cDNA library construction and yeast two-hybrid screening using NbLRK1 as the bait

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Phytopthera infestans, the oomycete pathogen responsible for late blight disease in potato and tomato, is a major concern in the agricultural industry. *P. infestans* is thought to colonize the host plant by suppressing the basal immunity through the production of effector proteins (Chapparo-Garcia, et. al). The wild tobacco plant, *Nicotiana benthamiana*, has been shown resistance to *P. infestans*. Such resistance is determined by the LRK1 (NbLRK1), a lectin-like receptor kinase recognizing *P. infestans* effector INF1 and triggering hypersensitive responses (HR) (Kanzaki, et al). Significantly, tomato does not possess a functional *LRK1* gene and we have recently found that heterogeneous over-expression of NbLRK1 in tomato can confer resistance to *P. infestans*. To identify the NbLRK1-associated defense signaling components in tomato, we are currently generating a tomato cDNA library for yeast two-hybrid screening using NbLRK1 as the bait. We hope to identify tomato proteins that interact with NbLRK1 and play a significant role in the NbLRK1-mediated resistance to *P. infestans*.

References

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Kanzaki, Hiroyuki, Saitoh, Hiromasa, Takahashi, Yoshihiro, et al. (2008) NbLRK1, a lectin-like receptor kinase protein of Nicotiana benthamiana, interacts with Phytopthera infestans INF1 elicitin and mediates INF1-induced cell death. Planta 228: 977-987. doi:10.1007/s00425-008-0797-y