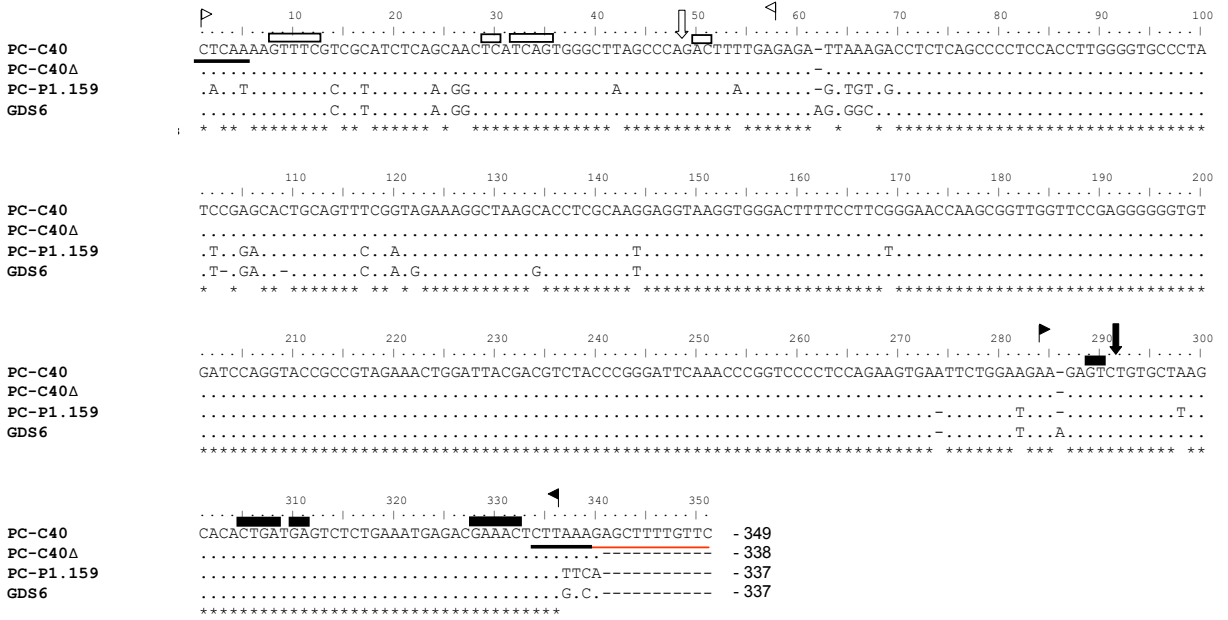
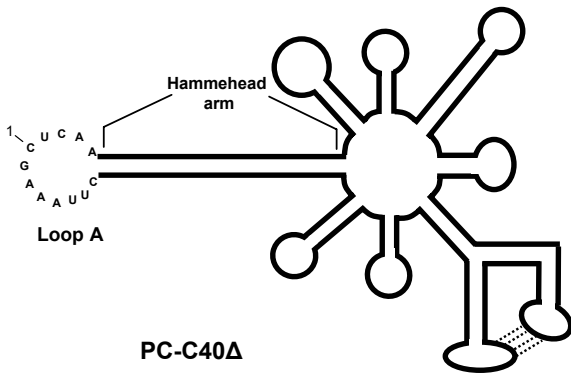
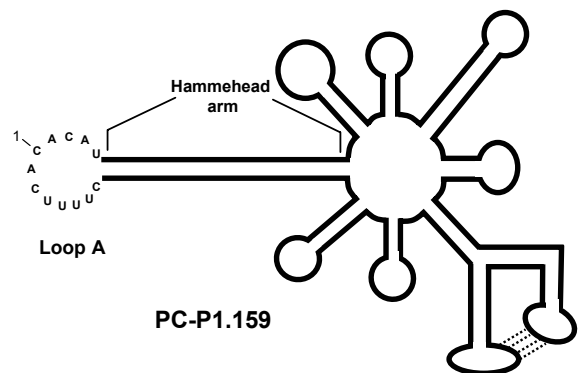
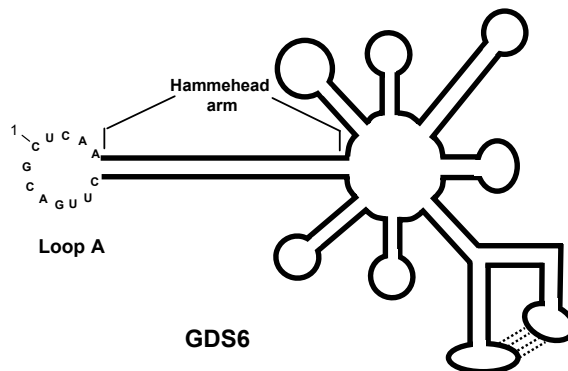


