

HISTOLOGY PRACTICAL LECTURE - 5 -

BONE TISSUE

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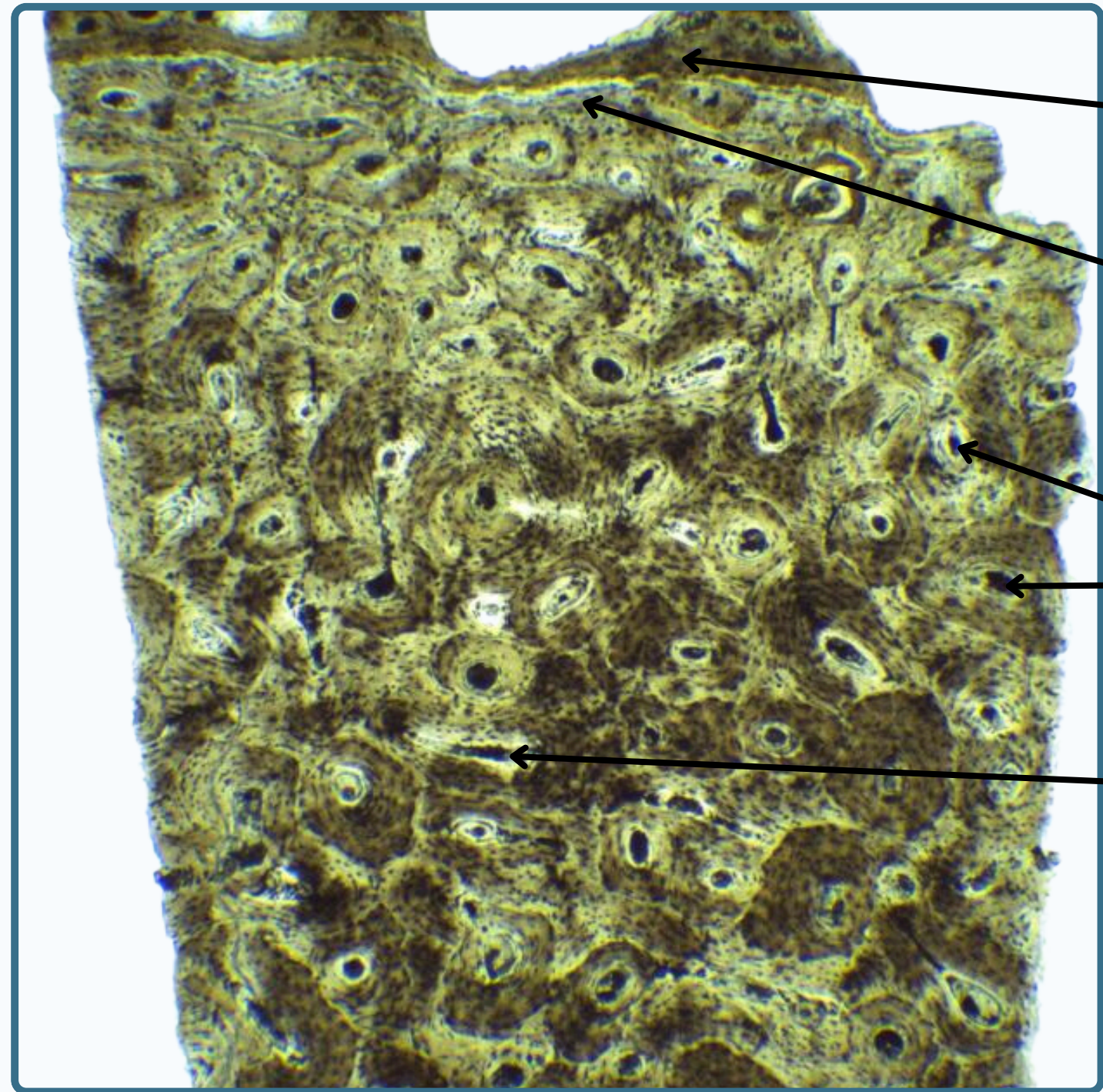
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BONE TISSUE



COMPACT BONE



periosteum

outer circumferential lamellae
(beneath periosteum)

