

Plant RNA Virus-Host Interaction: Potato virus X as a model system

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Potato virus X (PVX), the type member of Potexvirus genus, is a flexuous rod-shaped virus containing a single-stranded (+) RNA. Infection by PVX produces genomic plus- and minus-strand RNAs and two major subgenomic RNAs (sgRNAs). To understand the mechanism for PVX replication, we are studying the *cis*- and/or *trans*-acting elements required for RNA replication. Previous studies have shown that the conserved sequences located upstream of two major sgRNAs, as well as elements in the 5' non-translated region (NTR) affect accumulation of genomic and sg RNAs. Complementarity between sequences at the 5' NTR and those located upstream of two major sgRNAs and the binding of host protein(s) to the 5' NTR have shown to be important for PVX RNA replication. The 5' NTR of PVX contains single-stranded AC-rich sequence and stem-loop structure. The potential role(s) of these *cis*-elements on virus replication, assembly, and their interaction with viral and host protein(s) during virus infection will be discussed based on the data obtained by *in vitro* binding, *in vitro* assembly, gel shift mobility assay, host gene expression profiling using various mutants at these regions.

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