



FIGURE 9.7 The three-dimensional structure of filgrastim.

9.3 Motifs and Domains

The primary and secondary structures are involved in a single polypeptide chain, the rest of the interactions take place between two or more identical or different polypeptide chains. The secondary structure leads to the formation of α -helix and β -sheets (Figure 9.6), which give rise to 3D structures, which are referred to as tertiary structures that provide the unique physicochemical and biological properties to proteins. The tertiary structures may acquire one or more peculiar folding patterns called *motifs* or super-secondary structure or complex folds, which are essentially “local tertiary structures” and should not be confused with the final or global tertiary structure. The same applies to groups of *motifs* called domains, which are one or more independent compact regions of a protein. While motifs are structural elements, domains are functional elements, regardless of their size (Figure 9.8).

Proteins containing two or more domains are called multidomain proteins, wherein the domains may be covalently linked by highly flexible bonds called linkers. Despite the complexity of various HOS, small changes in the amino acid sequence may not necessarily affect the HOS, a protein demonstrating same activity. There can be more