osteons

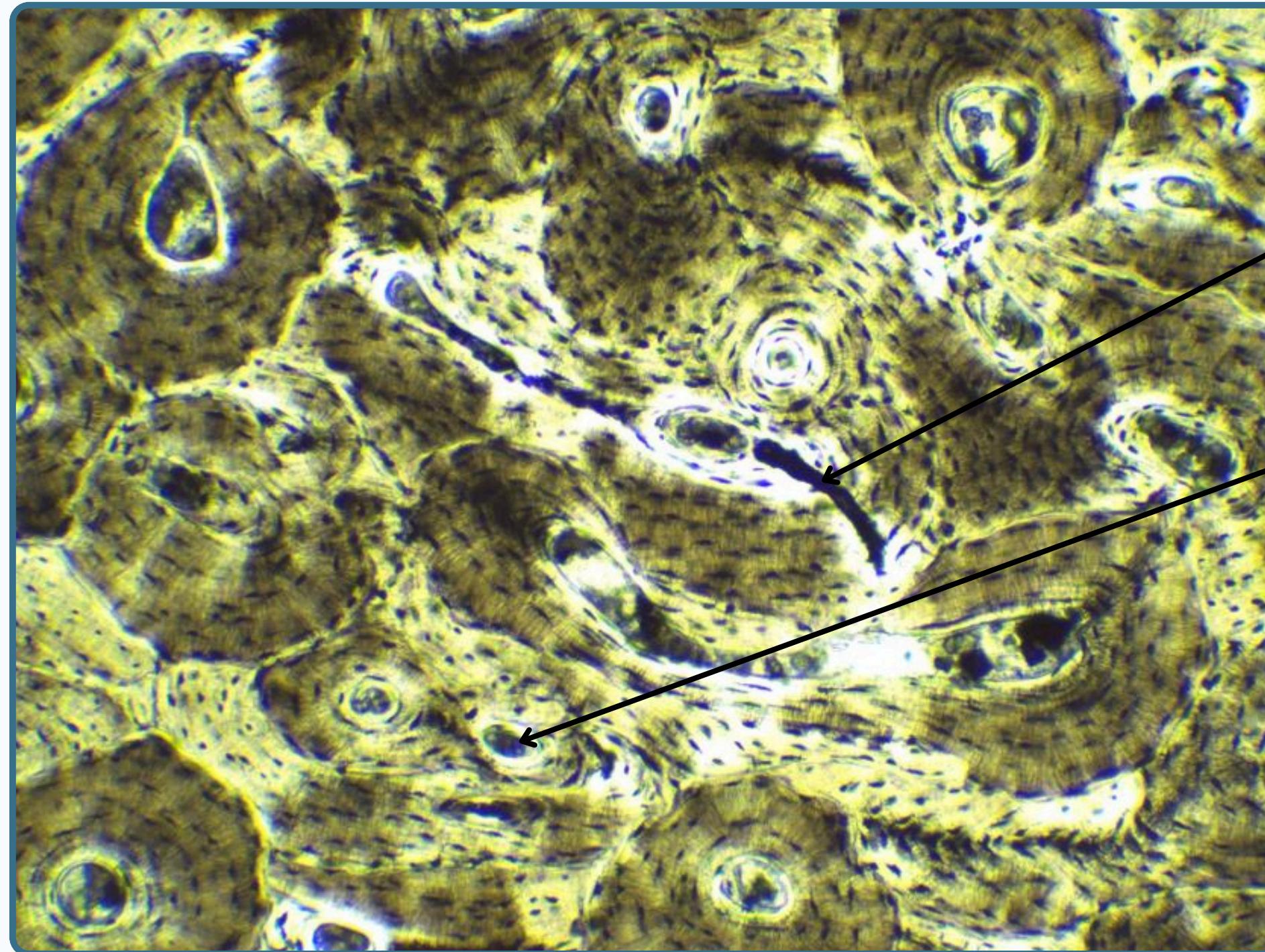
volkmann's canal



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COMPACT BONE



volkmann's canal

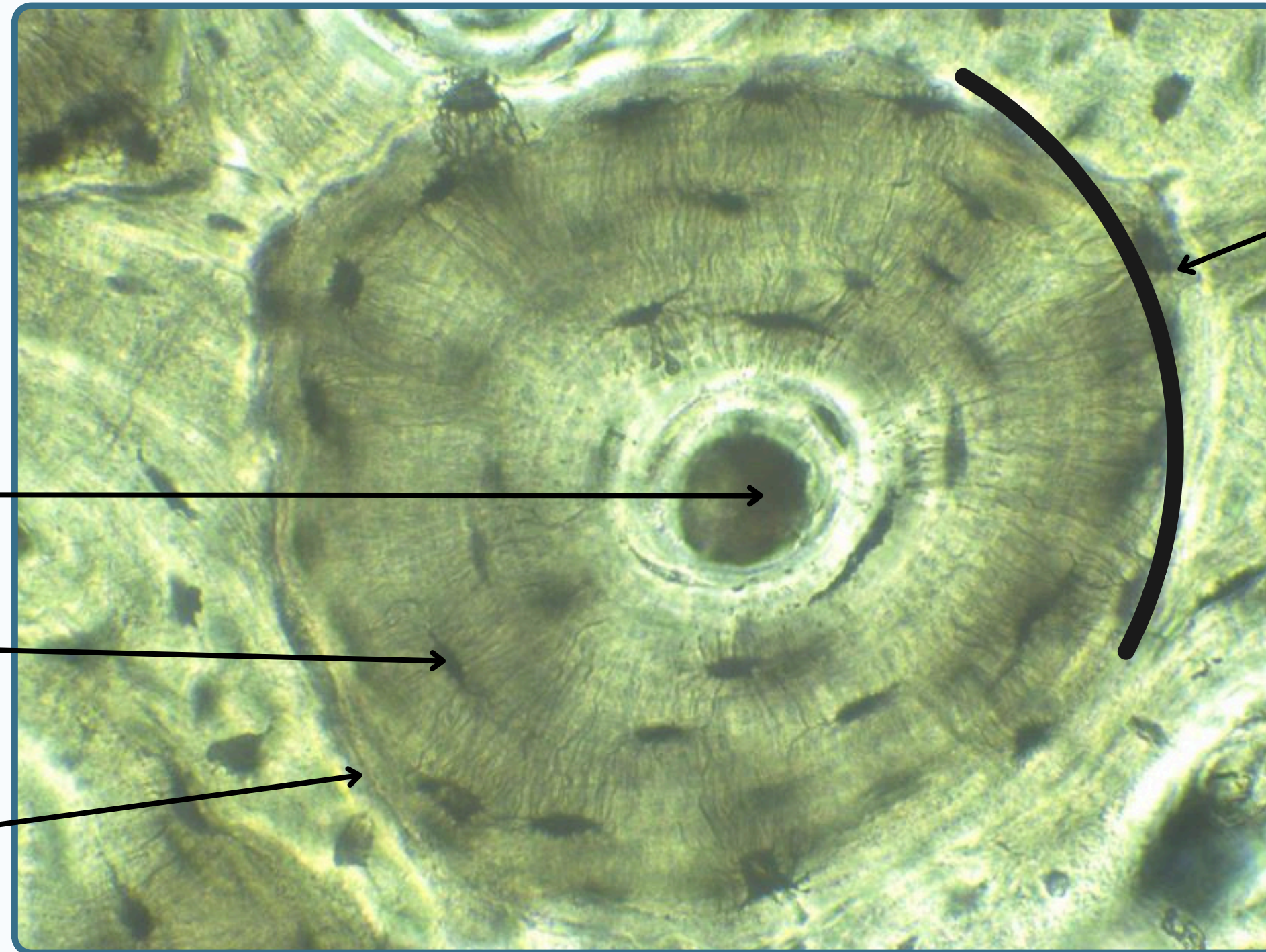
osteons



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COMPACT BONE



**osteons
(Haversian System)**

Haversian Canal

**osteocytes
in lacunae**

**cement layer or
(line)**



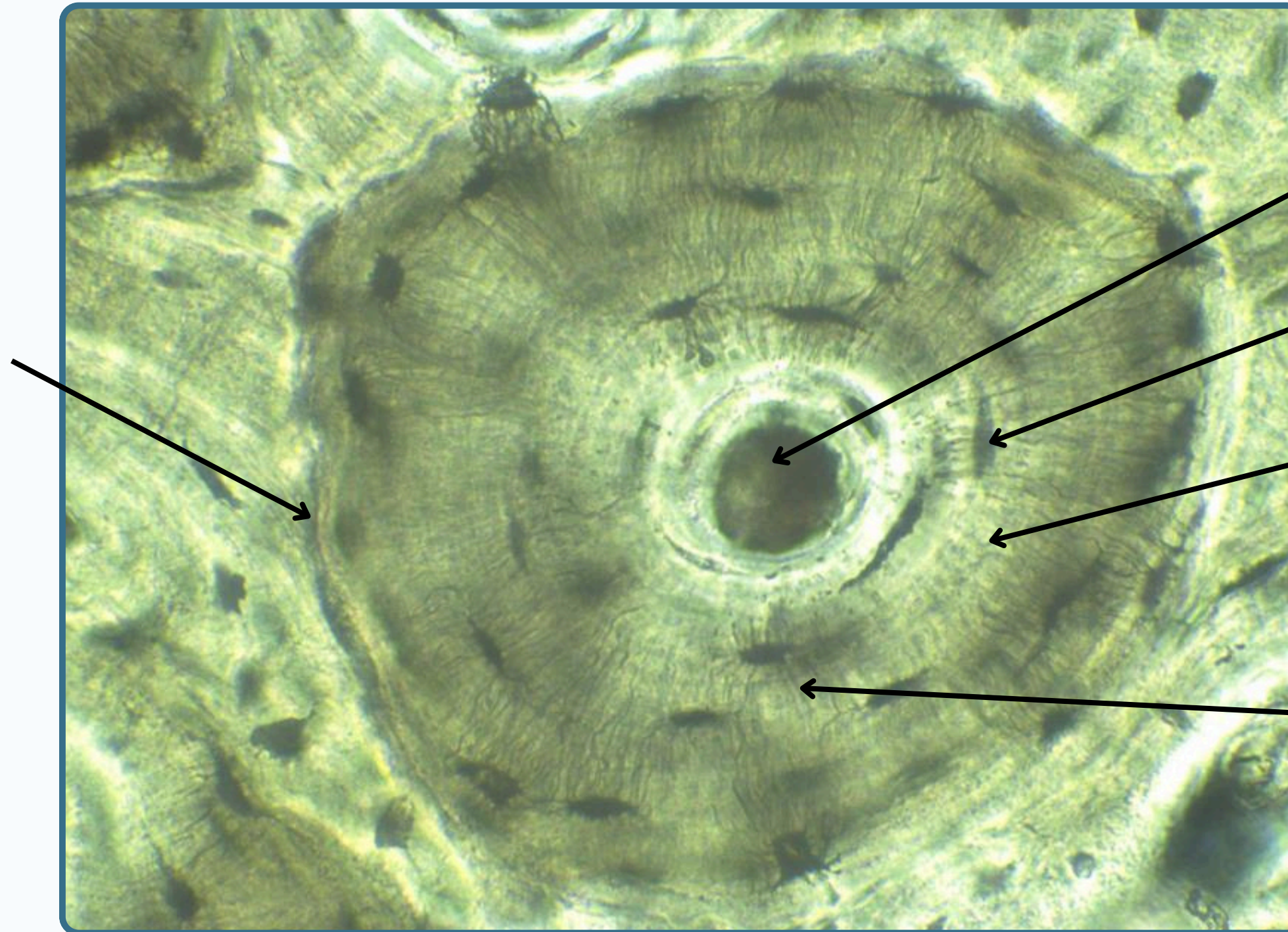
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COMPACT BONE

cement layer or (line)

