

## Nanobio-Analytical Studies for Carbohydrate-Protein Interaction Analysis

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Living organisms use simple or complex types of diverse biomolecule interactions (i.e. protein-protein, protein-compound, protein-carbohydrate, and carbohydrate-carbohydrate). Such interactions initiate biologically meaningful events and consequently, cell or organism can maintain its metabolism. Carbohydrate-protein interaction plays critical roles in living organisms; cell-cell communication, signaling, cell adhesion, fertilization, and immunological process. These interactions also initiate infection of host cells by bacterial toxin protein and viruses. Therefore, understanding of the molecular relation for carbohydrate-protein interaction not only provides useful information on biological processes in living organisms but also is helpful for development of potent biomedical agents. Interaction between ganglioside GM1 and Vibrio cholera toxin proteins has been generally regarded as a good model for carbohydrate-protein interaction. Pentameric B subunits of Vibrio cholera toxin are well known to interact individually with pentasaccharide of ganglioside GM1. Monomeric A subunit interacts with the membrane surface through pentameric B subunit and is known as enhancing avidity of whole interaction.