



High levels of S-RNase expression are not required for unilateral incongruity in the tomato clade

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Pollen rejection by pistils can occur if the pollen is too closely related to the pistil (self-incompatibility, SI) or if it is too distantly related. Many plant families exhibit interspecific incongruity in one direction (unilateral incongruity, UI). In the tomato clade, pistils of *Solanum lycopersicum* can accept pollen from eight closely related wild species, but in many cases the pistils of these species will reject *S. lycopersicum* pollen. SI in tomato is based on two S-locus genes; pistil expressed S-RNase genes and pollen expressed F-box genes. The purpose of our experiments was to determine whether S-RNases are also required for pollen rejection in UI. We tested pistil extracts from both self compatible (SC) and self incompatible (SI) accessions of *S. pennellii*, *S. habrochaites*, and *S. chmielewskii* for S-RNase activity, and we examined *S. lycopersicum* pollen tube growth in pistils of the same species. We found high levels of S-RNase activity in pistils of all SI accessions. In SC accessions of wild species, S-RNase was not detected. Pistils of all accessions of *S. pennellii*, *S. habrochaites*, and *S. chmielewskii* were able to reject *S. lycopersicum* pollen, regardless of whether the accessions were SI or SC. In *S. pennellii* and *S. habrochaites* pistils, pollen rejection occurred in the upper ¼ of the pistil, whereas in *S. chmielewskii* pollen tubes grew to about ¾ of the length of the pistil. Our results indicate that interspecific reproductive barriers in the tomato clade are not dependent on high levels of S-RNase expression in pistils.