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In this article, synthesis, physicochemical and biophysical studies of photoisomerizable cluster glycosides are reported. A rather stringent requirement of clustered patches of sugars in order to bring about a significant binding strength towards protein (lectin) targets is a phenomenon in carbohydrate – protein interactions. Efforts towards understanding this phenomenon have given a reasonable insight into possible modes of clustered sugar ligands – protein interactions. The role of synthetic cluster glycosides continues to be invaluable and has set paradigm in fundamental investigations in this area. While it is established at present that clusters of sugars are essential for tight binding to protein receptors, we have studied the effect of change in the orientation of cluster sugars upon binding to the protein receptor. This change in orientation was brought forth through facile photoisomerization property of azobenzene, which served as an important component of the glycoclusters studied herein. We have investigated in detail a series of synthetic cluster glycosides and their pattern of lectin interactions, addressing specifically the valency, spatial orientation and geometry of the sugar ligands. We believe that the present study contributes in an important and fundamental manner to our sustained efforts to understand intricate carbohydrate – protein interactions.