

PROTEIN COMMUNICATION BETWEEN PLANT PATHOGENIC BACTERIA AND THE HOST

Ulla Bonas

Department of Genetics, Martin-Luther-University Halle-Wittenberg, Halle, Germany. Email: ulla.bonas@genetik.uni-halle.de

Plant pathogens use sophisticated strategies to infect their host plants and to suppress basic defense reactions. Pathogenicity of the Gram-negative bacterium *Xanthomonas campestris* pv. *vesicatoria* (*Xcv*), which causes bacterial spot disease in pepper and tomato plants, depends on a type III protein secretion system (T3SS). The T3SS acts as a molecular syringe and injects more than 20 different effector proteins into the plant cell cytoplasm. T3SS mutants are unable to cause disease in susceptible plants and to induce a hypersensitive reaction (HR) in resistant plants. The HR is a rapid defense reaction associated with programmed cell death, which is triggered upon specific plant recognition of a particular bacterial effector protein termed “avirulence” protein. For example, the effector AvrBs3, which localizes to the plant nucleus, induces the HR in pepper plants carrying the dominant resistance gene *Bs3*. Interestingly, AvrBs3 induces a hypertrophy (cell enlargement) in susceptible pepper plants, i.e., in the absence of recognition. The activity of AvrBs3 in the plant cell depends on both nuclear localization signals and an acidic activation domain in the C-terminus suggesting that AvrBs3 modulates plant gene transcription.

Keywords: Protein secretion and localization, Pathogenicity factors, Host targets