Bone (osseous tissue)

By

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It is specialized connective tissue that provides mechanical support and protection , Very important storage of calcium ,and hematopoiesis(blood cell formation) .

There are two Types of bones :

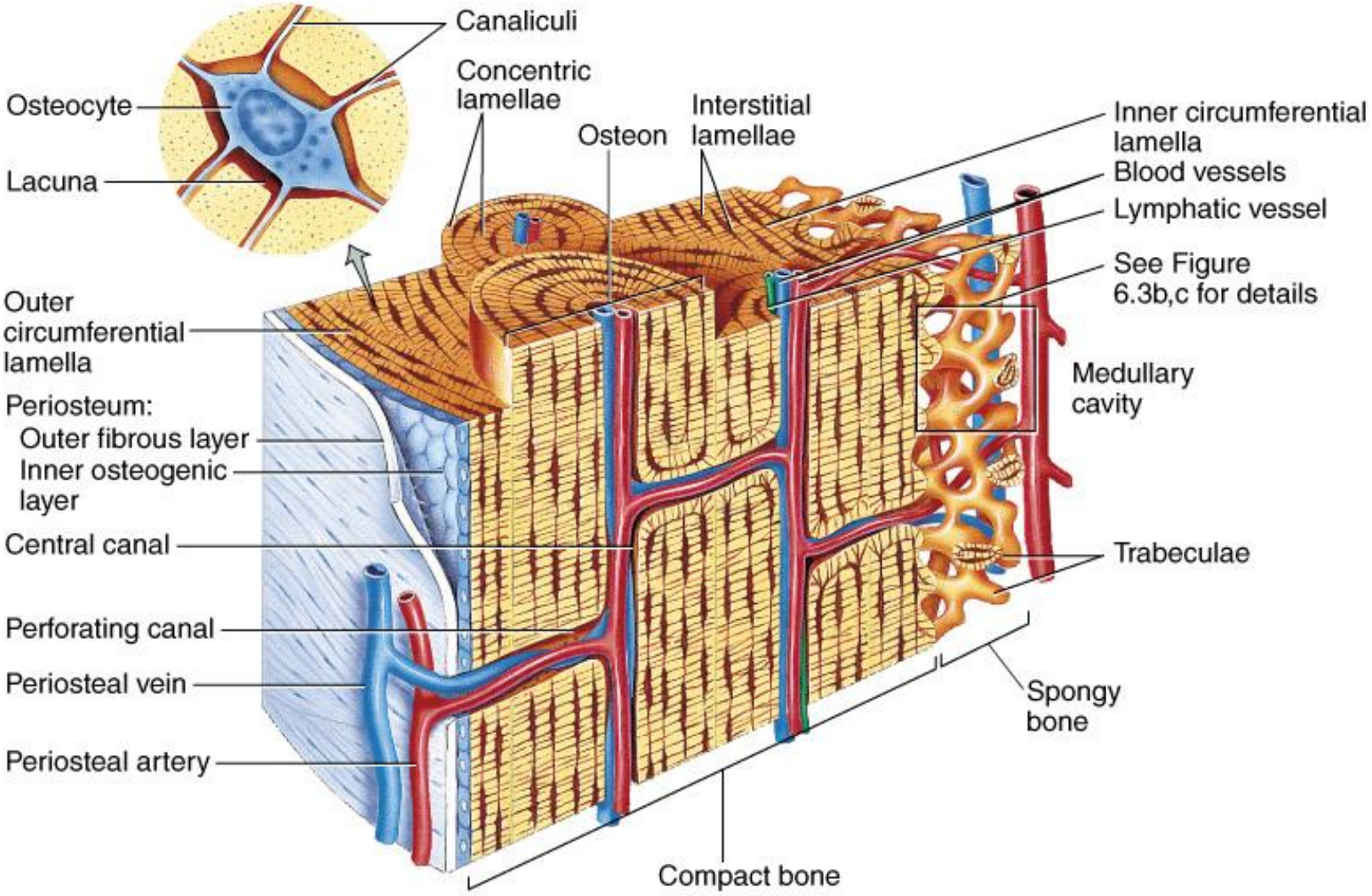
1- Compact bone

2- Spongy bone

