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Allele variation in the *Phytophthora infestans* effector gene *ipiO*

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The oomycete *Phytophthora infestans* is the causal agent of potato late blight. In the past we identified a number of *P. infestans* genes that are specifically activated during a compatible interaction. One of these *in planta* induced genes, named *ipiO*, encodes a secreted protein of 131 amino acids that has no obvious homology with known proteins. *ipiO* is not expressed in mycelial cultures but is highly expressed in the periphery of water-soaked lesions and in healthy looking plant tissue surrounding the lesion (van West *et al.*, FGB 23: 126-138). Also prior to infection, in particular in germinated cysts, *ipiO* expression is high. The IPI-O protein contains two intriguing motifs in the N-terminal part. One is an RGD tripeptide, a motif that is found in several extracellular proteins in mammals, which act as ligands of integrins and play a role in cell-cell interactions and cell attachment. Plants lack integrins but in recent years evidence accumulated that also plants have RGD-binding proteins in their cell membranes (see e.g. Gouget *et al.*, Plant Physiol 140: 81-90). The second motif is RXLR, a motif that is shared by five recently identified oomycete avirulence (AVR) proteins and thought to play a role in the translocation of AVR proteins into plant cells. Database mining has revealed that RXLR is also present in a large group of very diverse secreted proteins found in *Phytophthora* and other oomycete plant pathogens, and this motif is now considered as a hallmark of oomycete effectors. Although the *ipiO* expression pattern supports a role for IPI-O in pathogenesis, IPI-O may also function as an AVR factor that is recognized by Solanaceous plants thereby acting as an elicitor of defense responses. To further investigate the role of IPI-O as effector in the potato - *P. infestans* interaction, we determined *ipiO* allele variation in a variety of isolates collected over the years and in different geographical locations, in particular in Europe and Central- and South-America. Also IPI-O homologues in closely related *Phytophthora* species with a different host range were analysed. Several allele variants of *ipiO* were cloned and their expression was studied. The various alleles will be tested for their activity as effector or elicitor of defense responses on Solanaceous plants.