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HW #12 Essay Challenge SLS44-09/Period 4,5

2. The three forms of skeletons found in the animal kingdom are hydrostatic skeletons, exoskeletons, and endoskeletons. The three main phyla that utilize hydrostatic skeletons are Nematodes, Annelida, and Mollusca. Hydrostatic skeletons are different from the two other forms of skeletons in that the skeleton is not actually a solid, but rather compressed liquid. Hydrostatic skeletons are also moved by circular muscles that stretch out the body and longitudinal muscles that compress the body and make it wider. Exdoskeletons are mainly used by the phylum, Arthropoda. Exoskeletons differ from the other two forms of skeletons in that the hard skeleton is outside the body. This limits growth since the animal must go through molting in order to grow. Animals with exoskeletons move at joints where two portions of rigid exoskeleton are connected by a flexible hinge material. A flexor and extensor muscle moves this joint. Endoskeletons are used by animals in the phylum Chordata. Bones of the endoskeleton are located inside the body and are hard structures that are mainly composed of calcium.

3. The human skeleton has various functions. One function is to support the body. Tissues would otherwise just fall into a pile of flesh without bones to hold the tissues up. Another function is the protection of soft organs. For example, the brain is protected by the skull, the heart is protected by the sternum, and the lungs are protected by the ribcage. A third function of bones. A third function of bones is to move when a skeletal muscle contracts. Bones provide the actual structure that is moved by the muscles. A fourth function is the storage of minerals and fat. The bones contain about 99% of the body's calcium and 90% of the body's phosphorus. In addition, yellow bone marrow in bones are dominated by fat cells that store energy reserves. A fifth function of the skeleton is blood cell formation. In adults, red bone marrow in the sternum, ribs, upper arms, legs, and hips produce red blood cells, white blood cells, and platelets. Finally, the skeleton participates in sensory transduction in the ear via the hammer, anvil, and stirrup in the middle ear.

4. Osteoclasts and osteoblasts remodel bone by continuously removing parts of the bone and rebuilding it. Osteoblasts are the cells that build bone while osteoclasts are the ones that eat away at bone. Osteoclasts cling to the surface of bones to secrete acids and enzymes that dissolve the bone matrix. These cells work in groups to tunnel into bone to create channels. These channels allow for capillaries and osteoblasts to enter the channel. Osteoblasts fill the channel with concentric deposits of bone matrix, leaving a small opening for the capillary. Osteoblasts remain in their concentric deposits as osteocytes. This process continues as bone ages and becomes brittle or broken.

Bibliography

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