

S10-2

RsaI Determines a Host Range of *Ralstonia solanacearum*Yeonhwa Jeong¹, Seung Don Lee², Jae Sun Moon³ and Ingyu Hwang^{1,*}¹*School of Agricultural Biotechnology, Seoul National University,* ²*Plant Pathology Division, Department of Plant Protection, National Institute of Agricultural Science and Technology,* ³*Laboratory of Cellular Function Modulator, Korea Research Institute of Bioscience and Biotechnology*

Ralstonia solanacearum infects many solanaceous plants, however race 3 infects only potato and tomato. To identify genes responsible for race specificity of *R. solanacearum*, we mobilized genomic library of SL2029 (race 3) into SL341 (race 1) and inoculated 1,000 transconjugants into hot pepper. One transconjugant that did not induce wilt symptom in hot pepper was isolated. We found that a cosmid clone, pRS1, conferred avirulence to SL341. By deletion and mutational analyses of pRS1, we found the 0.9-kb *Pst*I/*Hind*III fragment carries avirulence functions (Fig. 1). We sequenced the fragment and identified one possible open reading frame, a *rsaI* gene, possibly encoding 110 amino acids. Expression of *rsaI* was regulated by HrpB, an AraC type transcriptional activator. The promoter region of the *rsaI* homolog in the strain GMI1000 (race 1) did not have the plant-inducible promoter sequences (Fig.2). When we mutated the *rsaI* gene by marker-exchange in SL2029, the mutant was less virulent in potato and became virulent in pepper (Fig. 3). This indicates that the *rsaI* gene has both avirulence and virulence functions. RsaI did not show any significant homologies with proteins in the database, indicating the protein is different from the previously reported avirulence proteins.

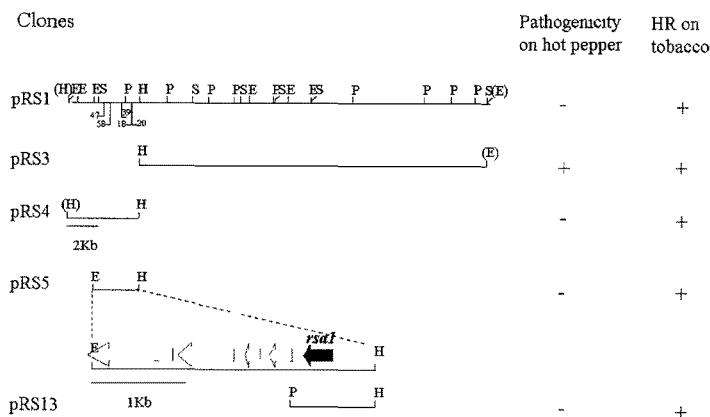
Fig. 1. Identification of *rsaI* from the cosmid clone pRS1

Fig. 2. The promoter region of *rsal* has PIP-box sequences

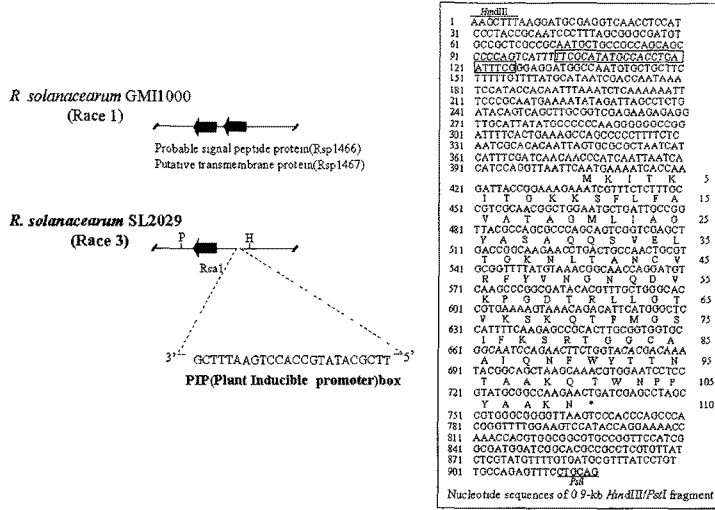


Fig. 3. Pathogenicity in potato

