

P010 Detailed studies on the interaction between S-layer proteins or cell-associated exoproteins and secondary cell wall polymers from Bacillaceae

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Based on the remarkable intrinsic feature of S-layer proteins to self-assemble and the possibility for genetic modifications, S-layer proteins can be exploited as patterning element for a biomolecular construction kit involving all major species of biological molecules as required for nanobiotechnology. S-layer proteins represent first order self-assembly systems which completely cover the cell surface of many bacteria and most archaea. In gram-positive bacteria, the S-layer proteins recognize distinct types of heteropolysaccharides, termed secondary cell wall polymers (SCWPs) as the proper cell wall anchoring structure. Basically, two types of binding mechanisms between S-layer proteins and SCWPs have been described. The first one involves so called S-layer-homology (SLH) domains and pyruvylated SCWPs. The second binding mechanism which has been described for *G. stearothermophilus* wild-type strains is mediated by a non pyruvylated SCWP and a highly conserved N-terminal region devoid of an SLH-domain and was recently investigated in detail by using surface plasmon resonance (SPR) measurements. Furthermore, also the binding mechanism between a cell-associated high-molecular-mass exoamylase (HMMA) of *G. stearothermophilus* ATCC 12980 and the S-layer protein SbsC, the peptidoglycan as well as the SCWP was investigated by affinity studies and SPR. Thereby, a specific peptidoglycan-binding domain could be identified.