

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ



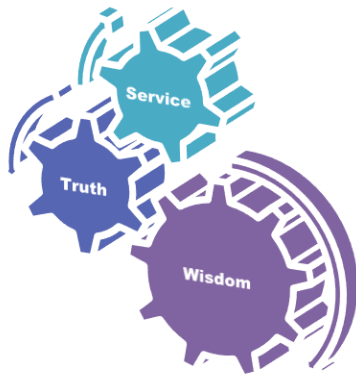
# MSK-1 Module(LGIS) Bone

Dr. Mohtasham Hina

25- 04-2023

# Vision; The Dream/Tomorrow

- **Motto**



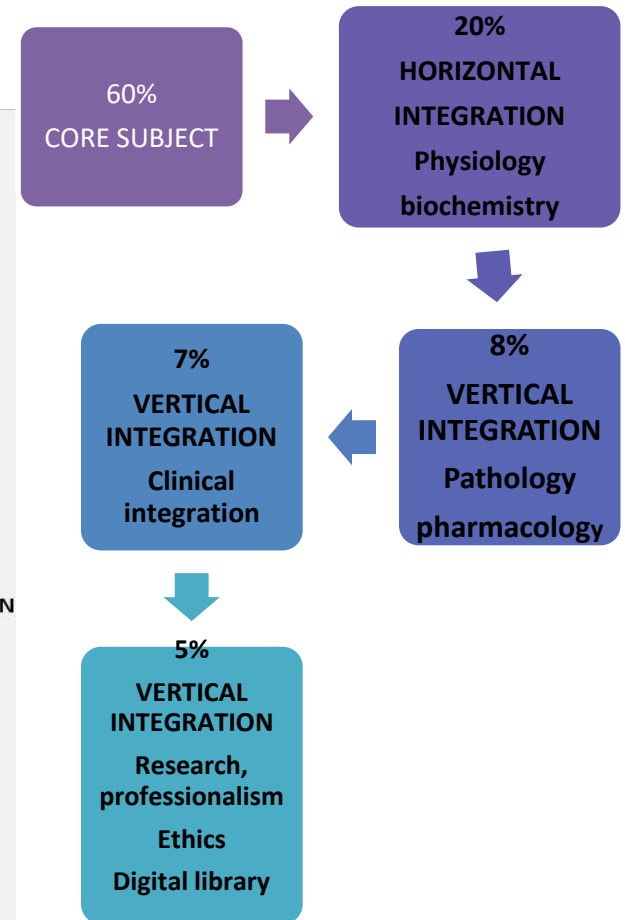
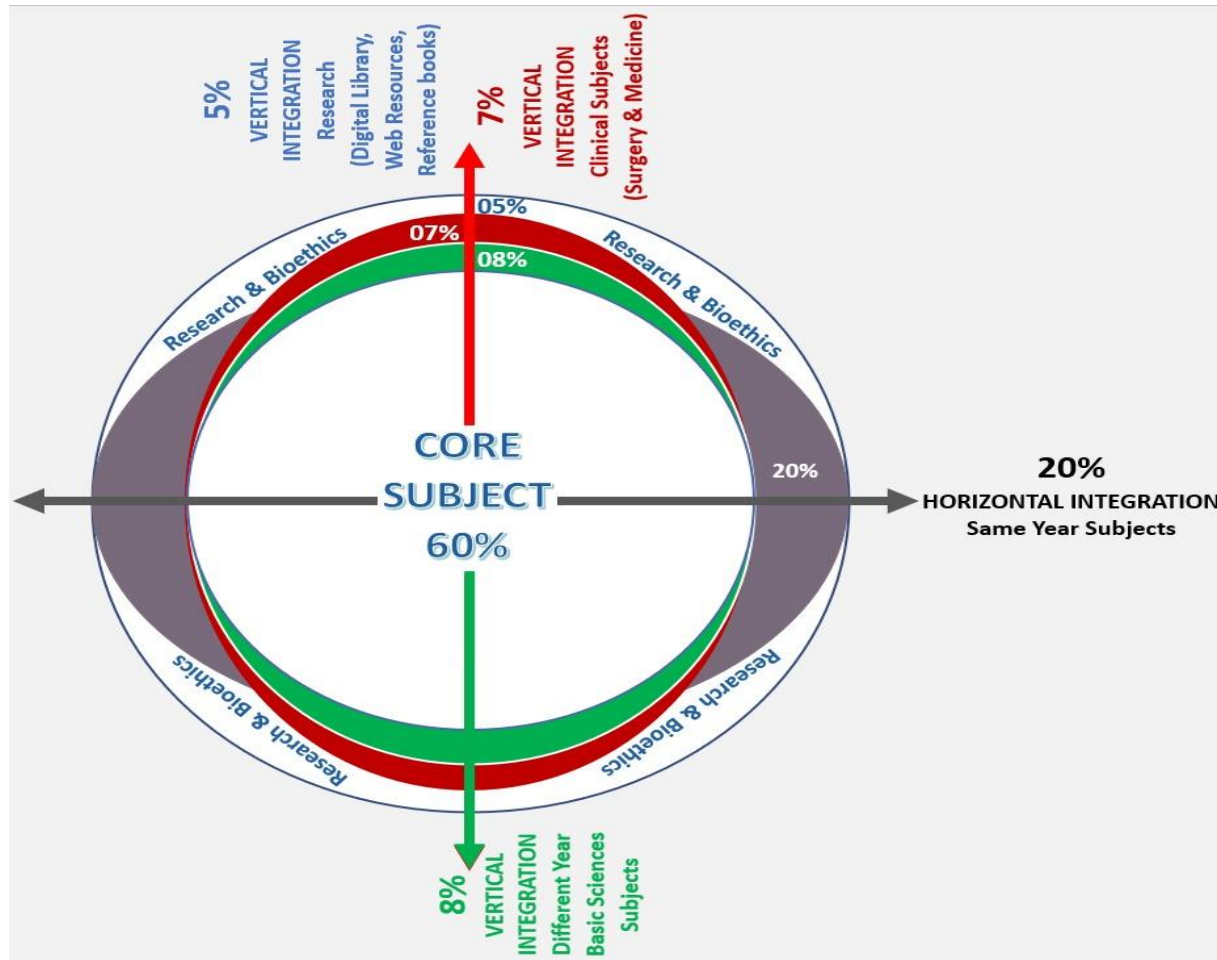
- To impart evidence based research oriented medical education
- To provide best possible patient care
- To inculcate the values of mutual respect and ethical practice of medicine