are collagen fibers that surround osteons



Haversian Canal

osteocytes in lacunae

concentric lamellae

canaliculi

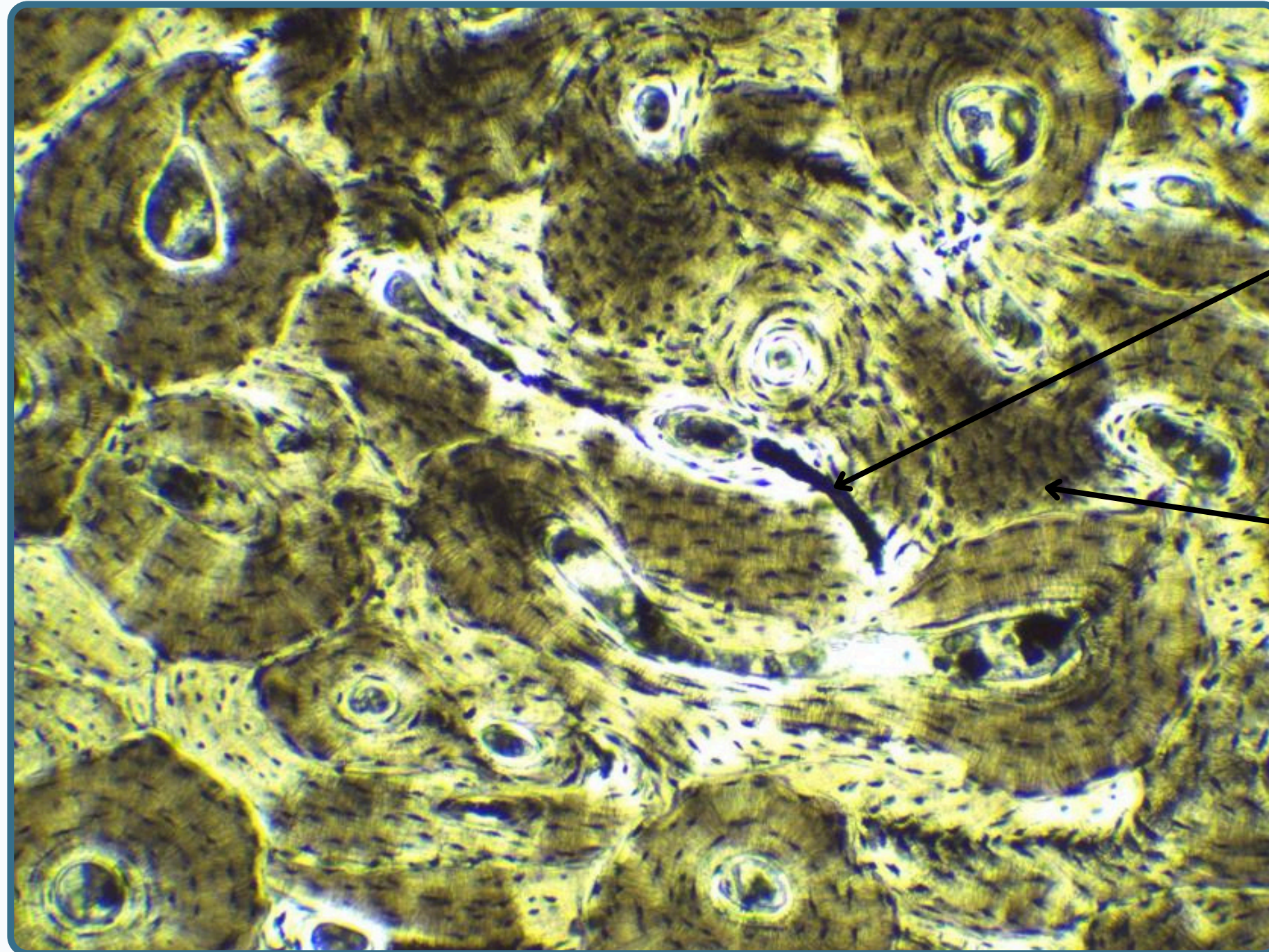
(cytoplasmic projections from osteocyte)



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volkmann's canal

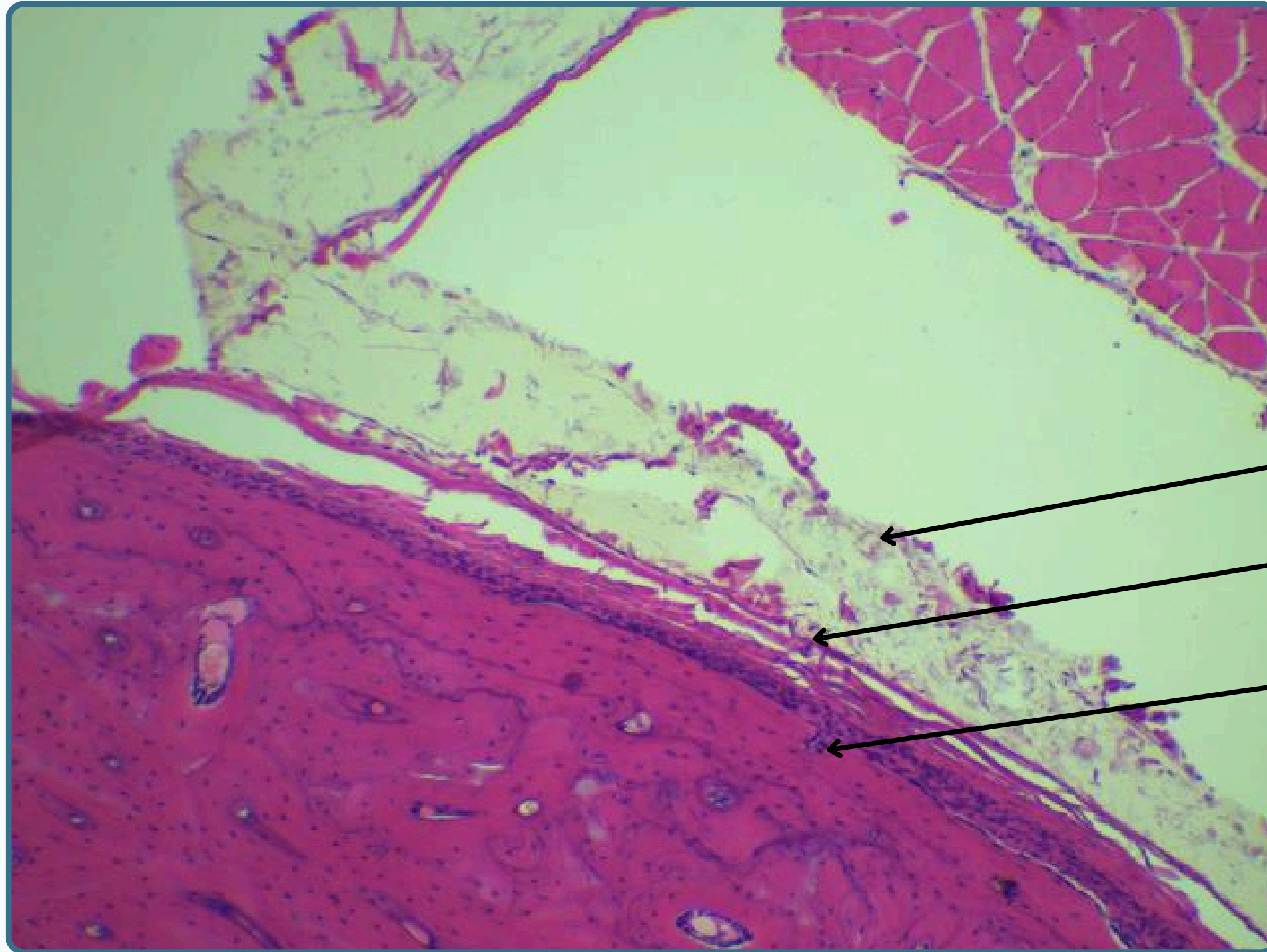
interstitial lamellae
remaining of osteocytes
partially destroyed by
osteoclast



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SECTION IN DECALCIFIED BONE



Periosteum consist of two layers:

- outer that consist of collagen bundle of fibroblast
- inner that consist of osteoprogenitor and osteoblast

