

Chapter 7, Bone Tissue

“Apply What You Know” Answers

- p. 206—Osteoblasts have an abundant rough endoplasmic reticulum associated with their role in synthesizing collagen, and a large Golgi complex for synthesis of the carbohydrate components of the matrix.
- p. 213—The lamellae farthest away from the central canal (around the perimeter of the osteon) are the oldest. They were laid down when the canal was a relatively wide channel at the margin of the metaphysis. As ossification progressed, lamellae were laid down inside these, making the canal narrower and narrower. Lamellae closest to the canal are therefore the youngest.
- p. 216—The first hydroxyapatite crystals that form in the bone matrix act as “seed crystals” that attract more calcium and phosphate ions from solution. The more hydroxyapatite that forms, the more calcium phosphate crystallizes out of solution. Thus, bone mineralization is a self-amplifying process.
- p. 220—The primary purpose of PTH is to raise the concentration of calcium in the blood and tissue fluid. It does this by promoting the liberation of calcium from the bones and the absorption of calcium by the small intestine. By promoting the excretion of phosphate, it prevents the deposition of calcium phosphate in bone and other tissues and helps to ensure that free soluble calcium remains available for other physiological needs.