Chapter 3: The Skeletal System

Bone Tissue
Bone tissue is comprised of osteocytes (bone cells) which are embedded in a hard substance called matrix. Matrix contains calcium salts and collagen. Calcium salts give strength to bone. Collagen gives bone some flexibility.

Arrangement of Bone Tissue
Bone tissue can be arranged in two ways: compact bone (arranged in circular layers around a blood vessel) and spongy bone (looks like a sponge).

Long Bones and Flat Bones
Long bones have compact bone on the outside, with spongy bone beneath. The hollow center of a long bone is called the marrow cavity. Flat bones have a layer of spongy bone between two layers of compact bone. There are two kinds of bone marrow: red bone marrow (makes blood cells) and yellow bone marrow (stores fat).

Calcium Storage
The body stores extra calcium in bone matrix. To take extra calcium out of the blood to store in the matrix, the thyroid gland secretes the hormone calcitonin which causes the extra calcium in the blood to be stored in the matrix. Conversely, when the body needs calcium, the parathyroid glands secrete parathyroid hormone (PTH). PTH takes calcium out of the matrix and puts it in the blood stream.

Bone Connections
There are 206 bones in the body. Bones are connected to one another by connective tissue called ligaments. Joints (articulations) also connect bones. There are three kinds of articulations: sutures (little or no movement allowed), slightly moveable joints (some movement) and synovial joints (a great deal of movement).