SUPPLEMENTAL DATA

Rodio et al. 2007

**A Viroid RNA with a Specific Structural Motif Inhibits
Chloroplast Development**

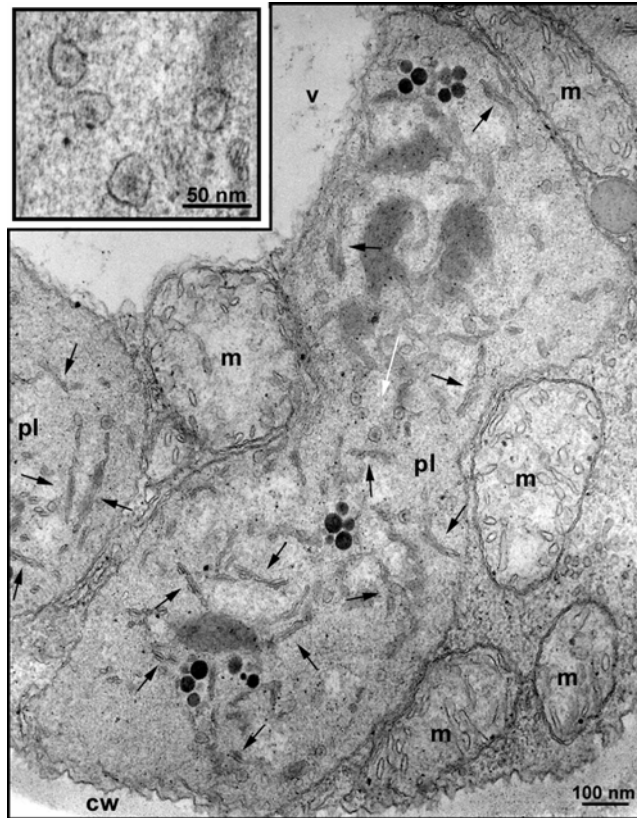
A**B****C****D**

Supplemental Figure 1. Primary and secondary structures of the PC-inducing and latent PLMVd

variants used in this study.

(A) Multiple sequence alignment of PLMVd variants including the PC-inducing variant PC-C40 (accession number AJ550912), the latent variant PC-C40 Δ derived from PC-C40 by site-directed deletion of the 12-nt hairpin insertion in loop A (Malfitano et al., 2003), and the natural latent variants PC-P1.159 (accession number DQ222062, Rodio et al., 2006) and GDS6 (accession number AJ005303, Ambrós et al., 1998). Nucleotide identity and gaps with respect to the PC-C40 variant are indicated by dots and dashes, respectively, with asterisks denoting nucleotides conserved in all variants. Flags delimit the regions involved in forming the plus and minus hammerhead structures, with their self-cleavage sites marked by arrows and the nucleotides conserved in most natural hammerhead structures indicated by bars; solid and open symbols refer to plus and minus polarity, respectively. Nucleotides forming the loop A and the hairpin insertion, wherein the PC determinant maps (see Figure 1), are underlined in black and red, respectively. Numbers on top indicate nucleotide positions in the multiple alignment, and numbers at the end the size of each variant.