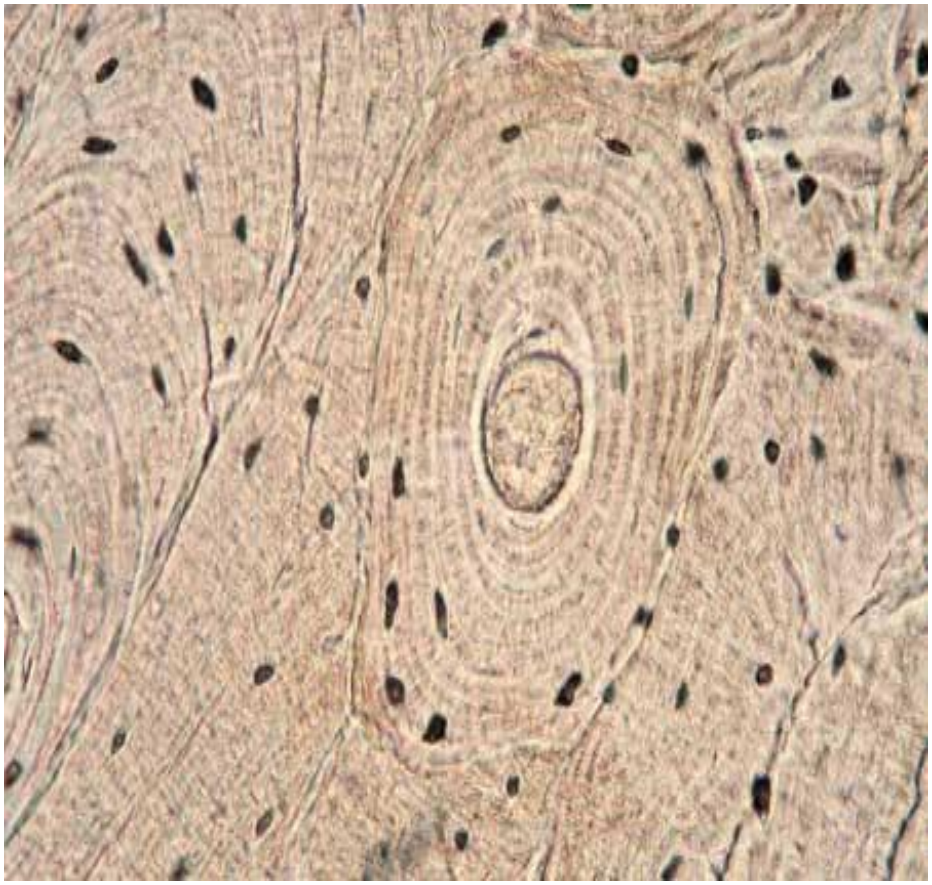
Compact bone :

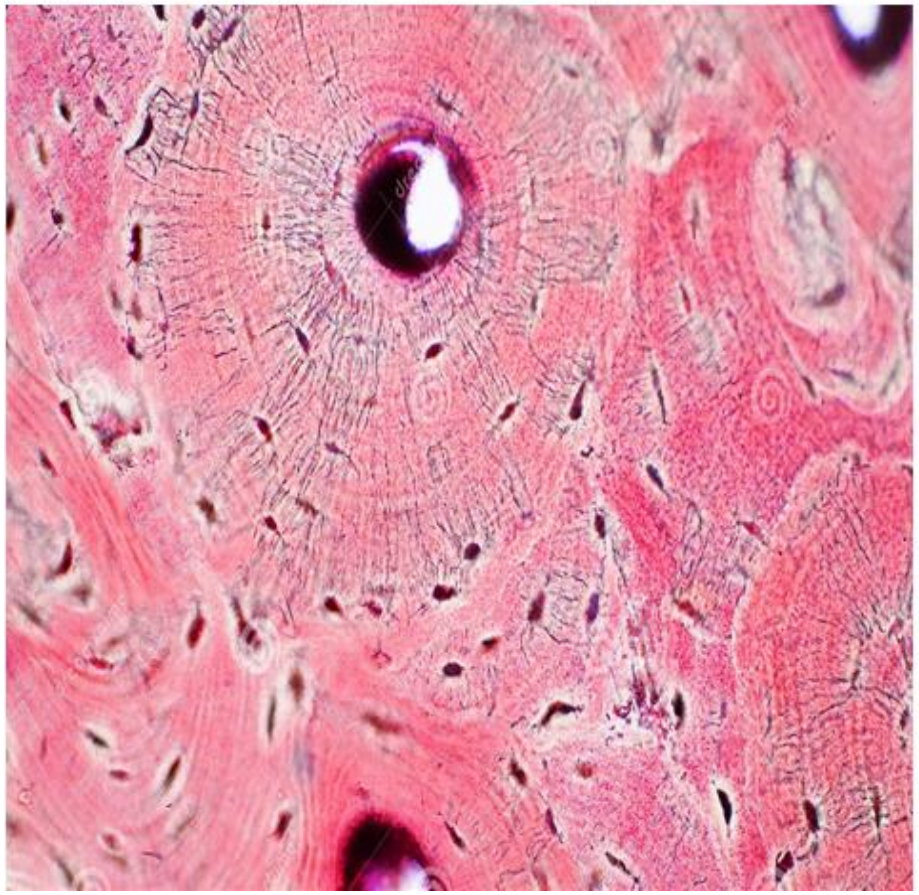
is composed of osteocytes(bone cells) within lacunae arranged in concentric circles called lamellae , This surround a central canal; this complex is called Haversian system. Canaliculi are microscopic canals between the lacunae ,connect osteocytes to central canal and to each other.