outer layer of periosteum

outer layer of periosteum

Sharpey's fibers

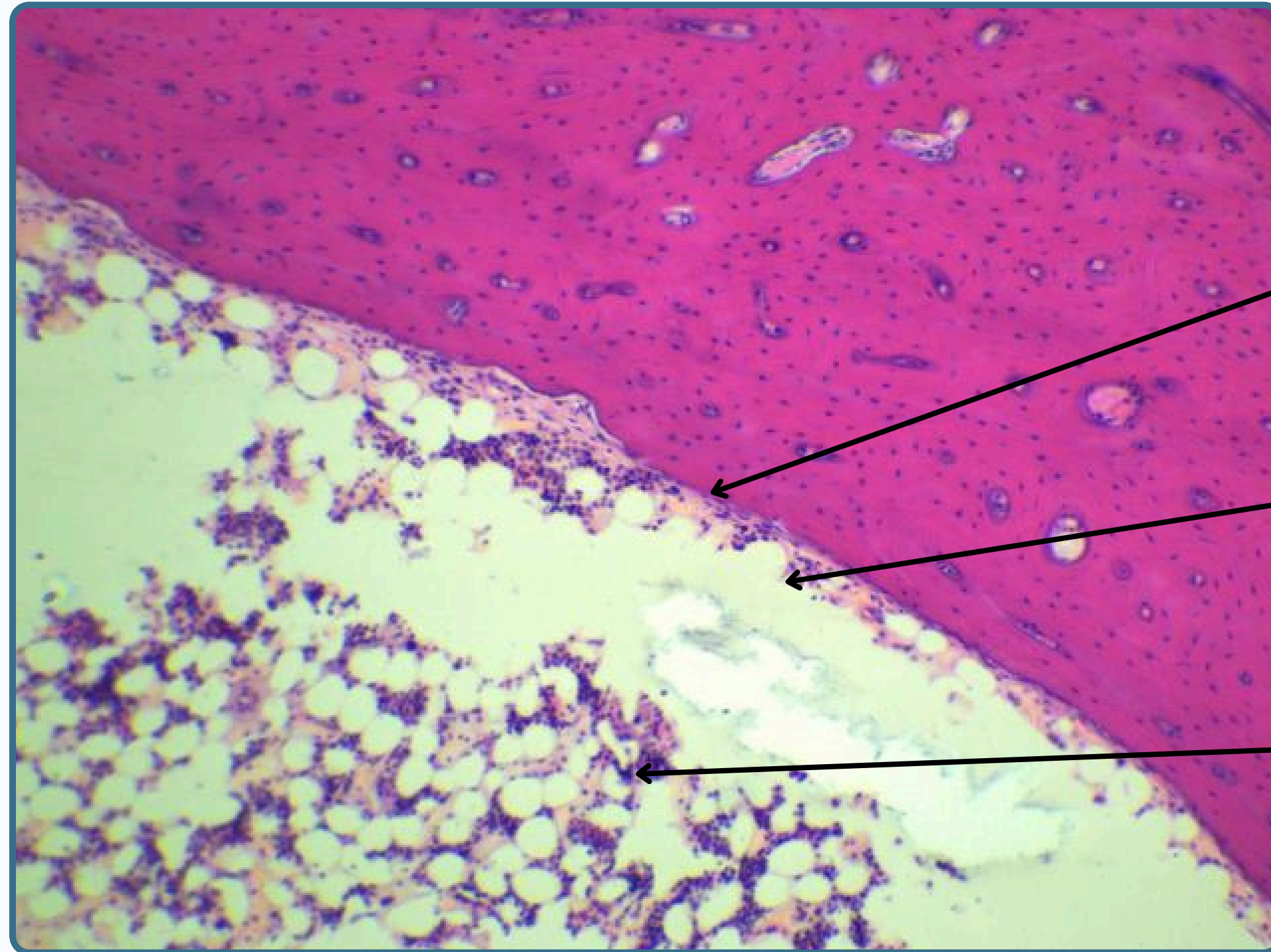
Bundles of periosteal collagen fibers extending into matrix called **Sharpey's fibres** connecting the outer layer Periosteum consist of two layers periosteum with the matrix



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endosteum's inner layer

Inner that consists of osteoprogenitor and osteoblasts

endosteum's inner layer

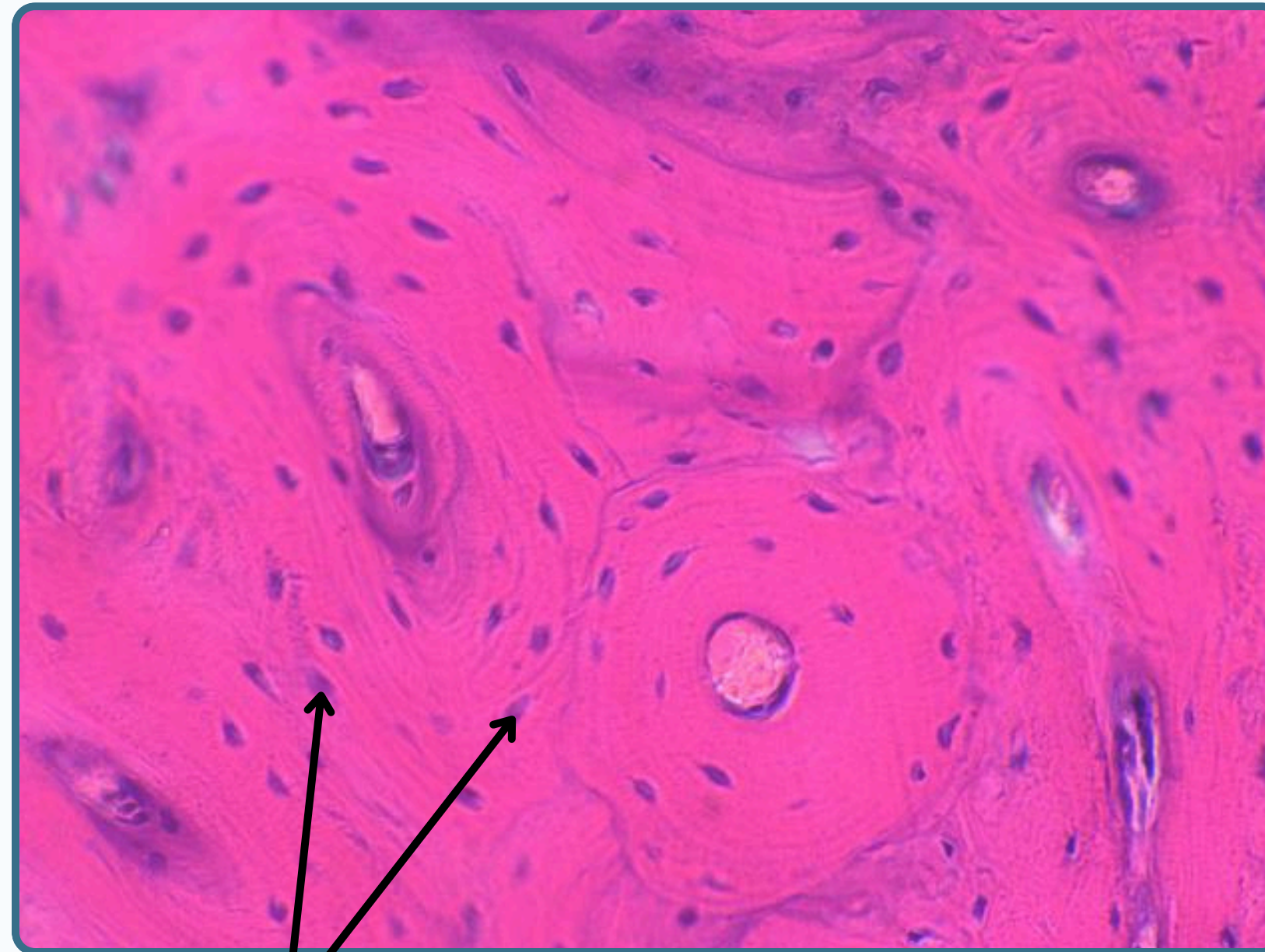
that consists of collagen bundles and fibroblast

marrow cavity

containing bone marrow tissue

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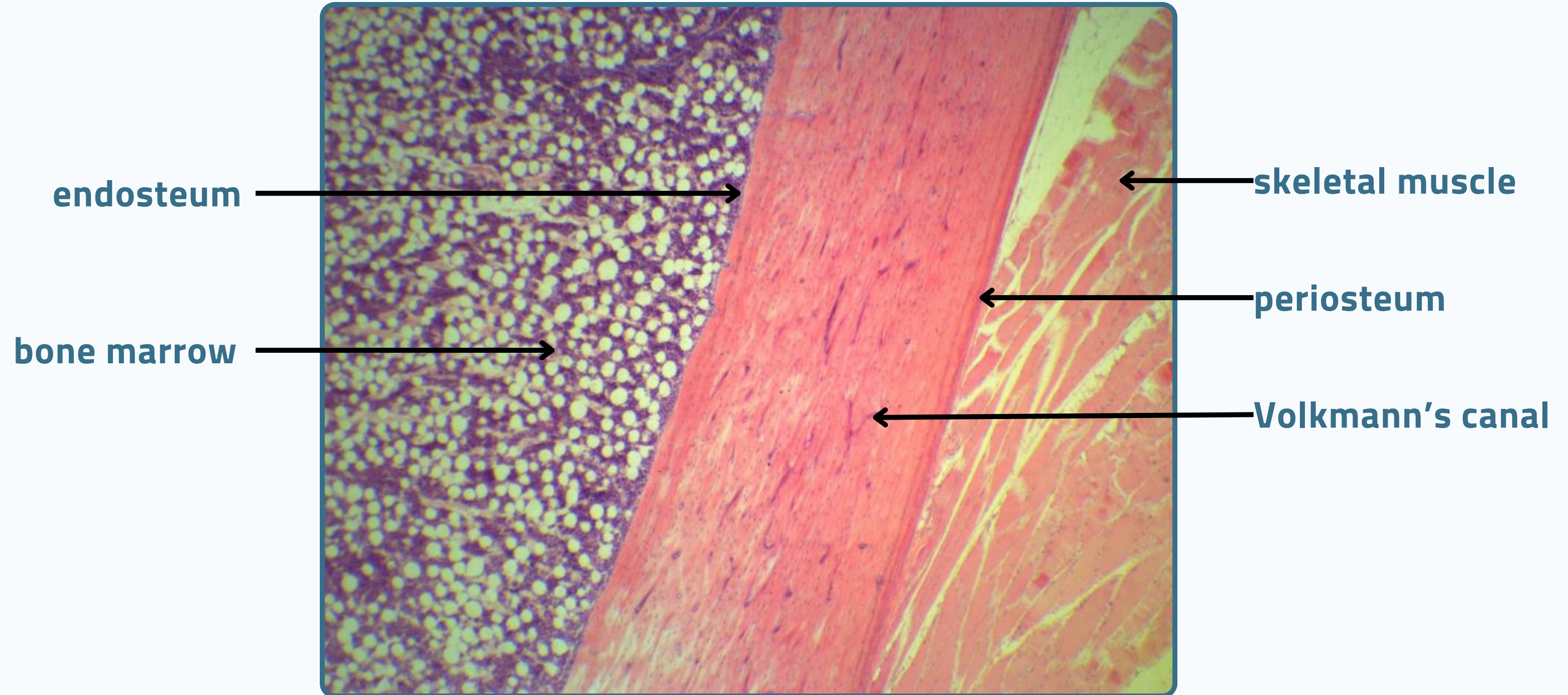
COMBACT BONE



osteocyte
(flat almond shape)

