

Copy of a printed diagram referenced as "Parallel chain/Pleated sheet"

Contributors

Gratzer, W. B. (Walter Bruno), 1932-

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N—H . . . O hydrogen bonds are practically linear and are 2.76 Å in length. The distance between the axes of adjoining peptide chains in the plane of the sheet is 4.7 Å, and the R groups project above and below this plane. The packing of the chains, in the direction perpendicular to this plane, is therefore dependent on the size of the side chains. Small side chains, like those of glycine, alanine, and serine, the principal constituents of silk fibroin, can pack more closely than larger ones. Several

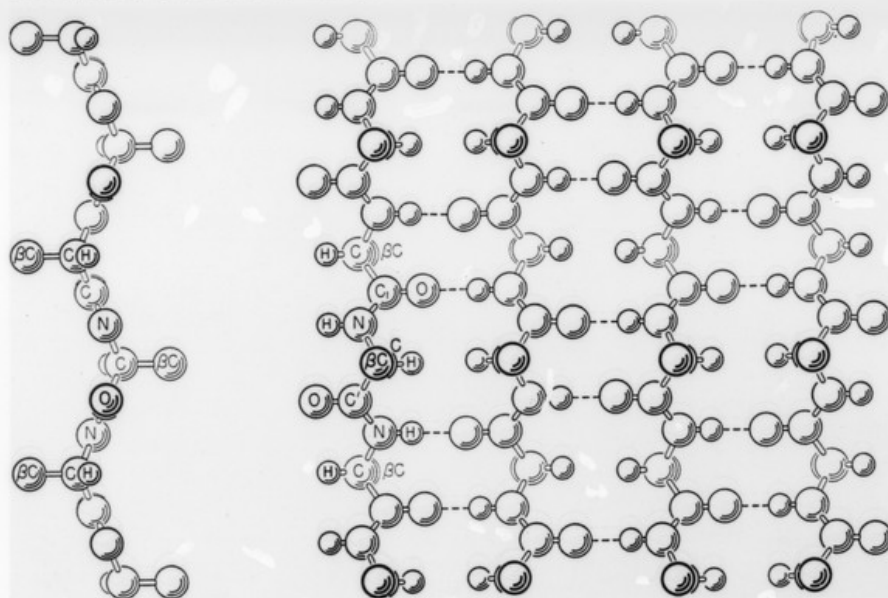


FIG. 9. The antiparallel chain pleated sheet structure of polypeptide chains. (From Marsh, Corey and Pauling (1955).)

drawings of possible packing models for silk fibroin are given by Marsh *et al.*, who have also given a detailed critical analysis of the observed and calculated X-ray diffraction patterns. We shall not discuss this in detail here. The antiparallel chain pleated sheet, however, does appear to provide an excellent basis for describing the structure of silk fibroin.

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