

Project 4 (P4): Functional and structural characterization of putative substrates of Type 1 secretions systems

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Type 1 secretion systems (T1SS) are widespread in Gram-negative bacteria and catalyze the one step translocation of proteins across both membranes directly from the cytosol in the extracellular media. Based on the exponentially increasing number of public accessible genome sequences, the number of putative substrates of T1SS is constantly growing. This is especially true for human pathogenic, Gram-negative bacteria. However the exact physiological function of these putative substrate is most of the time unknown. We will identify putative substrates of T1SS based on bioinformatic approaches, determine their structures by X-ray crystallography and identify human interaction partners by mass spectrometry. This will allow insights into their pathophysiological function. Knowledge of the molecular structure and function will furthermore allow interfering with and inhibiting the virulence of human pathogenic Gram-negative bacteria.