

# Bacterial Surface Glycans. Novel Bacteria-Based Microarray and QCM Approaches for In-Situ Assessment of Glycan-Lectin Interactions

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Bacterial surfaces display a diversity of carbohydrate structures that can be recognized by host receptors, as anti-carbohydrate antibodies and lectins of the innate immune system, for triggering defense responses. Analysis of such glycan-protein interactions using purified bacterial components may not reflect the real bacteria-receptor interplay, since the carbohydrate structures are not tested in their natural environment. We have developed two novel methods for exploring interactions directly on the bacterial surface, based on the generation of bacteria microarrays (1,2) and quartz crystal microbalance (QCM) sensor chips (2). Bacteria microarrays have proved to be useful for exploring the presence of accessible carbohydrate epitopes and for detecting strain-selective binding of antibodies and lectins, also giving information on binding avidity. In addition, QCM bacteria chips enable the analysis of the affinity and kinetic parameters of lectin binding, providing further insights into the interactions occurring at the bacterial surface. Illustrative examples of the development, validation and application of these microarray and QCM strategies will be presented.

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## References

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