ground substance, however, is abundant; in fact, it occupies more volume than the fibers do. It has a viscous to gel-like consistency and plays an important role in the diffusion of oxygen and nutrients from the small vessels that course through this connective tissue as well as in the diffusion of carbon dioxide and metabolic wastes back to the vessels.Collagen fibers are the most abundant structural compo?nents of the connective tissue.Hollow organs (e.g., the intestinal tract) possess a distinct layer of dense irregular connective tissue called the submu?cosa in which the fiber bundles course in varying planes. Although collagen is the major extracellular fiber of most ligaments, some of the lig?aments associated with the spinal column (e.g., ligamenta flava) contain many more elastic fibers and fewer collagen fibers.Typically, the fibers are arranged in bundles oriented in various directions (thus, the term irregular) that can withstand stresses on organs or structures.In transmission electron micrograph (TEM) sections parallel to the long axis of tendons, the cytoplasmic projections of the cell are seen to lie be tween the fibers and appear as thin cytoplasmic sheets.The cytoplasmic sheets that extend from the body of the tendinocytes are not usually evident in lon?gitudinal H&E-stained sections because they blend in with the collagen fibers.Similarly, skin contains a relatively thick layer of dense irregular connective tissue called the reticular layer (or deep layer) of the dermis.This tissue is thus the initial site where pathogenic agents such as bacteria that have breached an epithelial surface are challenged and destroyed by cells of the immune system.For example, the lamina propria, the loose connective tissue of mucous membranes, such as those of the respiratory and ali?mentary systems, contains large numbers of these cells.Because of its high pro - portion of collagen fibers, dense irregular connective tissue provides significant strength.In most H&E-stained longitudinal sections, however, tendinocytes appear only as rows of typically flattened ba?sophilic nuclei.The substance of the tendon is surrounded by a thin connective tissue capsule, the epi?tendineum, in which the collagen fibers are not nearly as orderly (Plate 5, page 194).Typically, the tendon is subdi?vided into fascicles by endotendineum, a connective tis?sue extension of the epitendineum.Connective tissue fibers are present in varying amounts, depending on the structural needs or function of the connec?tive tissue.Most cell types in loose connective tissue are transient wander?ing cells that migrate from local blood vessels in response to specific stimuli.Dense irregular connective tissue contains mostly colla?gen fibers.Dense regular connective tissue is the main functional component of tendons, ligaments, and aponeuroses.Each type .of fiber is produced by fibroblasts and is composed of protein consisting of long peptide chains