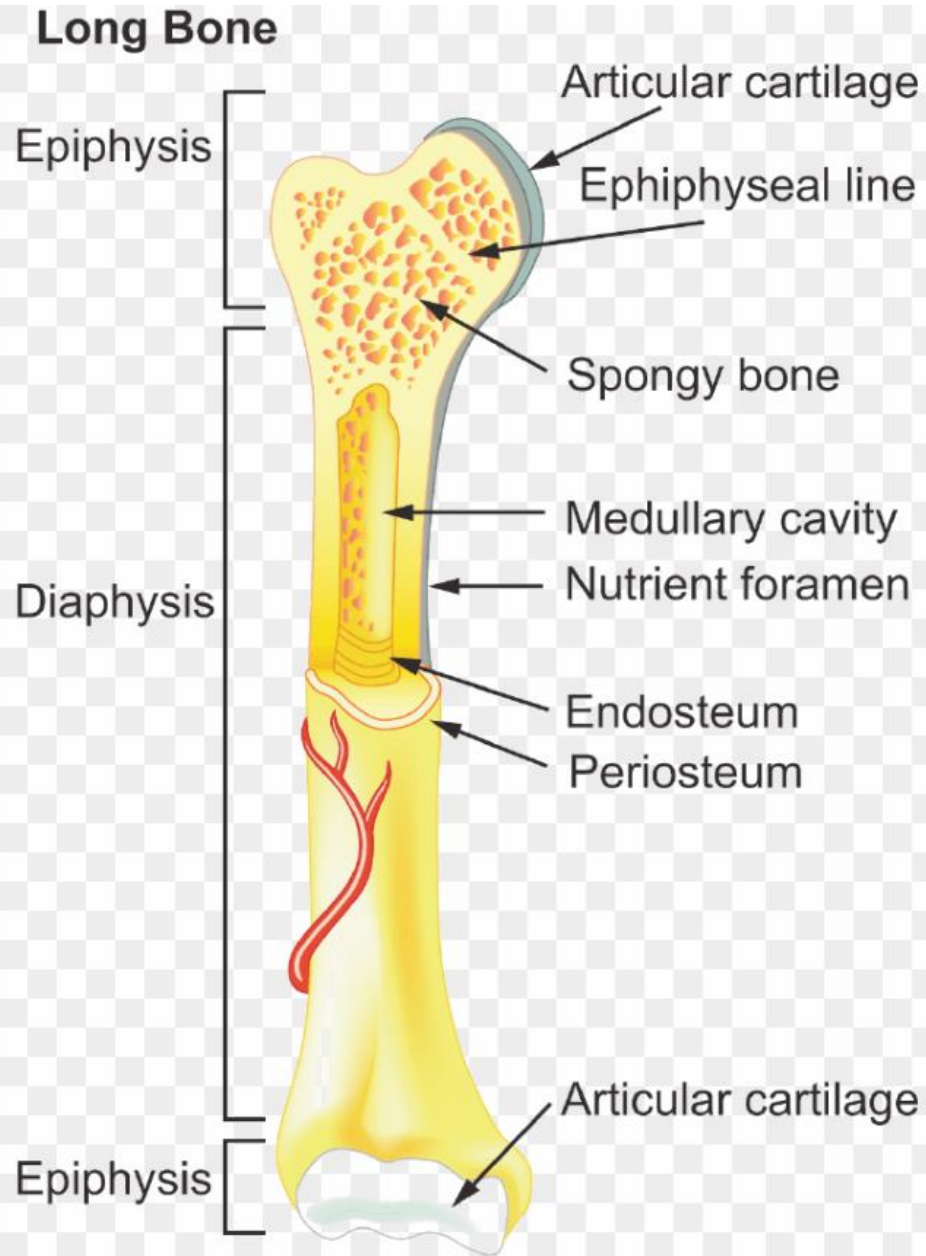
# Learning Objectives

At the end of lecture 1<sup>st</sup> year students should be able to

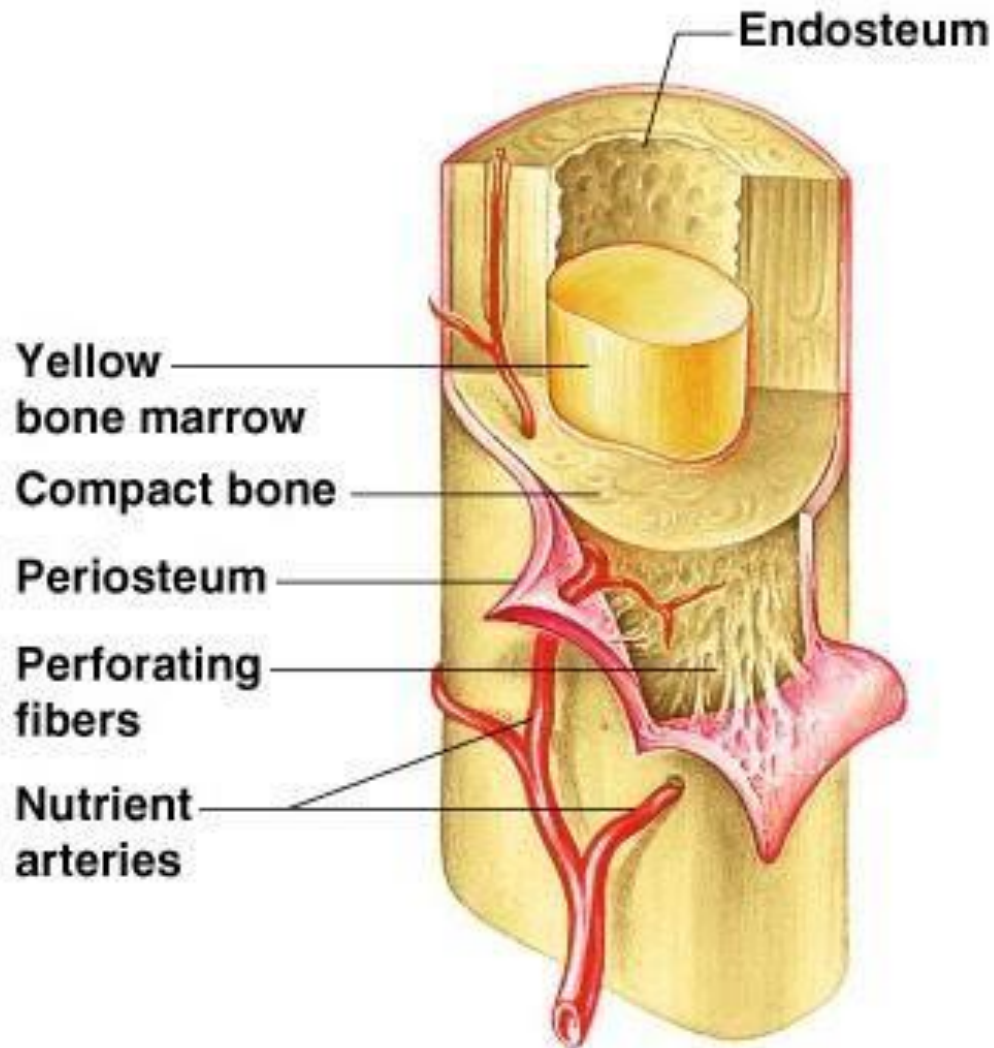
- Understand the histological structure of bone
- Describe different structural components of bone
- Histological features of various types of cells present in bone
- correlate clinical aspects
- To understand bio-physiological aspect bone
- Read a research article
- Use digital library

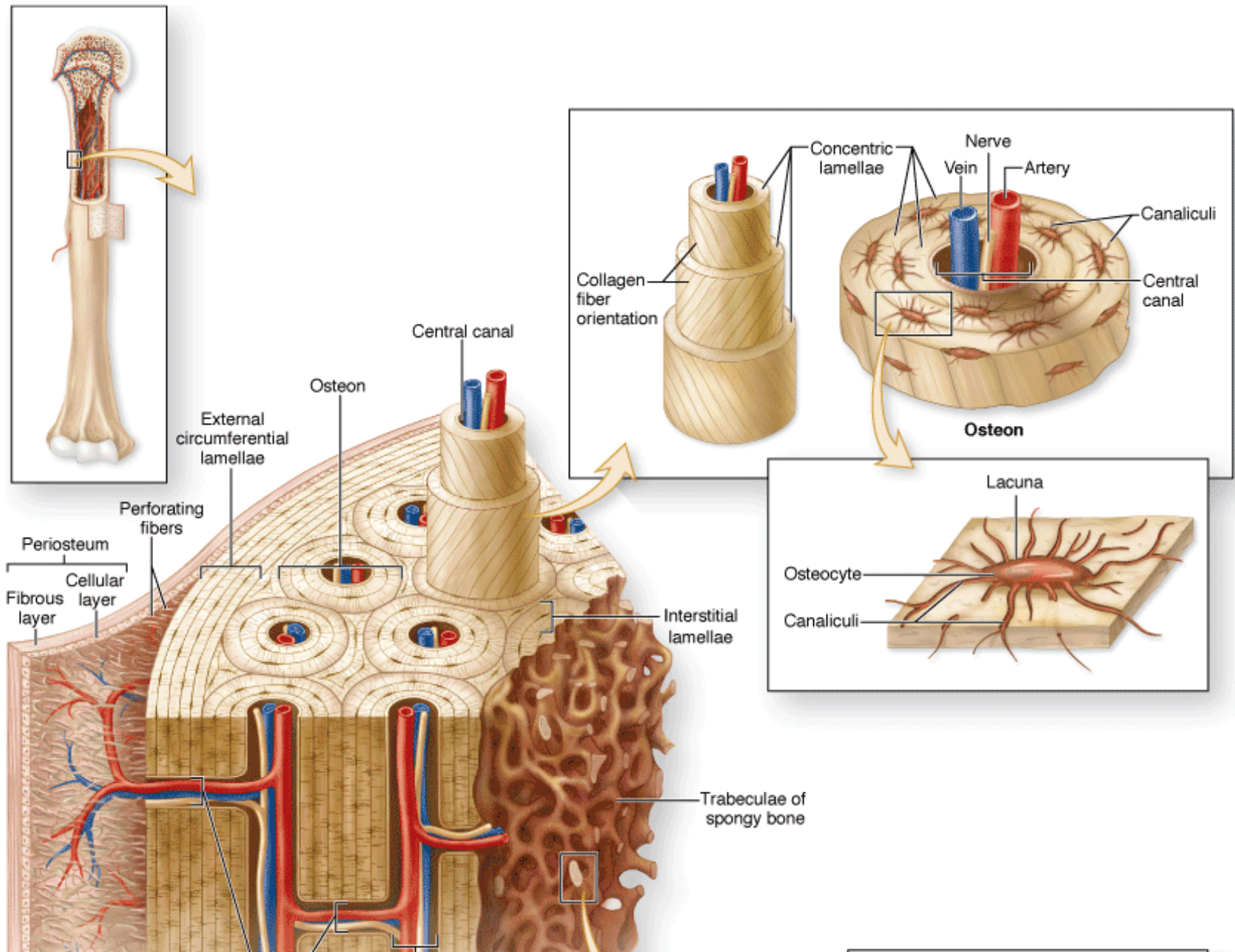
# Professor Umar Model of Integrated Lecture





