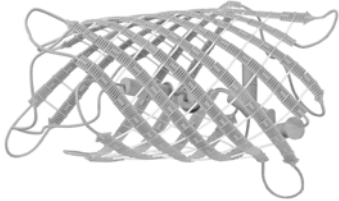


W0278

A Kit for the Construction of Three-dimensional Cartoon-style Models of Protein Structures. Richard C. Garratt, Leila Beltramini & Luciano D.S. Abel, Instituto de Física de São Carlos, USP, CP 369, São Carlos, SP, Brazil, CEP 13560-970.

Despite the widespread use of cartoon-like representations of protein structures, there is, to our knowledge, no readily available 3D equivalent. Nevertheless, we believe that physical models can be of use in teaching the basic rules of protein folding, such as the frequency of right-handed $\beta\alpha\beta$ units and the chirality of TIM barrels. We have developed a modelling system, *Protein folder*, for the reproduction of a 3D cartoon. The main components of the model are made from injection molded plastic parts which represent helices as cylinders and strands as flattened ribbons. Arrowhead components may be used at the C-termini of the secondary structures to indicate the chain direction. Loops are made from plastic coated copper wire which has no memory and may be bent to reproduce the mainchain conformation. Similar wires represent the H-bonding pattern between β -strands. The modular nature of the components means that the kit may be used for building anything from simple secondary structures and their distortions up to full tertiary structures for any known (or as yet unknown) domain topology. A teacher's guide gives tips as to how to apply *Protein folder* to teaching protein structure. Three examples follow:



GFP

β -propellor



TIM Barrel