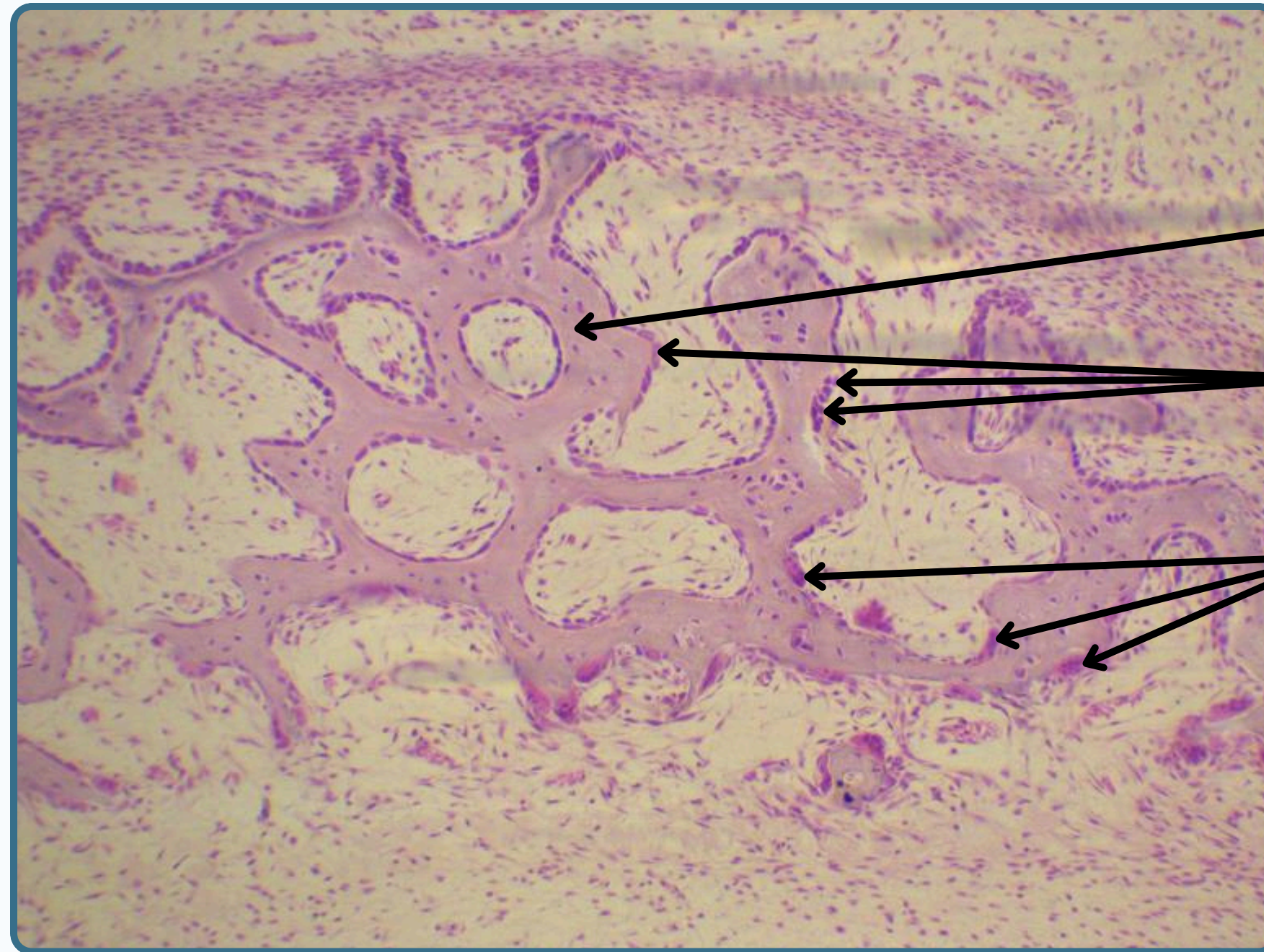
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LONGITUDINAL SECTION IN DECALCIFIED BONE



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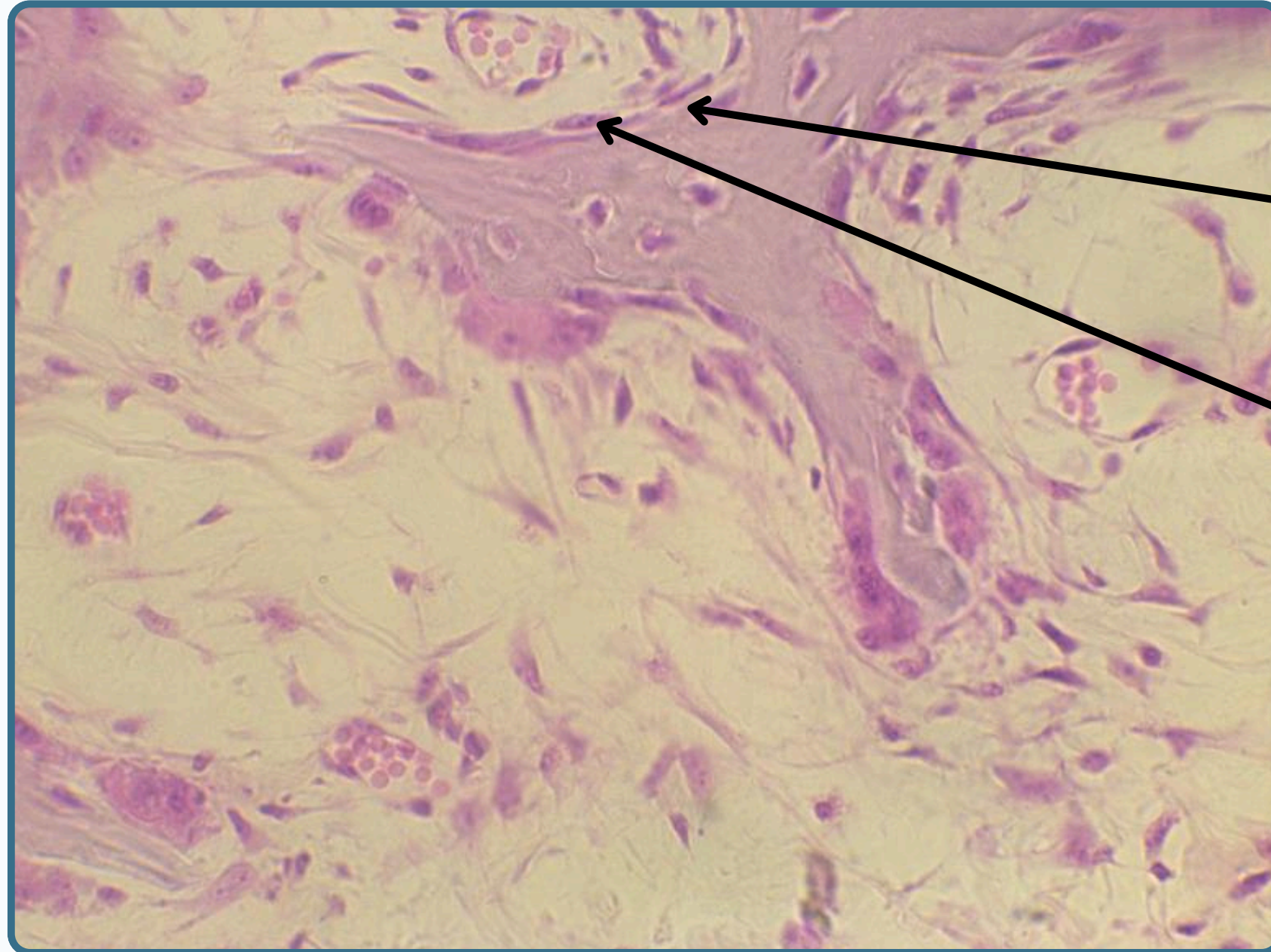
LONGITUDINAL SECTION IN MEMBRANOUS BONE