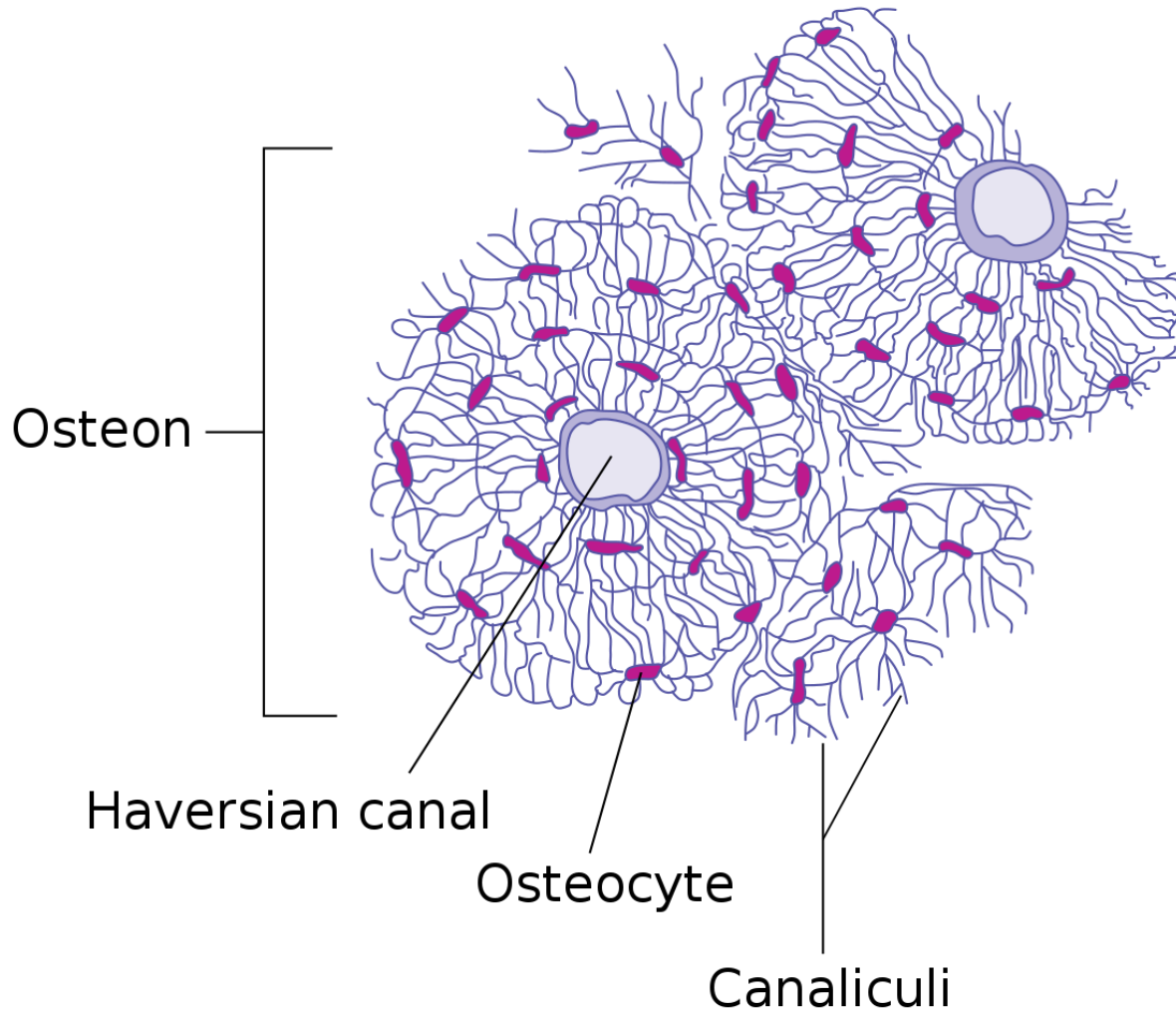






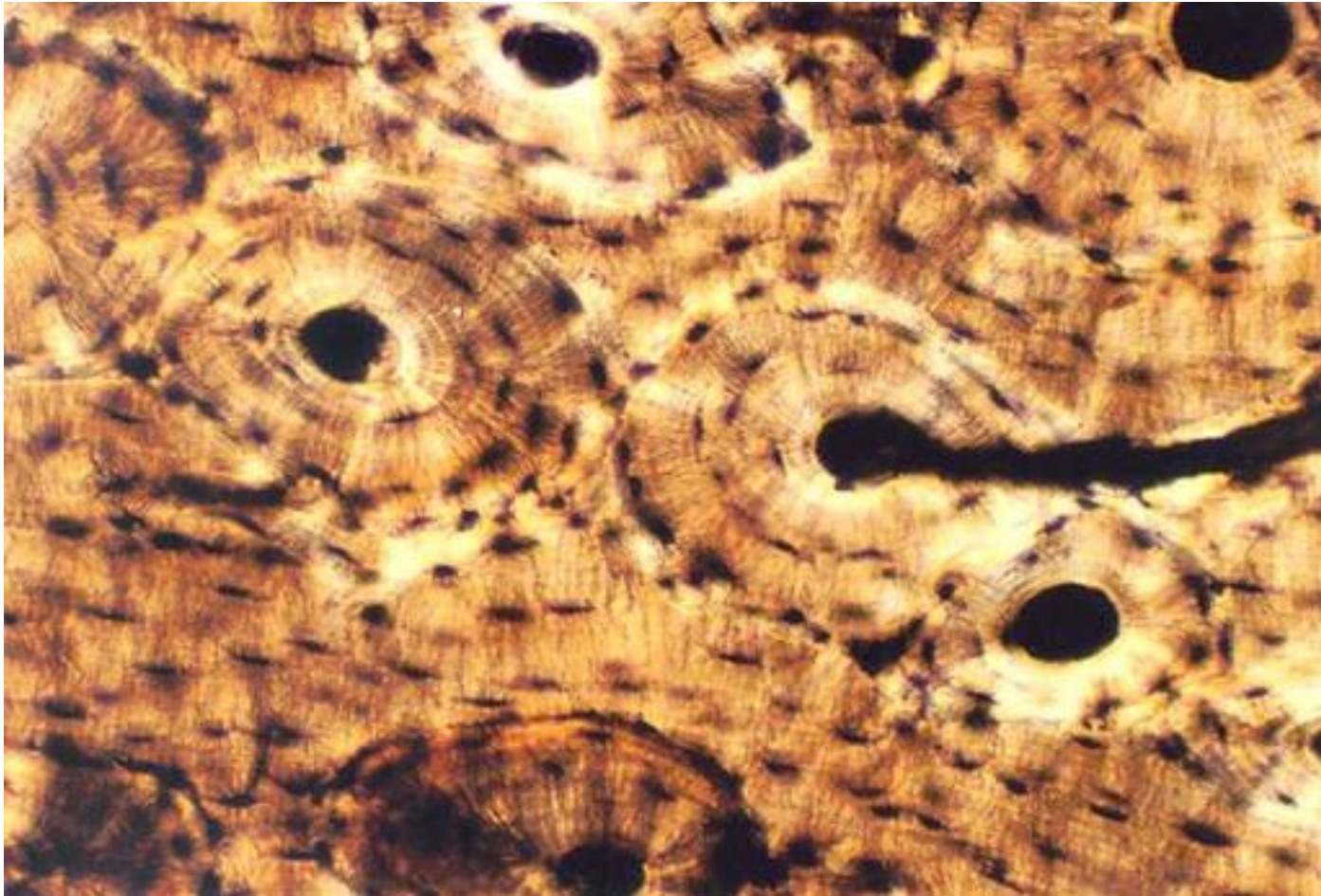


# Osteon (Haversian system)



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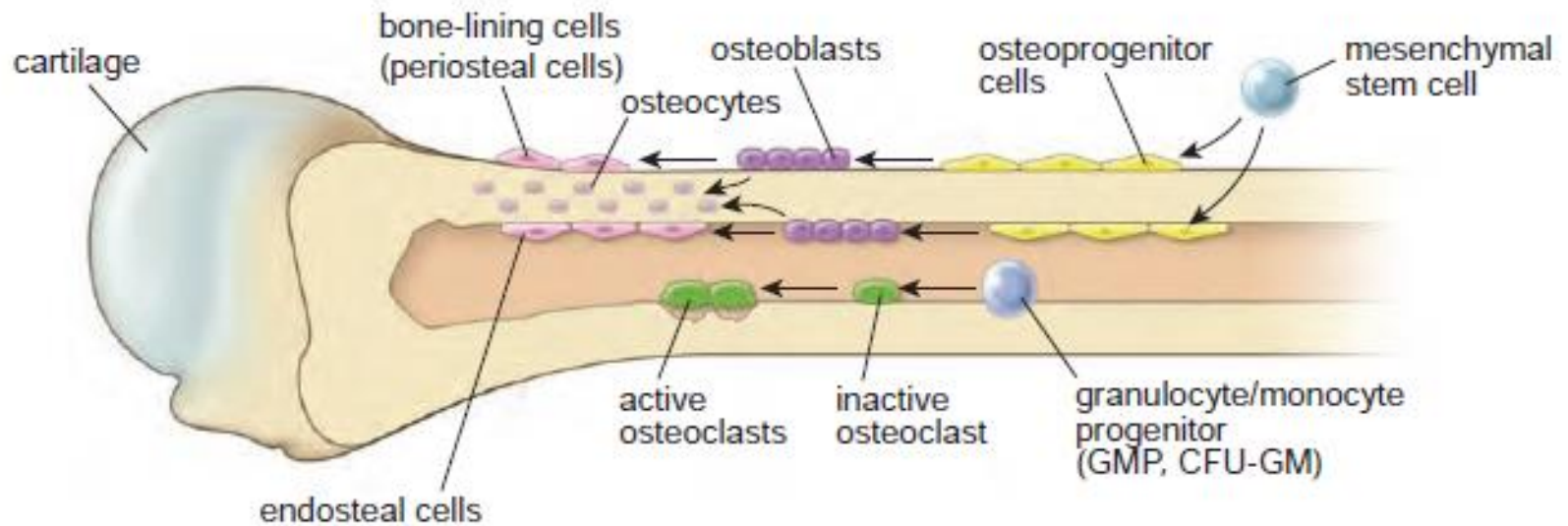


## CELLS OF BONE TISSUE

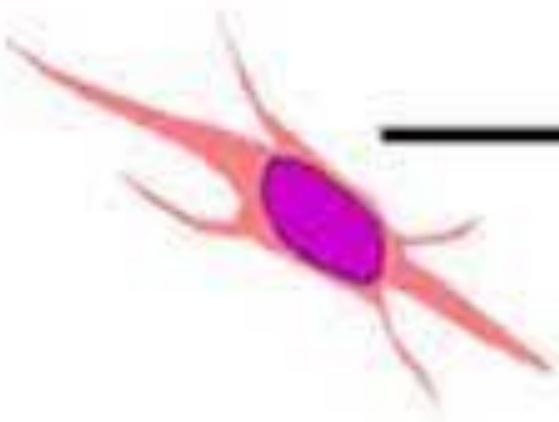
