Not All Noroviruses like it sweet

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In this talk, we will show how mass spectrometry and NMR spectroscopy complement each other in the study of carbohydrate-protein interactions. In many viral infections, specific carbohydrate-protein interactions play an important role. As an example, we will discuss glycan recognition by noroviruses. Noroviruses belong to the family of *Caliciviridae*, non-enveloped viruses with single-stranded positive-sense RNA. The viral capsid consists of 180 copies of the major capsid protein VP1, which assemble into icosahedral particles that envelop the viral RNA. The binding site for HBGAs is located in the so-called protruding domain of VP1 and has been the subject of many crystal structure studies. However, the binding affinities reported have been inconsistent. At one extreme, mass spectrometry detects binding for the same system while NMR spectroscopy does not.

We will explain the reasons for the observed discrepancies [1] and present reliable and reproducible binding affinities[2]. We will then show how mass spectrometry provides new insights into the glycan-induced structural dynamics of VP1 that are not readily available from other techniques [3]. Our joint studies show that mass spectrometry and NMR spectroscopy provide highly complementary insights into the process of HBGA-binding by norovirus capsid proteins.

Bibliographic references:

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