**Sweet-talk between pathogens and hosts**

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Abstract: A large number of pathogenic microorganisms display receptors for specific recognition and adhesion to the glycoconjugates present on human tissues. In addition to membrane-bound adhesins, soluble lectins are involved in infections caused by the bacteria Pseudomonas *aeruginosa* and Burkholderia *cepacia* and by the fungus *Aspergillus fumigatus* that are responsible for hospital-acquired diseases. The specificities of the lectins towards human histo-blood group oligosaccharides find their origin in the co-evolution between hosts and pathogens. The multivalency of lectin is proposed to play a role in their strong avidity for glycosylated cell surfaces and also in their ability to affect membrane dynamics by clustering glycosphingolipids. Bacterial lectins are able to bind to glycoconjugates on human tissues and are therefore thought to be involved in the first step of infection

Accumulated knowledge about the structures of the lectins and the interactions with host glycoconjugates has lead to the design of powerful glyco-derived inhibitors that can serve as antimicrobial therapeutic agents, as a complement to or an alternative to antibiotic therapy. Design of glycosylated chips, liposomes, fullerenes and other nanoglycoparticles have provided information on multivalent interaction between receptors and cell surfaces. This also result in development of nanomaterials that can be used in diagnostic applications.