trabecular or spicules

osteoblast

osteoclast



osteoid

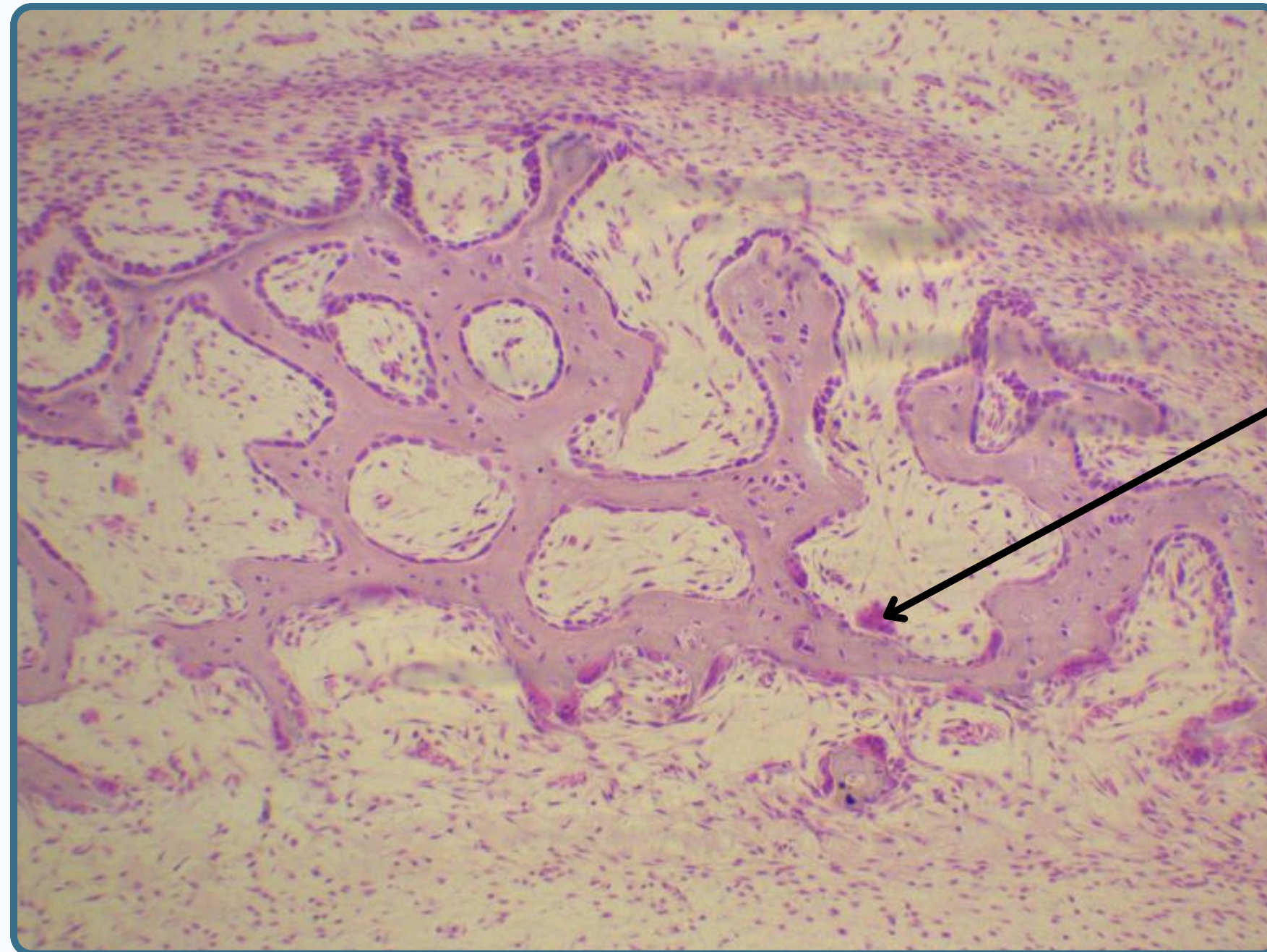
is the thin light newly formed matrix under the osteoblast

shape of osteoblasts:

- When activity decrease they are flattened and the cytoplasm basophilia is reduced
- When active they are cuboidal to columnar

Osteoblasts

(on surface of bone Side by side resembling simple epithelium) their shape depend on their activity

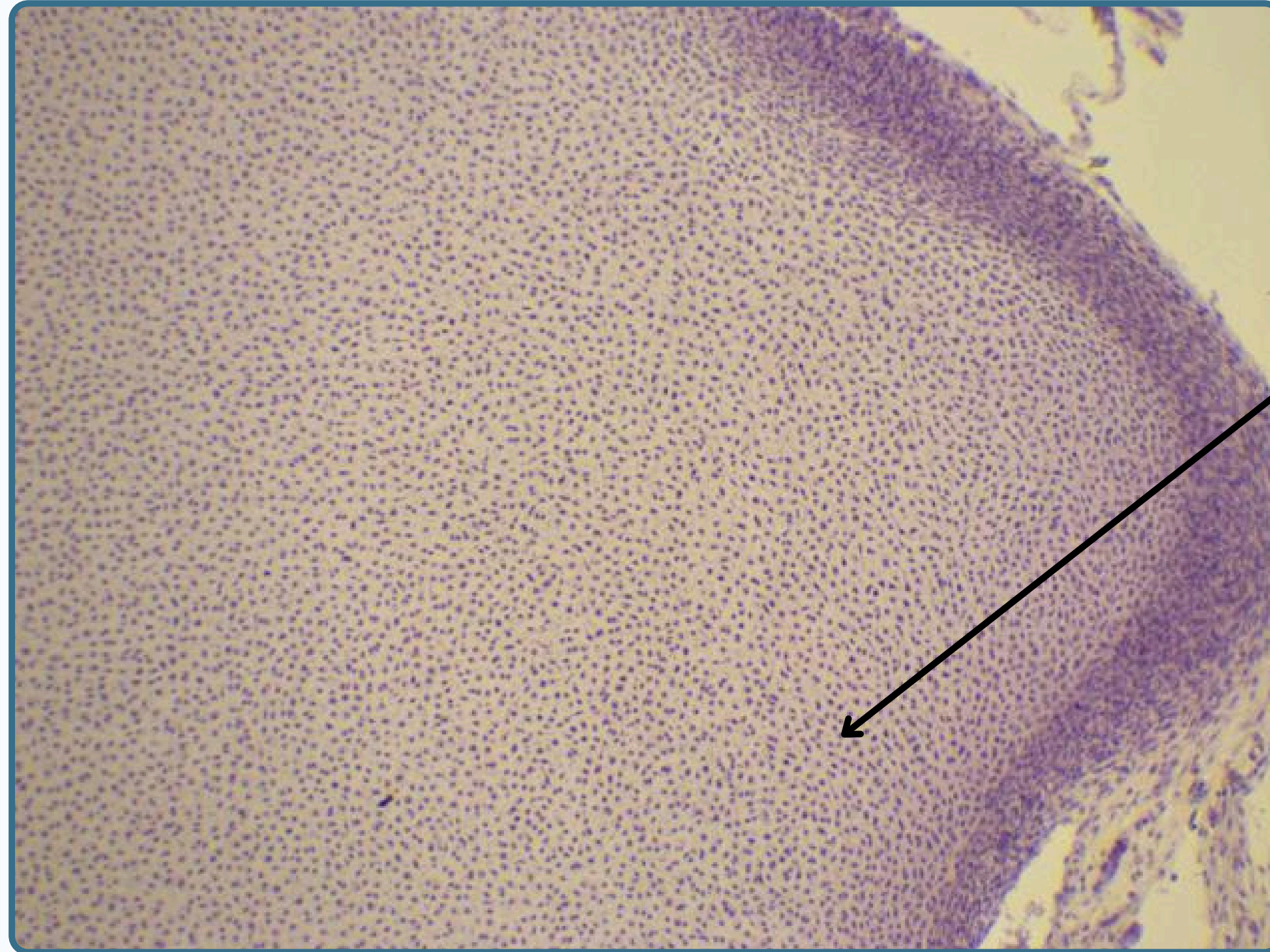


osteoclast

- Very large giant cell
- Multinucleated
- Located within lacunae
- Responsible for bone resorption and remodeling