cell types

Differentiated form of  
the same basic cell type

1. osteoprogenitor cells,
2. osteoblasts,
3. osteocytes,
4. bone-lining cells
5. Osteoclasts



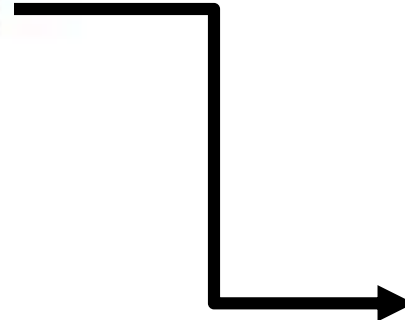
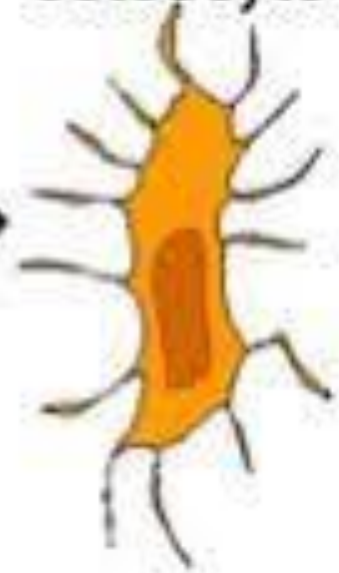
osteoprogenitor cell