Haversian canal place for the nerve, blood and lymphatic vessels .There are some bone lamellae and some lacunae are present among the Haversian system ,and are not arranged around Haversian canals such as these are called Non-Haversian system.



(a) Osteons (Haversian systems) in compact bone and trabeculae in spongy bone





Spongy bone :

Spongy bone is the structure located deep in compact bone. It is made up of thin trabeculae that align along the stress lines. This helps the bone to resist stress while maintaining its light weight.

There are no osteons present in spongy bone; however, its trabeculae contain lamellae, lacunae interconnected by canaliculi

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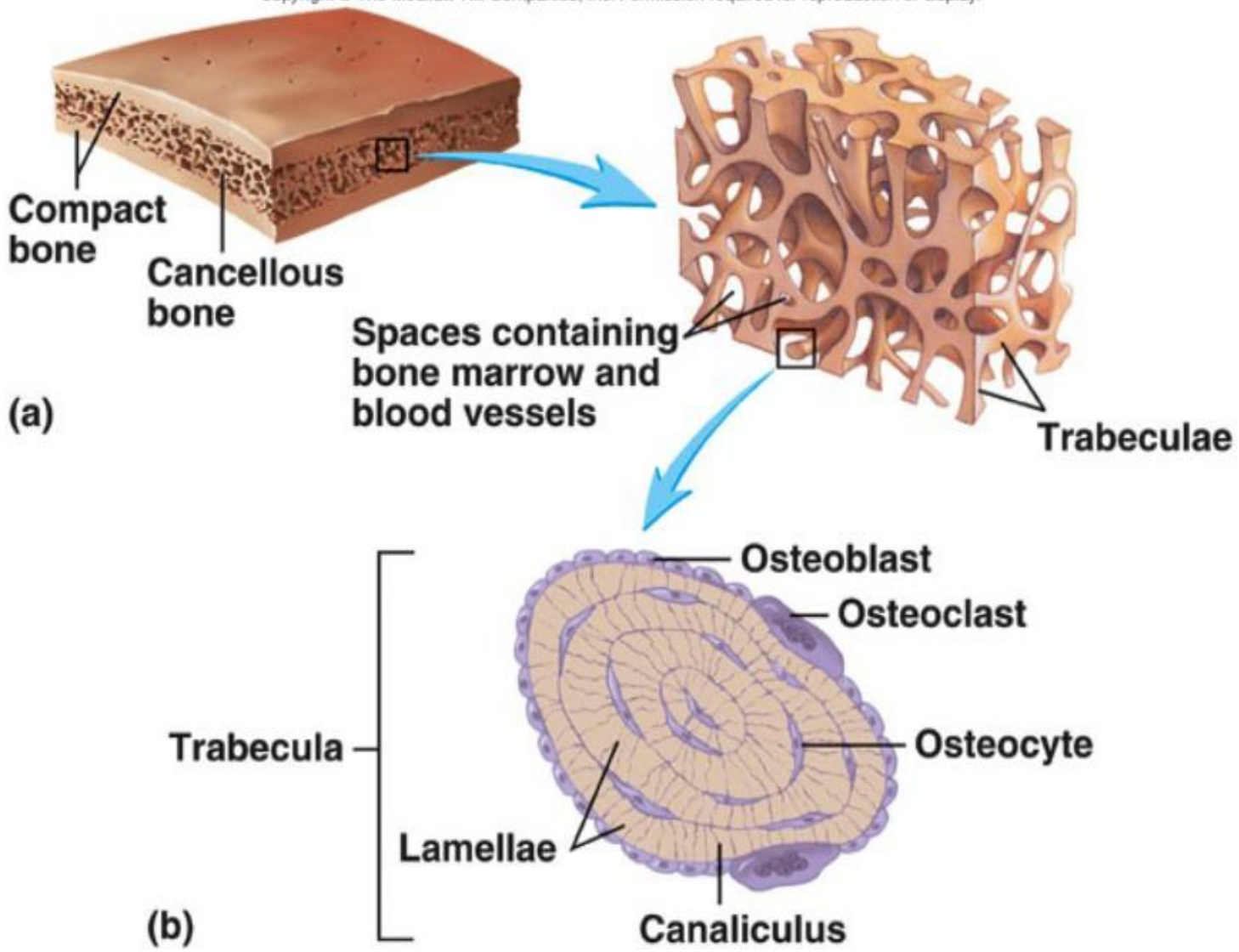
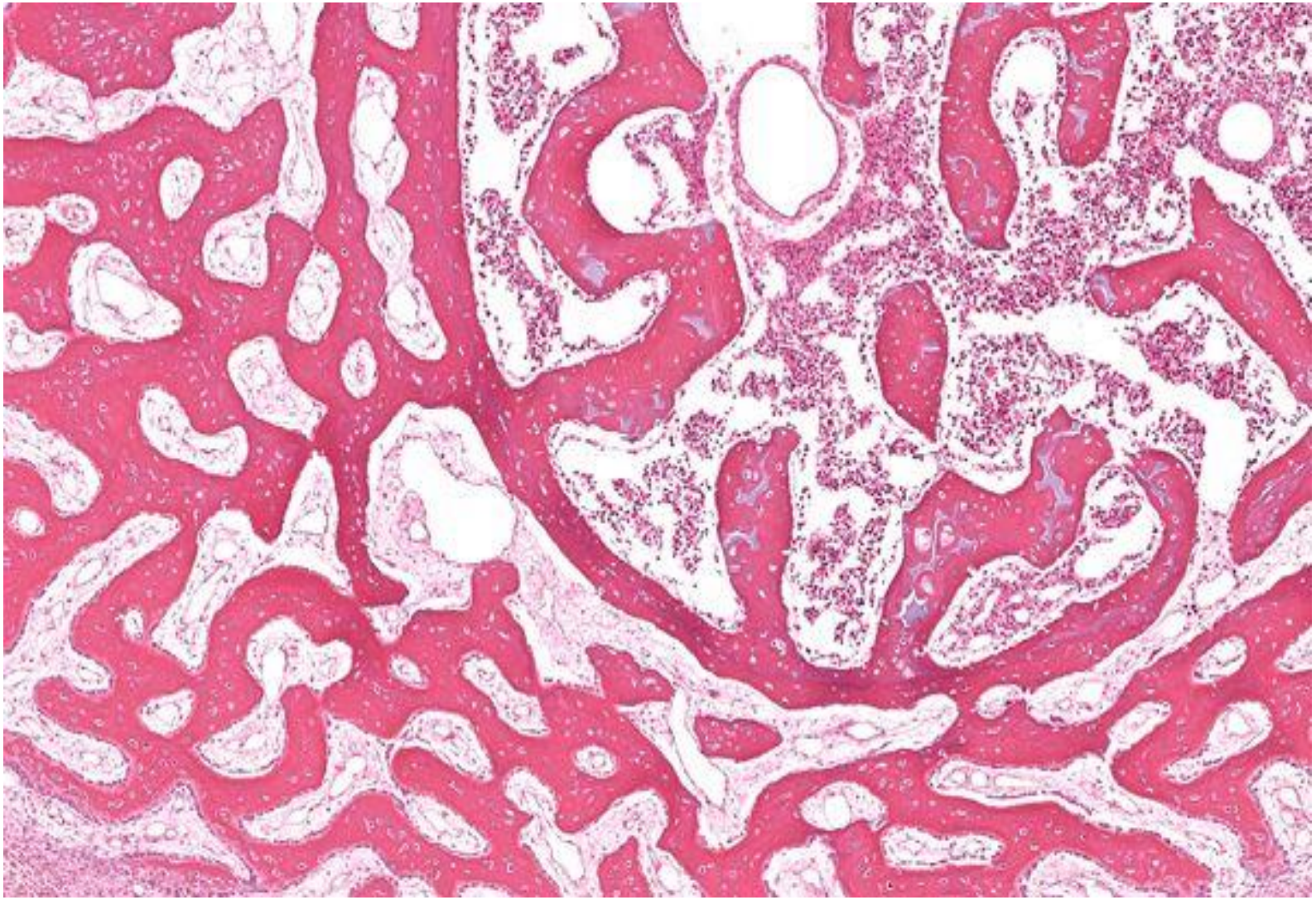
There are three types of cells associated with this tissue :-

