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Comparative analysis of disease resistance genes in Solanaceae

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We have used comparative approaches to study the structural and functional divergence of resistance genes. Previously, it was shown that R genes occur in syntenous clusters in *Lycopersicon*, *Solanum*, and *Capsicum*. This talk will summarize recent results from our comparative genetic and genomic studies of disease resistance genes. Many NBS-LRR type dominant resistance genes have been cloned from Solanaceae and these genes were used for comparative analysis of resistance genes. Results from our analysis showed that R gene specificity diverges much more rapidly than general resistance function. Pto defines a unique resistance gene subclass. We have isolated and characterized Pto homologs from Capsicum. In addition to the dominant resistance genes, we also have studied recessive resistance genes in pepper. Several recessive viral resistance genes have recently been cloned and characterized. In contrast to NBS-LRR R genes, recessive resistance genes appear to be highly conserved.