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SECTION IN DEVELOPING BONE ENDOCHONDRIAL OSSIFICATION



resting or Reserve cartilage zone

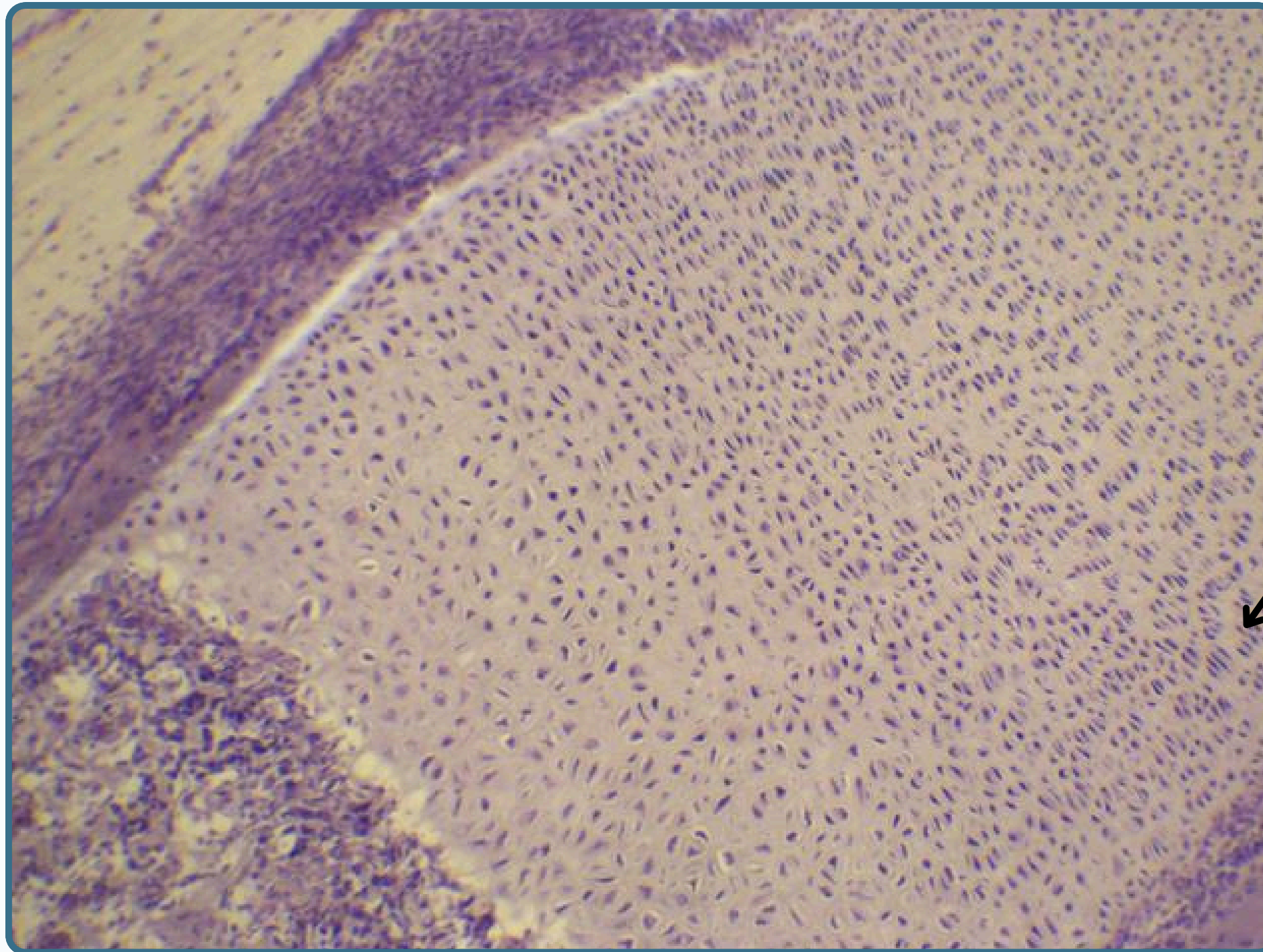
Consist of typical hyaline cartilage



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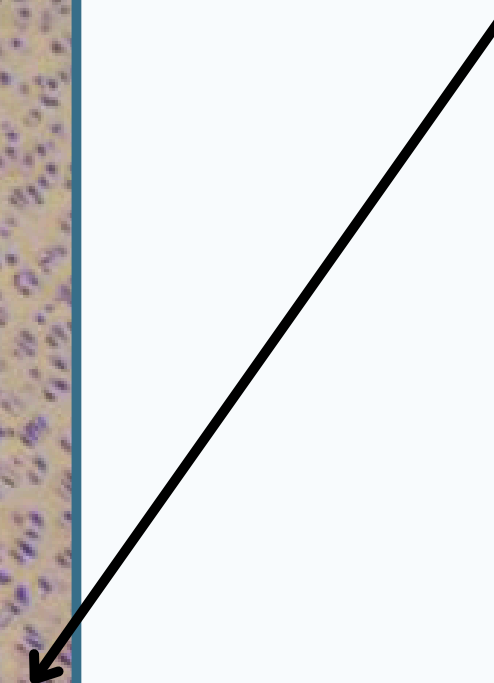


SECTION IN DEVELOPING BONE ENDOCHONDRIAL OSSIFICATION



Proliferative zone

Chondrocytes divide quickly forming columns of stacked cells

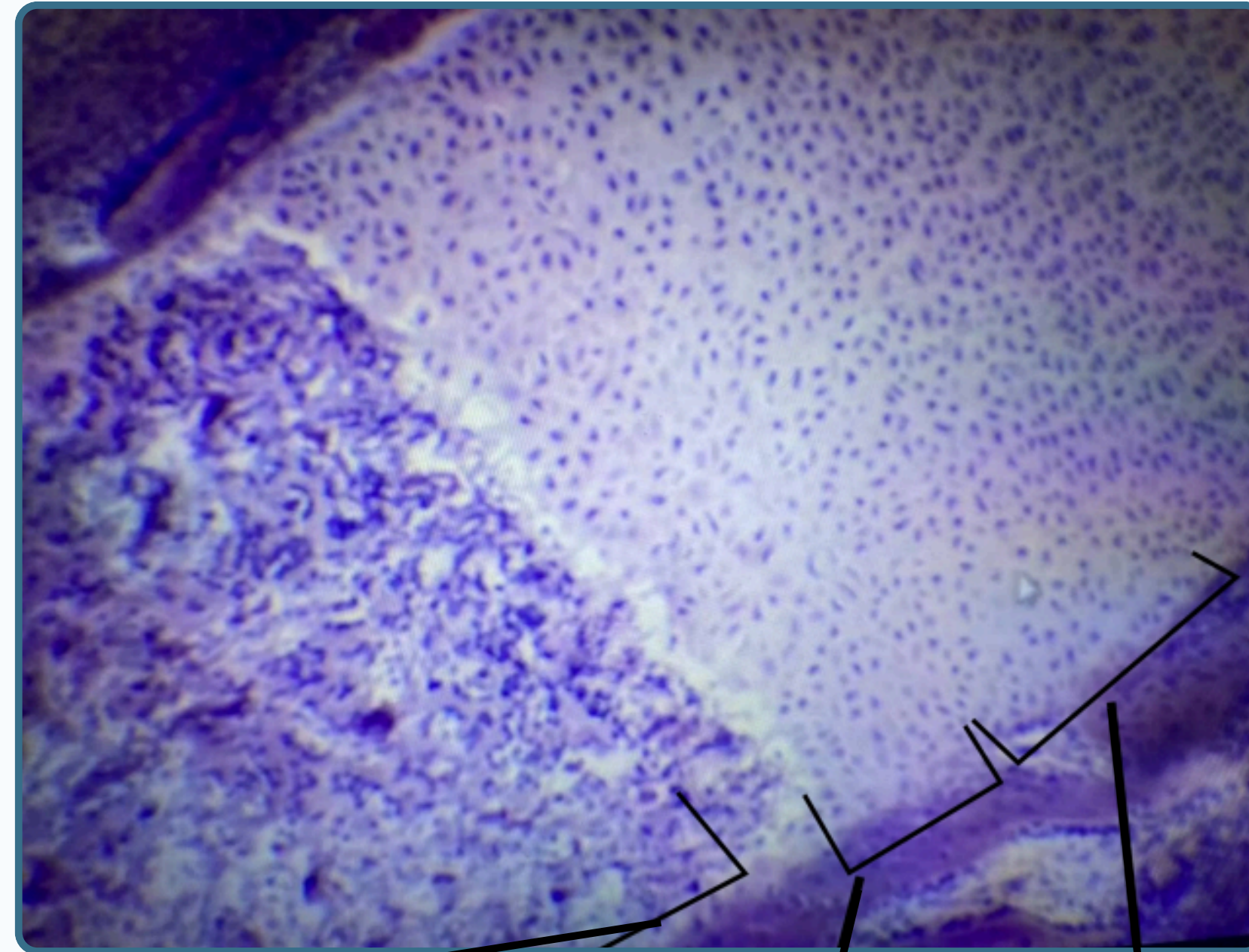




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SECTION IN DEVELOPING BONE ENDOCHONDRIAL OSSIFICATION



Ossification zone
Bone tissue appear

Calcified cartilage zone
Lose of cartilage cells by apoptosis
and the matrix become calcified