osteoblast



osteocyte



bone lining cell

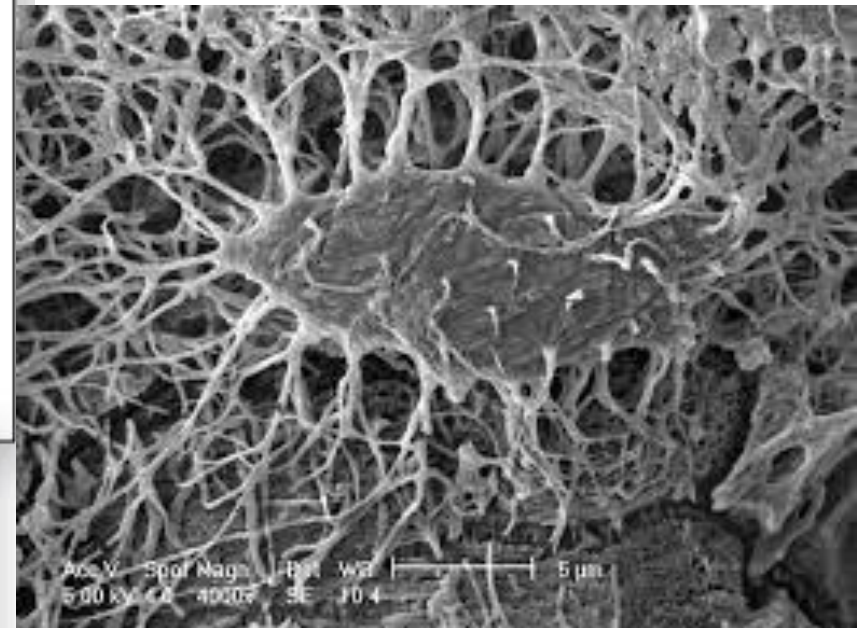
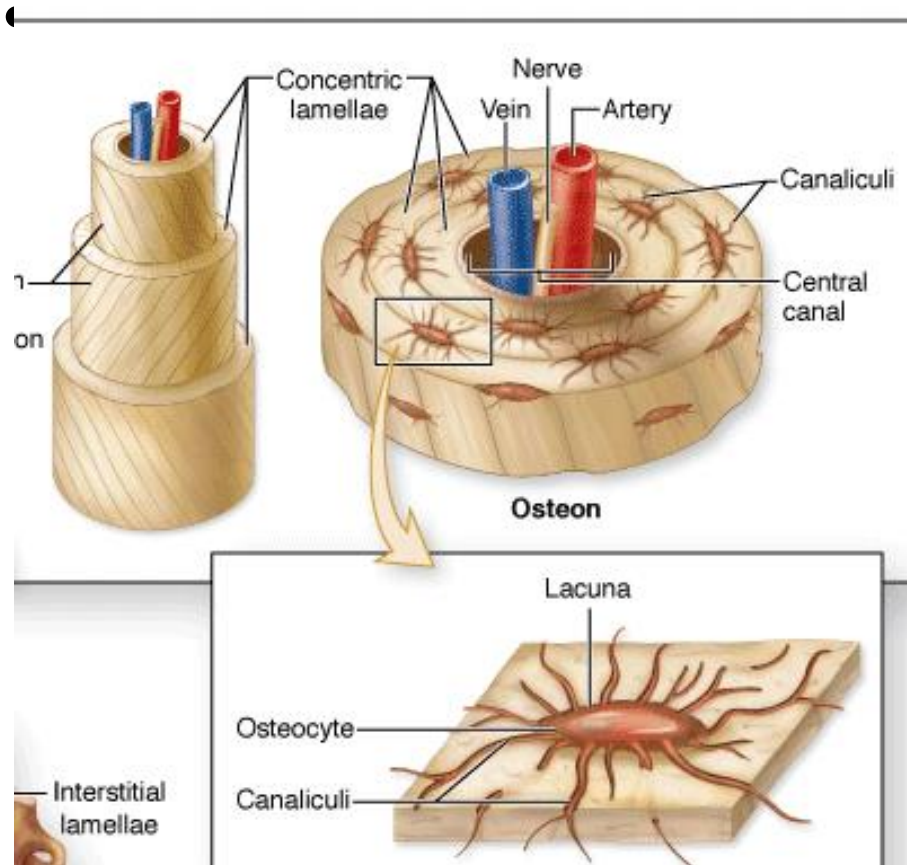




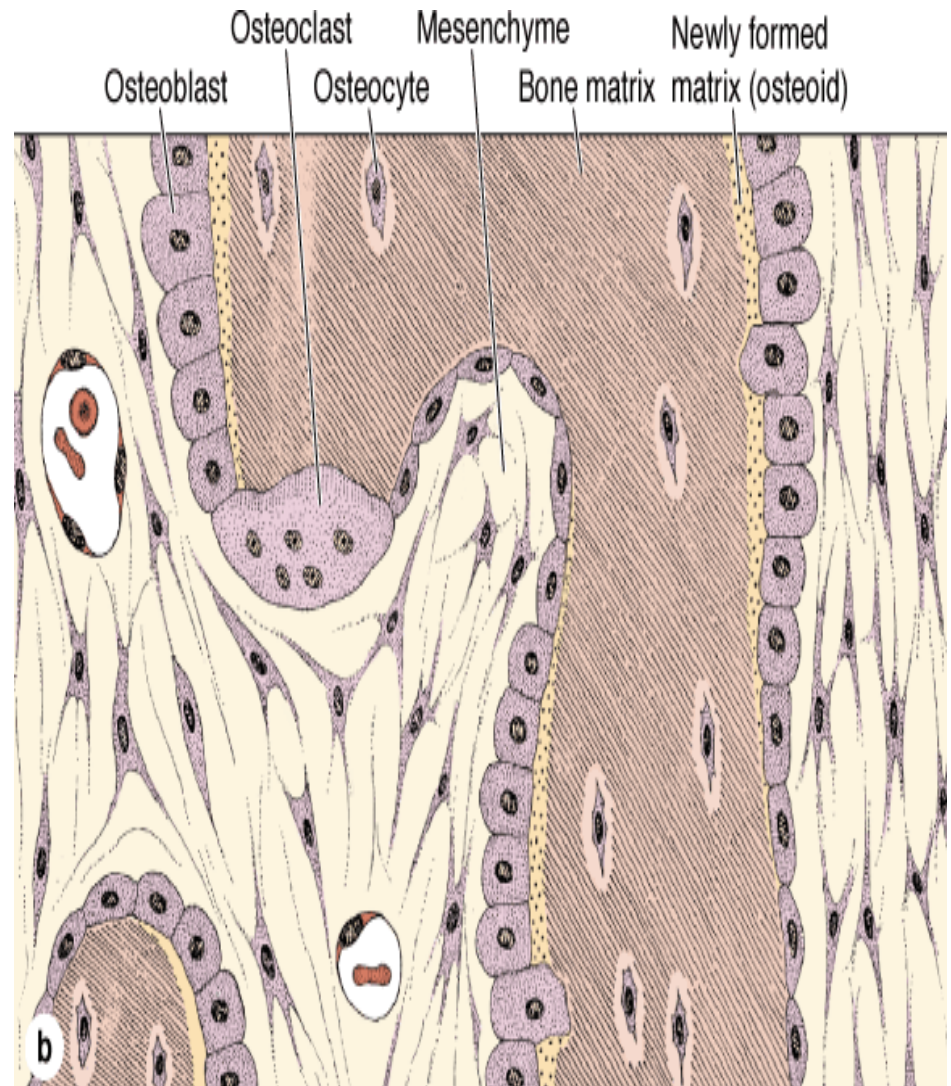
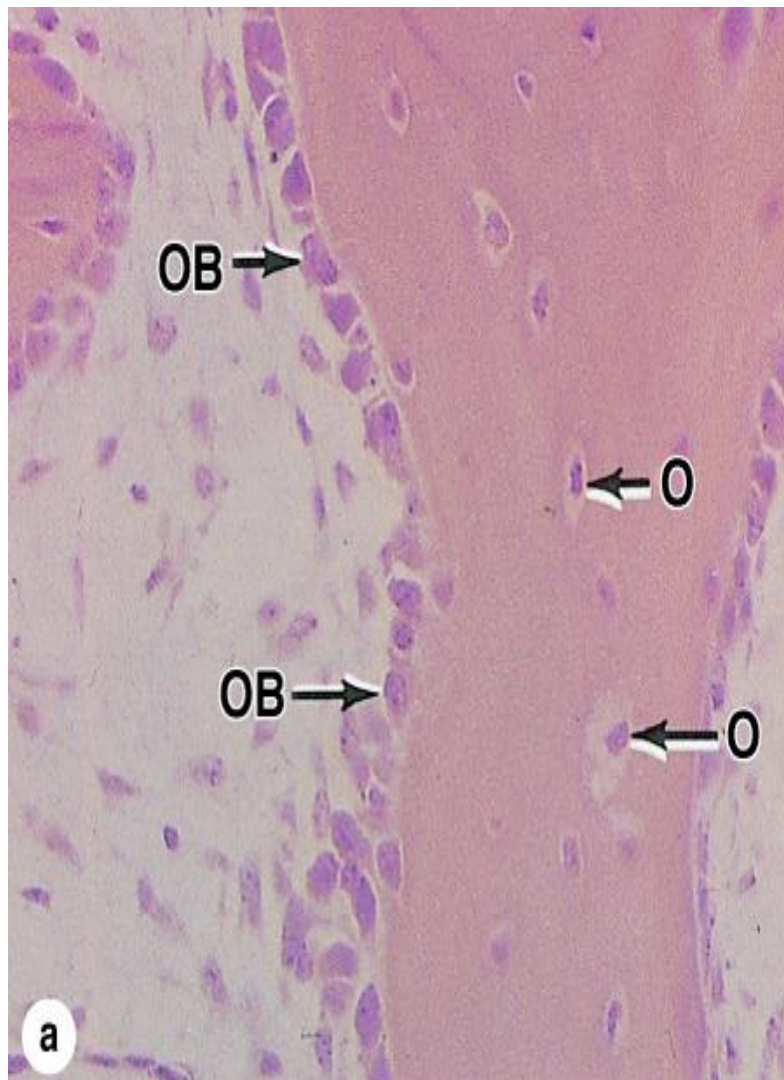
## Bone-Lining Cells

