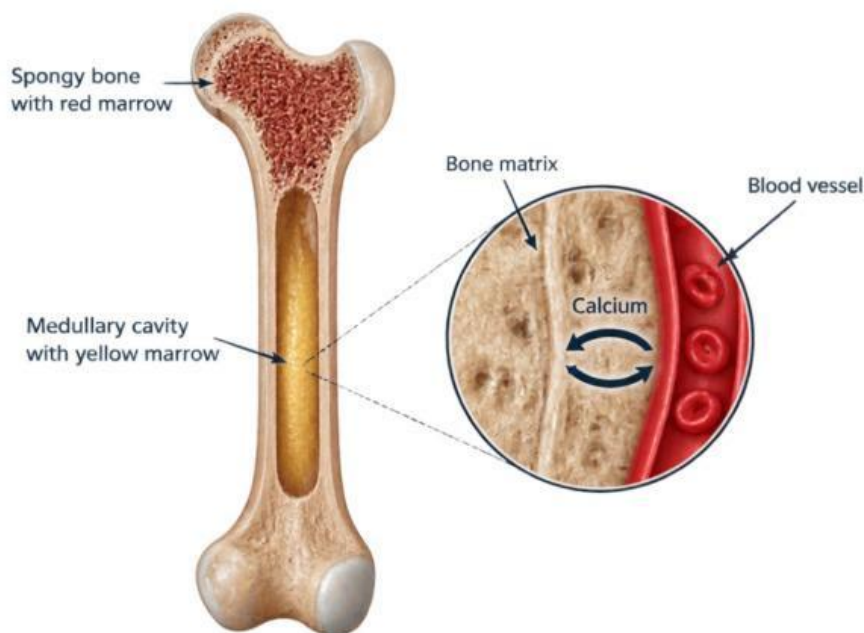


Section 1: Functions of Bone and Marrow

Learning Objective: Explain essential skeletal functions including support, protection, lever movement, mineral storage, and hematopoiesis, while contrasting red and yellow bone marrow.

Key Vocabulary: Osteo, hematopoiesis, red marrow, yellow marrow, calcitonin, osteoclast.

Bones serve vital biomechanical and metabolic roles, providing structural support, serving as muscle-anchored levers for body motion, and shielding delicate internal organs. Within bone cavities, red marrow generates formed blood cells through hematopoiesis, while yellow marrow stores energy in the form of adipose tissue. Osseous tissue also functions as a dynamic mineral reservoir, balancing systemic calcium phosphate levels through osteoclast activity and hormonal regulation via calcitonin.



1. Match each skeletal function labeled A–E with the correct mechanism and example numbered 1–5. Write the matching number beside each function.

Skeletal Functions

A. Support

Match with number: _____

Mechanism and Example

1. Bones act as levers that skeletal muscles pull via tendons to create movement. Example: long bones of the limbs.

B. Protection

Match with number:

2. Red marrow produces red blood cells, white blood cells, and platelets. Example: spongy bone in the ribs, sternum, and vertebrae.

C. Movement

Match with number:

3. The skeleton supports soft tissues and helps maintain posture against gravity. Example: the pelvis and lower limbs.

D. Mineral storage

Match with number:

4. Bone stores calcium phosphate, which can be released or deposited in response to hormonal signals. Example: the mineral matrix of bones.

E. Hematopoiesis

Match with number:

5. Bones enclose and protect vital organs and sensory structures. Example: the cranium, ribs, and sternum.

2. Match each type of bone marrow with its primary function and location. Write the correct number beside each type.

A. Red marrow Match with number:

1. Stores fat and occupies the cavities of most bones.

B. Yellow marrow Match with number:

2. Produces red blood cells, white blood cells, and platelets; found in spongy bone of the skull, ribs, sternum, clavicles, vertebrae, and pelvis.

3. How does bone help regulate blood calcium levels? Choose the best answer. Type the letter

A. Osteoclasts release calcium from bone when blood calcium is low; calcitonin promotes calcium storage in bone when blood calcium is high.

B. Osteoclasts store calcium in bone when blood calcium is low; calcitonin releases calcium when blood calcium is high.

C. Bone releases calcium only when blood calcium is high, and calcitonin has no effect on bone.

D. Bone does not store calcium, so blood calcium levels are regulated only by marrow.