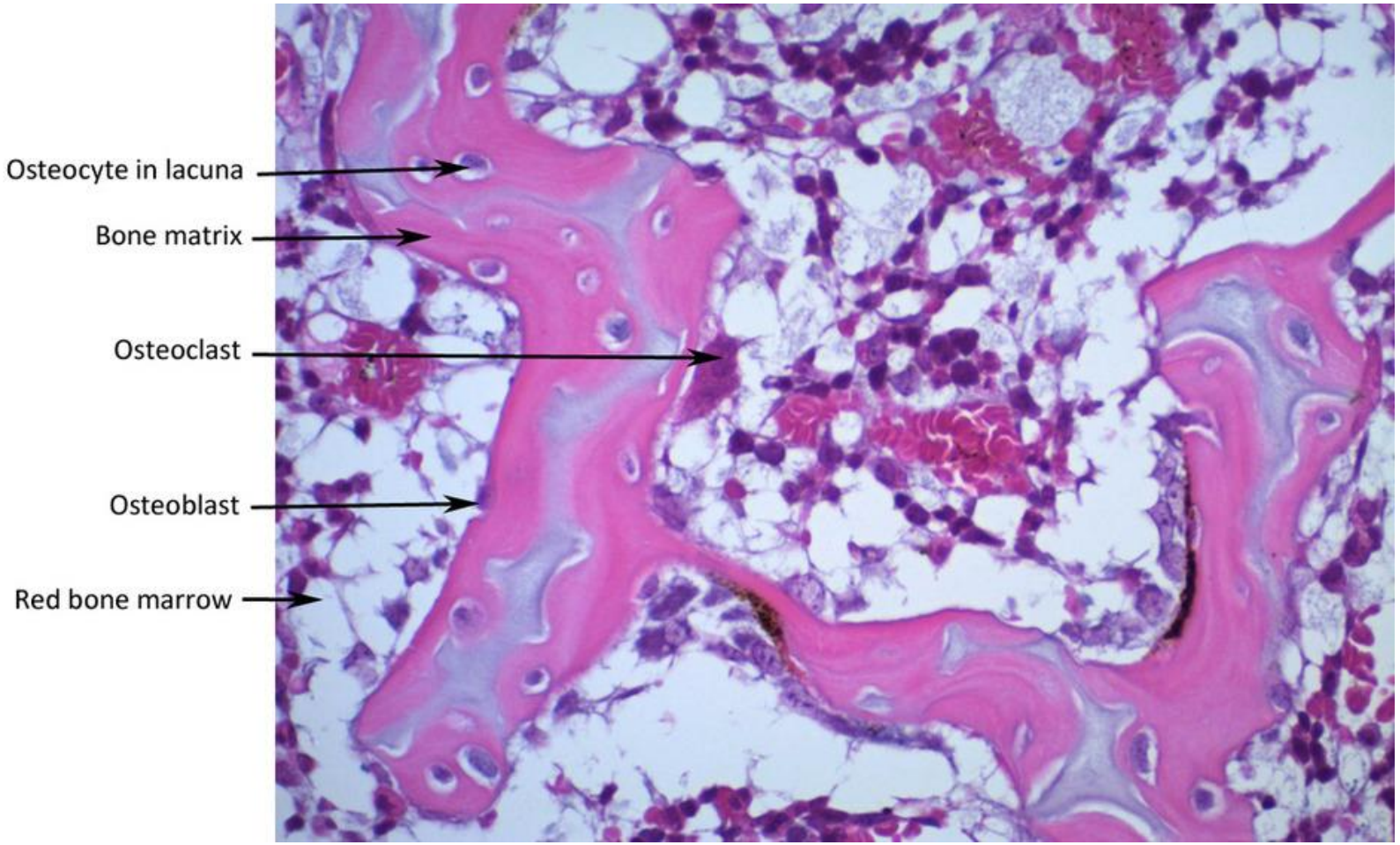
1.Osteoblasts : are recognized by their cuboidal or polygonal shape and their aggregations single layer of cells .

2.Osteocytes : are differentiated osteoblasts ,occupies spaces or lacuna.

3.Osteoclast : rest directly on the surface of the bone where resorption is take place .






Osteocyte in lacuna
Bone matrix
Osteoclast
Osteoblast
Red bone marrow