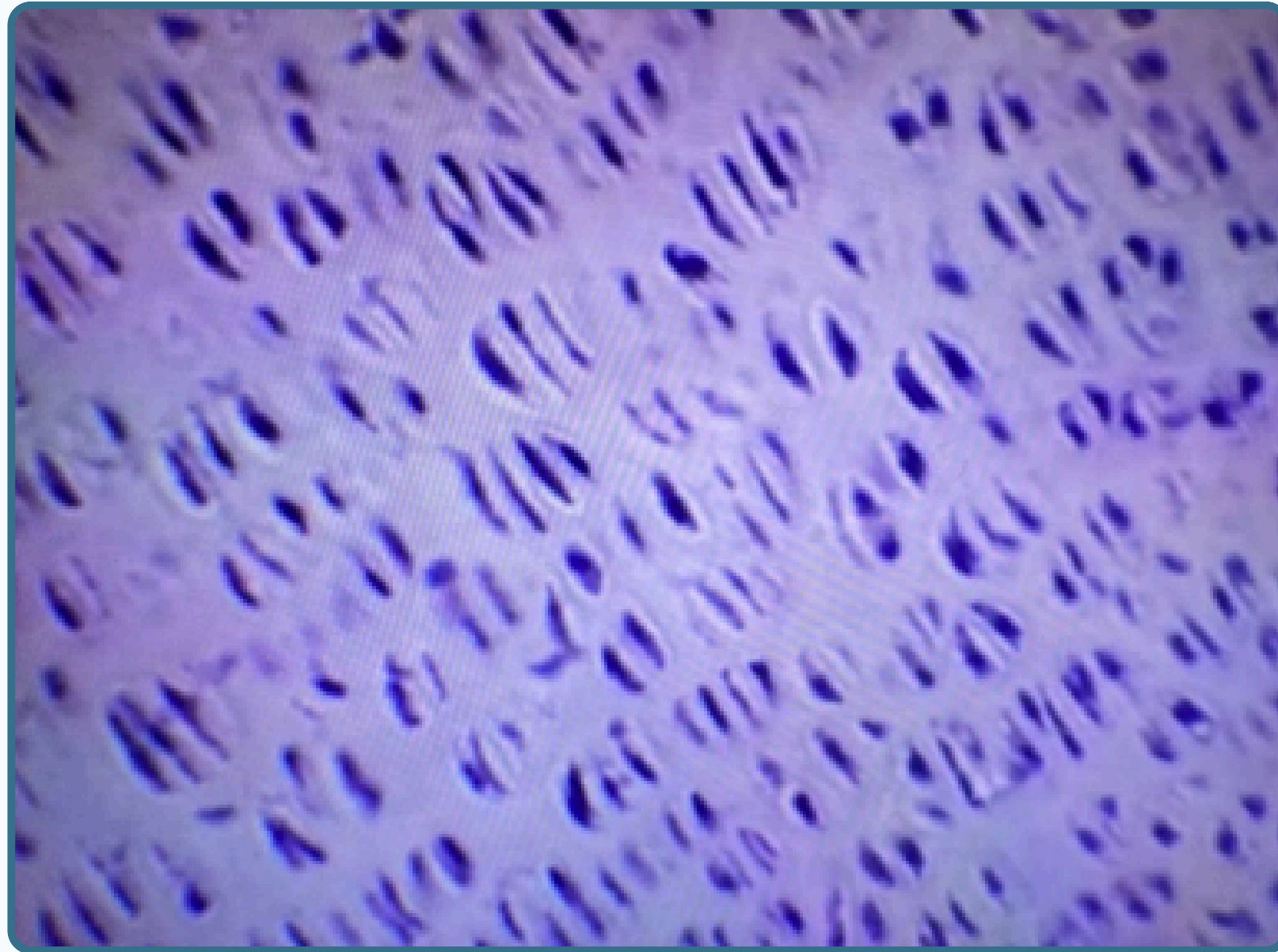
Hypertrophic cartilage zone
Cartilage swollen and
cytoplasm filled with glycogen



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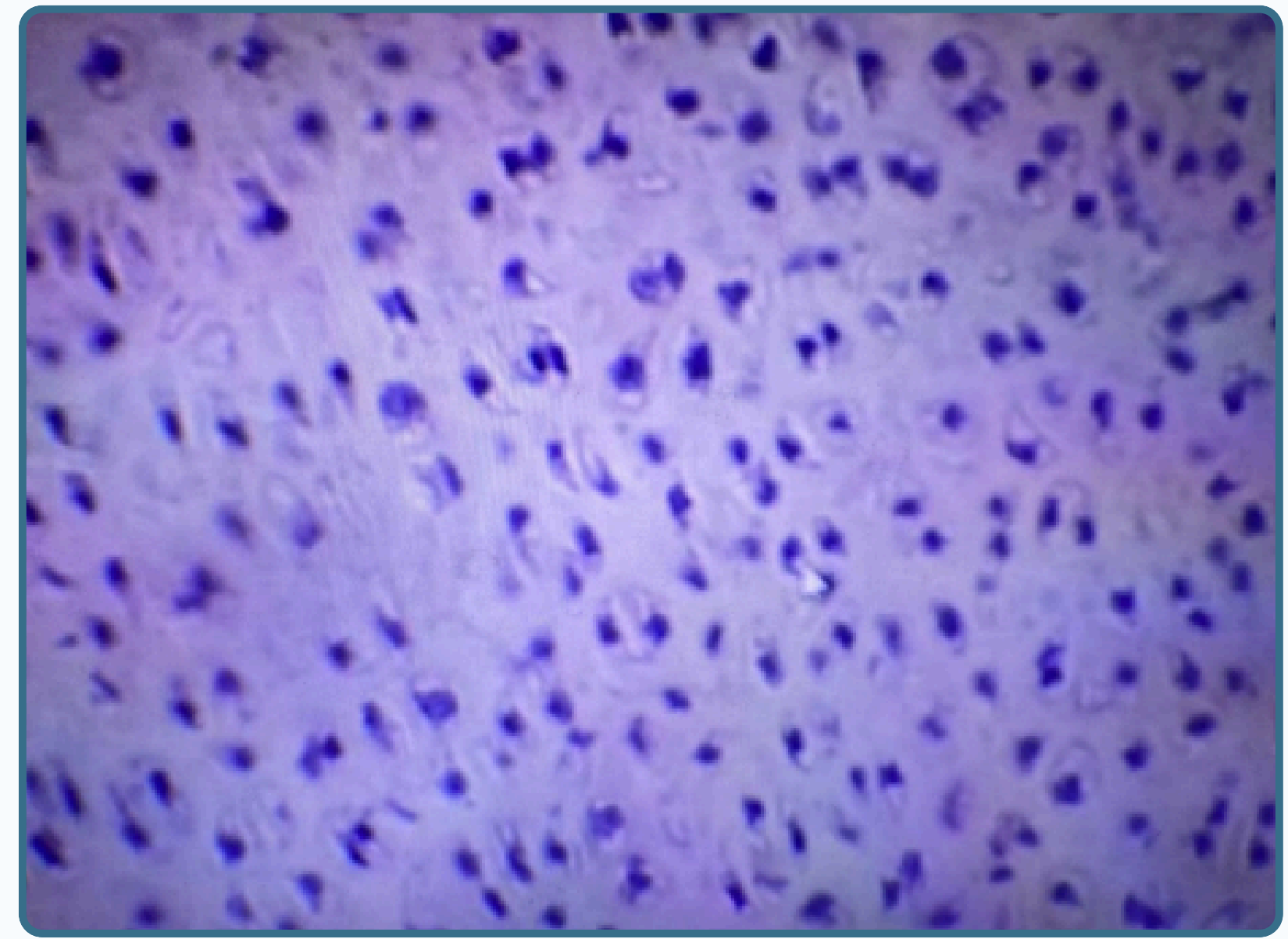


SECTION IN DEVELOPING BONE ENDOCHONDRIAL OSSIFICATION



Proliferative zone

Chondrocytes divide quickly forming columns of stacked cells



Resting or Reserve cartilage zone

Consist of typical hyaline cartilage

THANK YOU

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