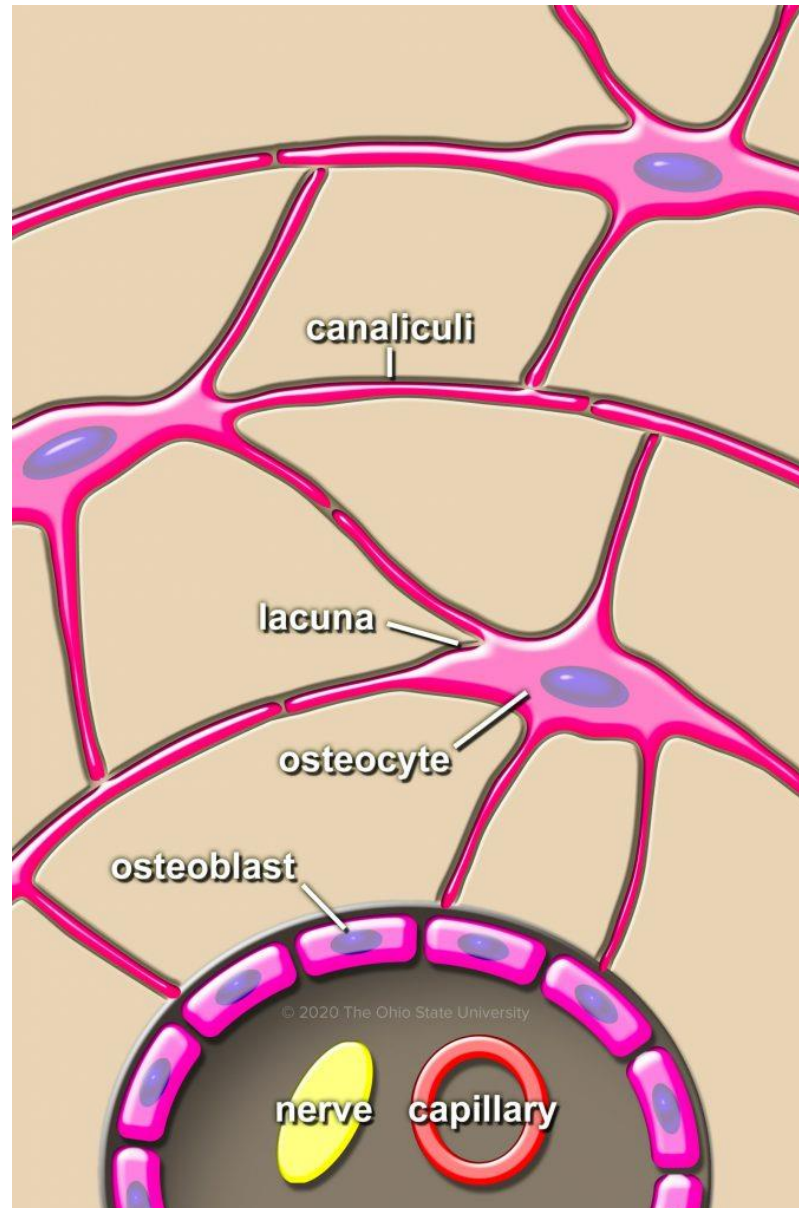
- **Bone-lining cells are derived from osteoblasts and cover bone that is not remodeling.**
- layer of flat cells with attenuated cytoplasm
  - on external bone surfaces = periosteal cells
  - on internal bone surfaces = endosteal cells
- Cell processes contact one another and with osteocytic processes → Gap junctions
- Function
  - maintenance and nutritional support of the osteocytes and regulate the movement of calcium and phosphate into and out of the bone.

