
Bridging the Gap - Cytomics meets Proteomics

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Abstract

Staphylococcus aureus is responsible for a broad variety of local or systemic diseases and is one of the leading causes of bloodstream, lower respiratory tract and skin/soft tissues infections. Despite its capacity for survival and persistence in various tissues S. aureus is classically considered as an extracellular pathogen. Nevertheless, it is able to internalize and survive within non-professional phagocytic cells. To elucidate the interaction of S. aureus and host cells after internalization, we applied proteome analysis using different human cell lines and the S. aureus strain RN1HG. Proteome profiles of 104 - 106 internalized S. aureus cells isolated 1.5 h to 7 days post-infection were quantified applying a workflow that combines a SILAC approach with high capacity cell sorting, on-membrane digestion, and high-sensitivity mass spectrometry. As a result, we were able to monitor changes in levels of regulatory proteins, induction of adhesins, toxins and proteins protecting against oxidative damage as well as adaptation of cell wall synthesis. To conclude, with this study, we provide an integrated and time resolved view of the response of S. aureus to internalization. In the presentation also the pro and cons will be illustrated.

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