Natchiar, S. K.; Srinivas, O.; Mitra, N.; Dev, S.; Jayaraman, N.; Surolia, A.; Vijayan, M., 2006, "Multivalency in lectins-A crystallographic, modeling and light-scattering study involving peanut lectin and a bivalent ligand", *Curr. Sci*., *90*, 1230 – 1237.

Studies of Professor M. Vijayan, MBU, IISc., Bangalore

In the present investigation, cross-linking of PNA molecule by a bivalent molecule with lactose at the termini is established in solution by dynamic light scattering and in the solid state by X-ray structure analysis. The formation, in the presence of LAL divalent glycoside having an azobenzene as the core, of an apparent dimeric species and a larger aggregate involving about a hundred, PNA molecules in solution is in consonance with the sequential, cooperative binding observed in thermodynamic measurements. Detailed modelling studies provide a rationale for the observed arrangement of protein molecules in the crystal. Furthermore, modelling indicates the possibility of a number of different types of crystalline arrays produced by crosslinking. Thus, crosslinking involving multivalent lectins and multivalent carbohydrates could result in an ensemble of a finite number of distinct periodic arrays rather than a unique array. Such an ensemble may perhaps be better suited than a unique array to deal with the complexity and variability of glycoconjugates on the cell surface.