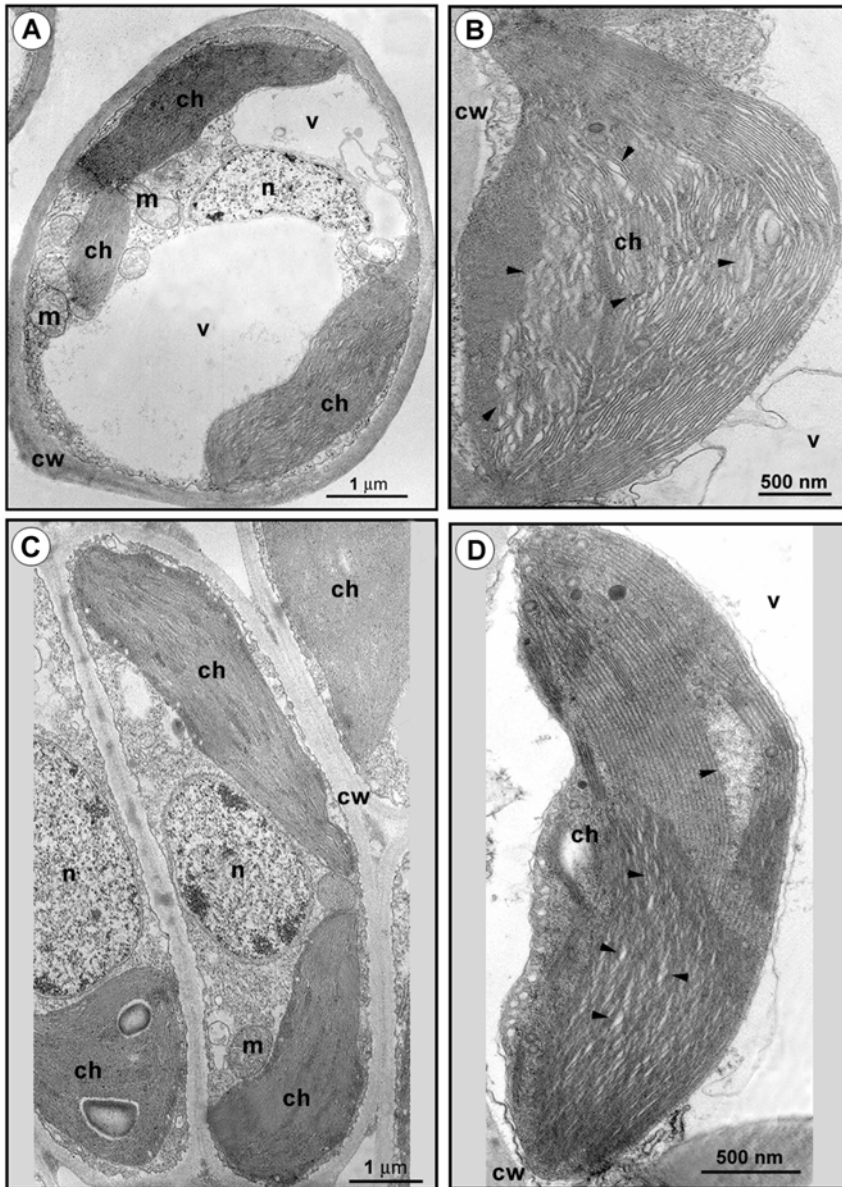
(B) to **(D)** Secondary structures of lowest free energy predicted for variants PC-C40 Δ **(B)**, PC-P1.159 **(C)** and GDS6 **(D)**, showing the nucleotides of loop A capping the hammerhead arm. Polymorphic positions identified in the multiple sequence alignment do not generate major rearrangements of the branched secondary structure (see Figure 1 for additional details).



Supplemental Figure 2. Close View of a Plastid, Resembling a Proplastid, in the Albino Sector of a Leaf Infected by PLMVd Variant PC-C40.

