

## Development of Tomato Non-Host to Tomato Virus through Targeted Mutagenomics and Bioinformatics Approaches

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Tomato (*Solanum lycopersicum* L.) is economically one of the most important vegetable crops grown worldwide. Tomato fruit makes important contributions to diet and livelihood, as an everyday ingredient in many dishes, and a rich source of nutrients and natural anti-oxidants. Yield and fruit quality losses caused by persistent virus diseases are among the major constraints in tomato production. Breeding for resistant varieties and search for genetic materials have always been a race with the fast virulence evolution of the pathogen. Mutational approaches such as Targeting Induced Local Lesions In Genome (TILLING) are carried out to generate and screen for vast germplasm resource. Large families of  $M_{2;3}$  tomato mutants are generated for mutational and subsequent phenotypic analysis. DNA markers are designed using computational biology tools, and SGN and other public genome databases targeting candidate virus-host factors and R-gene regulatory sequences. Bulk and individual DNA samples are processed from each  $M_2$  plant, and currently being analyzed for point-mutation/s at target loci, employing both high throughput DNA sequencing and TILLING/HRM mutation screening.  $M_3$  progenies are being generated from each  $M_2$  plant and will be used to validate the induced host resistance against target tomato viruses.