## Osteocytes



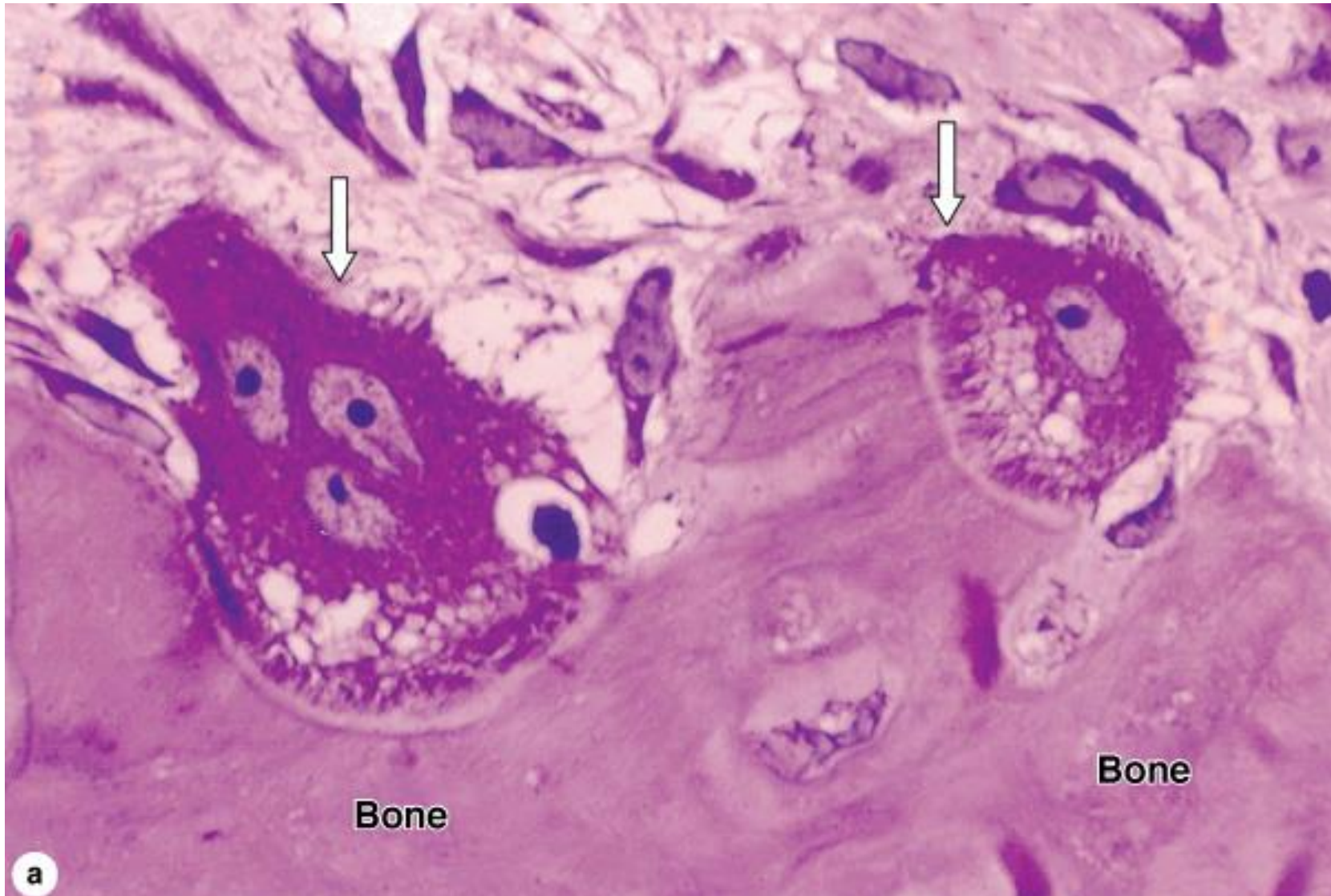




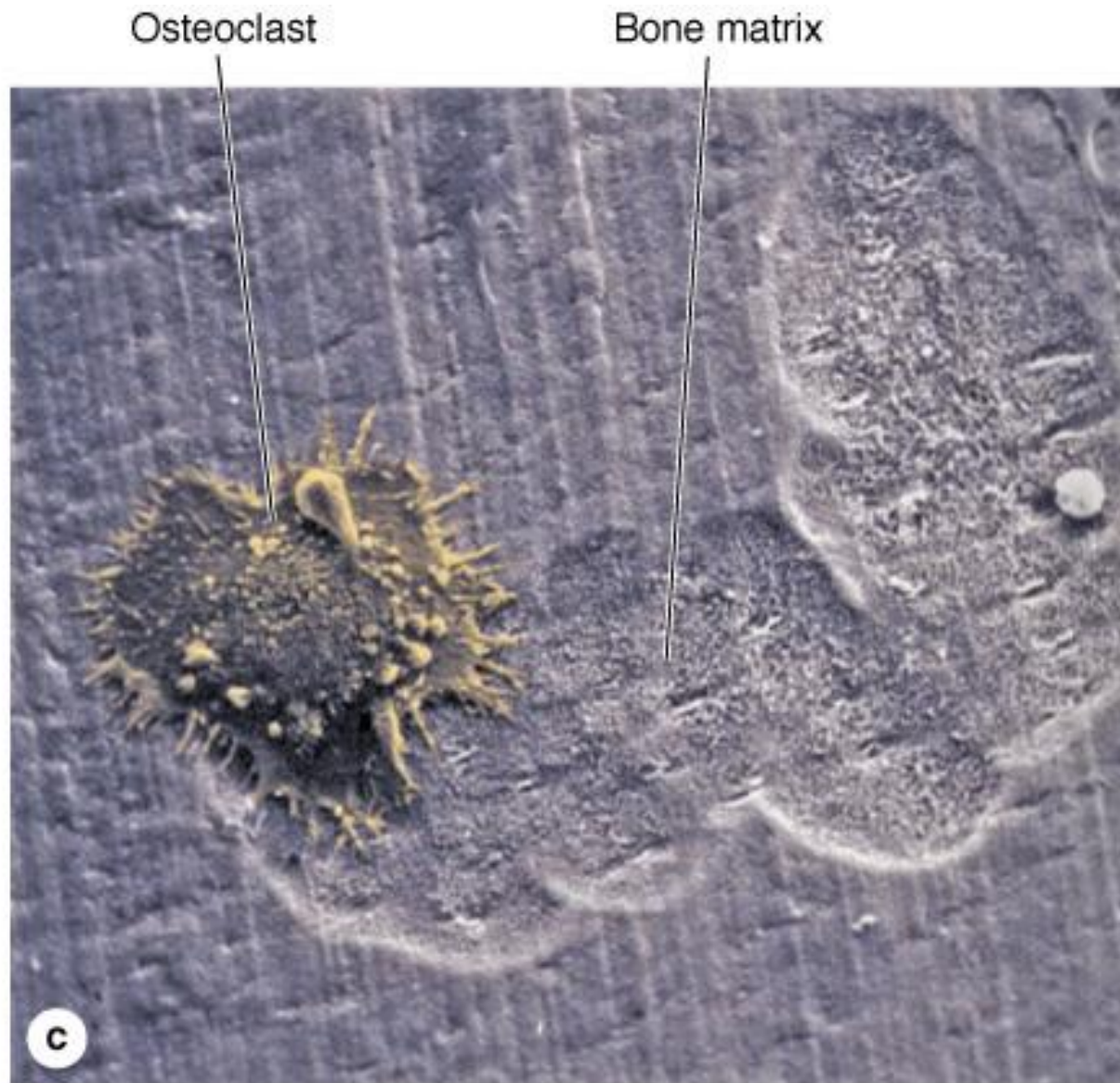




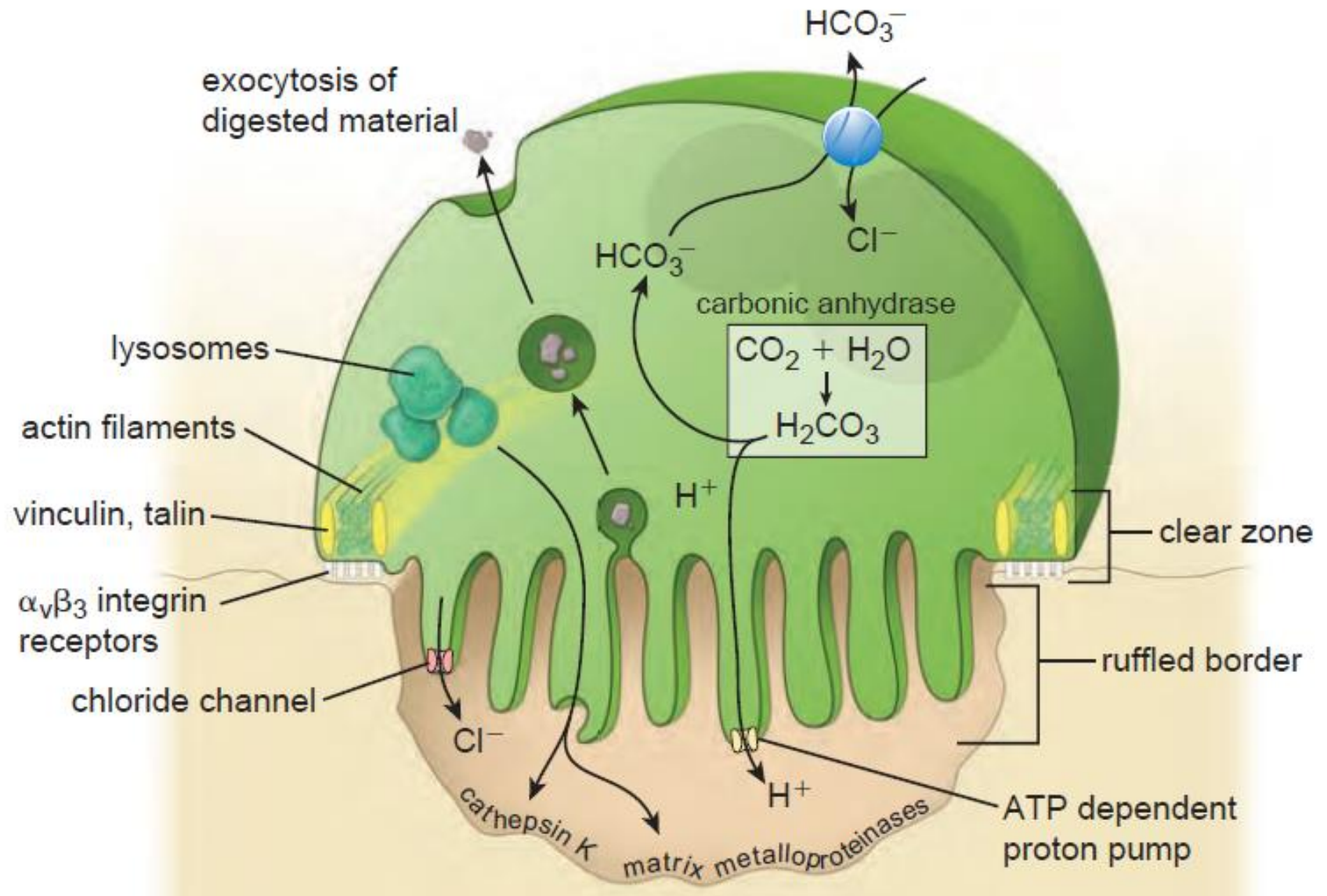
# Osteoclasts



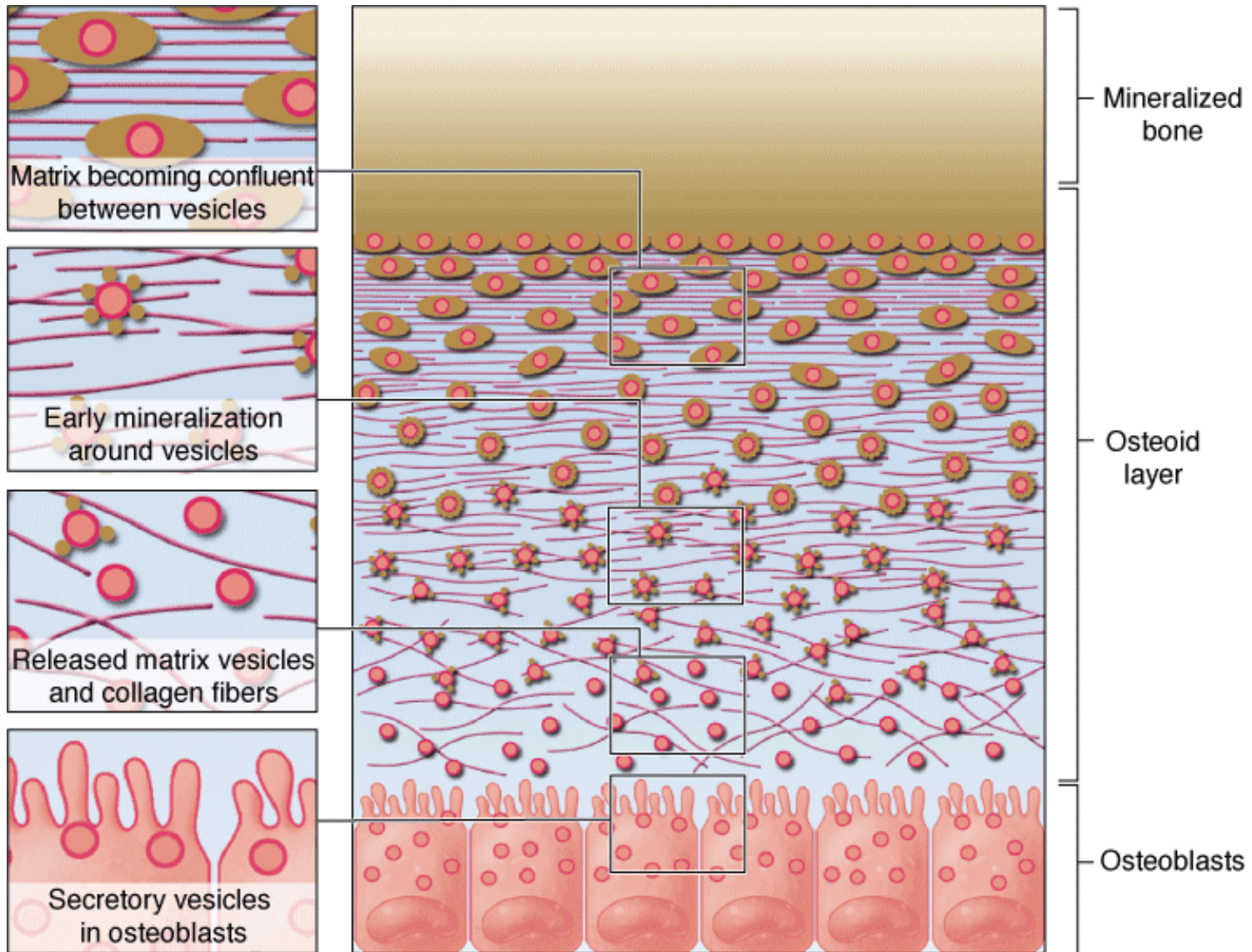




# Core Concept

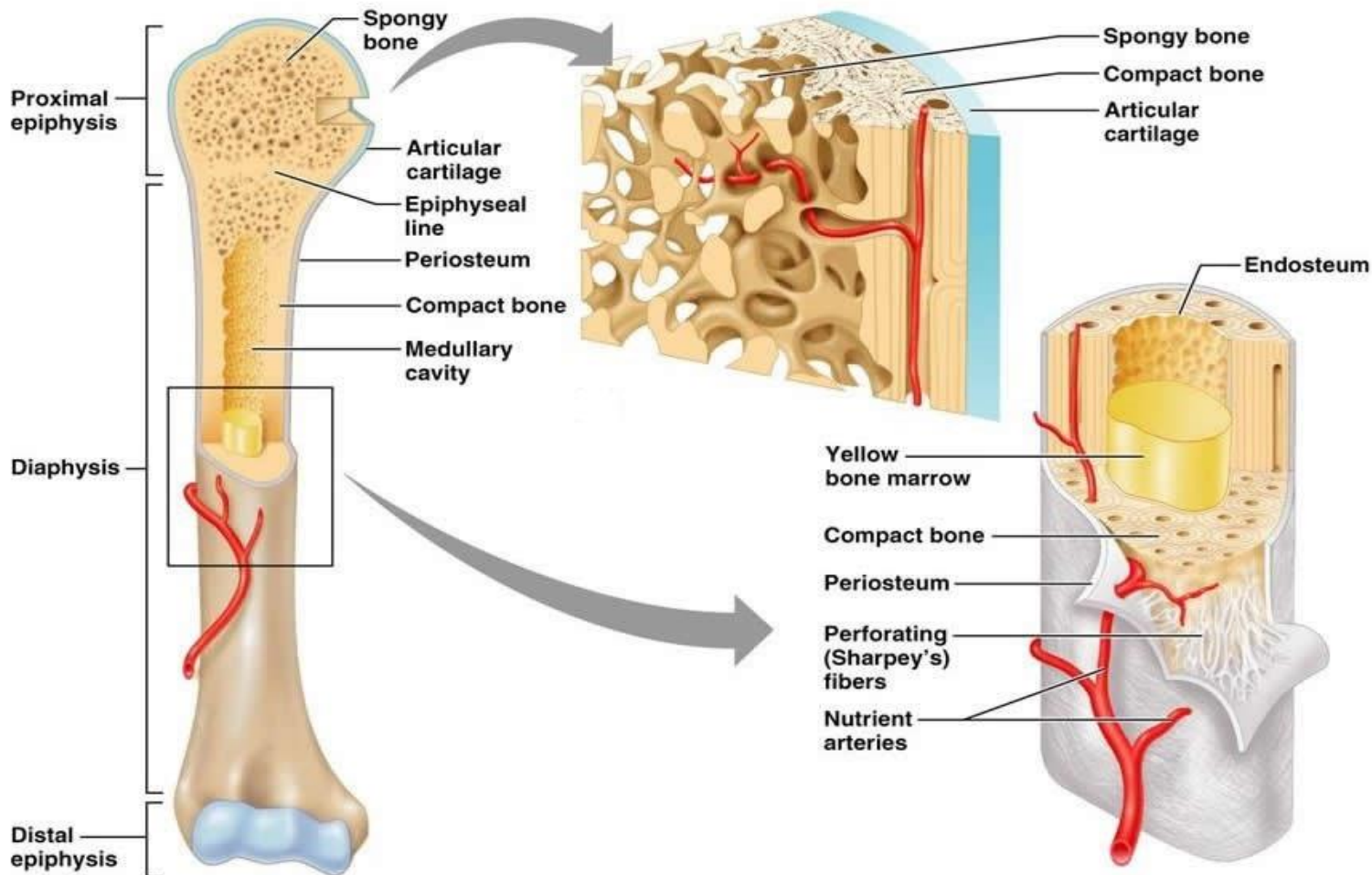


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## Compact and cancellous bone



# Research article

- Current Trends in Research on Bone Regeneration: A Bibliometric Analysis
- <https://www.hindawi.com/journals/bmri/2020/8787394/#:~:text=Xin%20Huang,and%20Gang%20Chen>



# Learning Resources

- Junqueira's Basic Histology 12<sup>th</sup> Edition, Chapter 8
- Histology , A text and Atlas by Michael H.Ross 6<sup>th</sup> Edition, Chapter 8
- Google scholar
- <https://www.hindawi.com/journals/bmri/2020/8787394/#:~:text=Xin%20Huang,and%20Gang%20Chen>