

1-15. Isolation and characterization of native plasmids carrying avirulence genes in *Xanthomonas* spp.

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Most major plant pathogenic bacteria in Korea belong to *Xanthomonas* spp.. *Xanthomonas oryzae* pv. *oryzae* is a major pathogen in rice, *X. campestris* pv. *vesicatoria* in pepper, *X. axonopodis* pv. *glycines* in soybean, *X. campestris* pv. *campestris* in cabbage, and *X. axonopodis* pv. *citri* in tangerin. Host specificity of the bacterial pathogen depends on the avirulence gene in the pathogen and the corresponding resistance gene in host plants. Many avirulence genes in bacterial pathogen located on the native plasmids. However, the presence of the native plasmids in *Xanthomonas* spp. was not investigated well. In order to study the host specificity, we isolated native plasmids from *Xanthomonas* spp. and compared those plasmids each other. The presence of the native plasmids and the characteristics of the plasmids depended on the bacterial strains. In the *X. axonopodis* pv. *glycines*, most strains carried native plasmids but some strains did not. Some strains carry about 60 kb native plasmids including 3 different avirulence genes. We will discuss the characteristics of the native plasmids isolated from the *Xanthomonas* spp.

1-16. Identification of a host range determinant from *Ralstonia solanacearum* race 3

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Ralstonia solanacearum infects many solanaceous plants, however race 3 infects only potato and tomato weakly. To identify genes responsible for race specificity of *R. solanacearum*, we mobilized genomic library of LSD2029 (race 3) into LSD341 (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 LSD341. By deletion and mutational analyses of pRS1, we found the 0.9-kb *Pst*I/*Hind*III fragment carries avirulence functions. We sequenced the fragment and identified one possible open reading frame, a *rsal* gene, possibly encoding 110 amino acids. The *rsal* was preceded with a plant-inducible promoter (PIP) box, indicating that the gene might be regulated by HrpB. Interestingly, the promoter region of the *rsal* homolog in the strain GMI1000 (race 1) did not have the PIP box. *Rsal* did not show any significant homologies with proteins in the database, indicating the protein is different from the previously reported avirulence proteins. When we mutated the *rsal* gene by marker-exchange in LSD2029, the mutant was less virulent in potato.