Black and white arrows indicate rudimentary thylakoids and vesicles, respectively. Some vesicles contain electron-dense material of unknown composition (inset).

v: vacuole, m: mitochondrion, cw: cell wall; pl: plastid

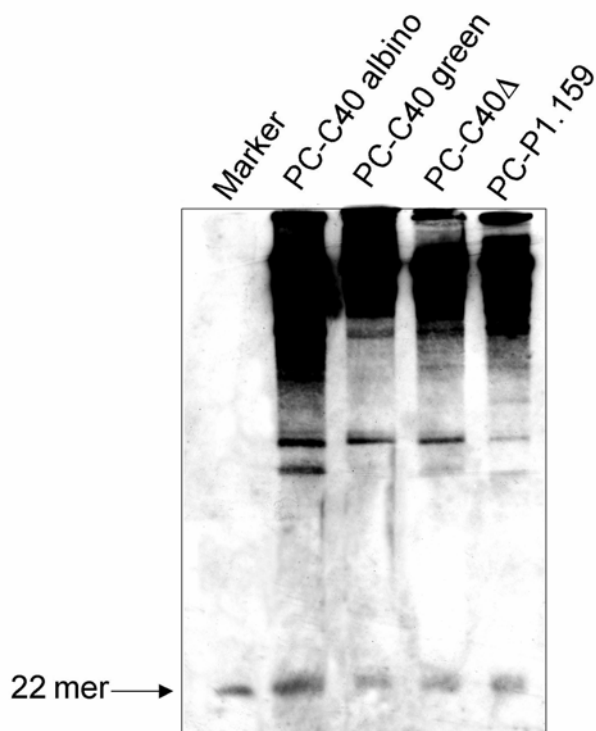


Supplemental Figure 3. Transmission Electron Microscopic Images of Cells and Plastids of Mature GF-305 Peach Leaves.

(A) and (B) Mesophyll cell (A) and altered chloroplast (B) from a leaf infected by the PLMVd latent variant PC-C40Δ.

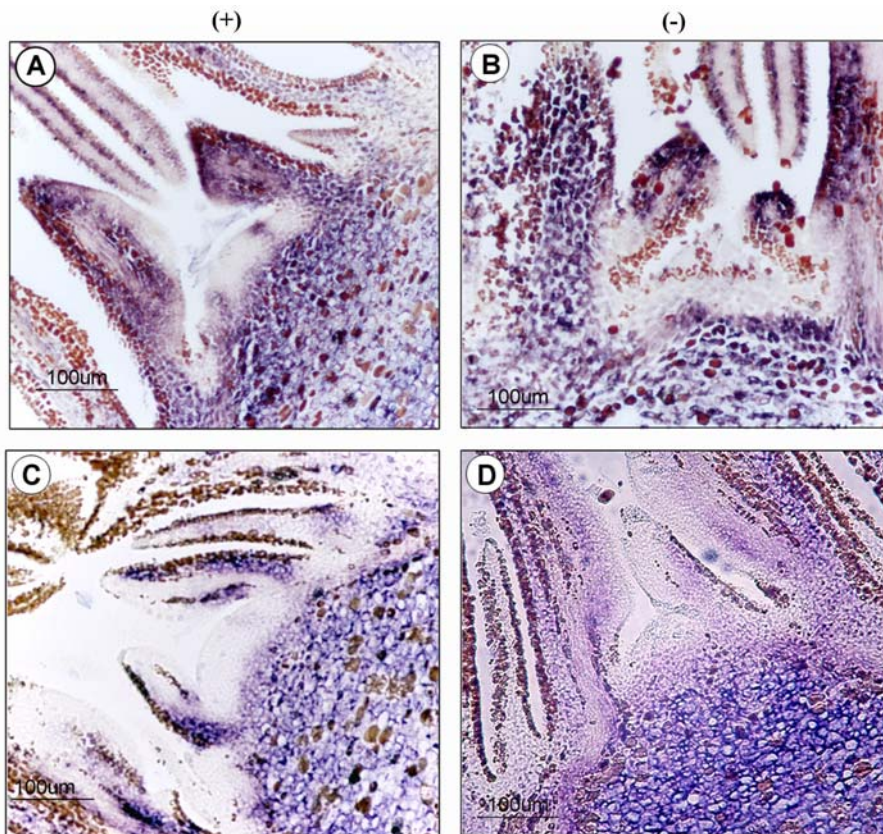
(C) and (D) Mesophyll cell (C) and altered chloroplast (D) from a leaf infected by the PLMVd latent variant PC-P1.159. Arrowheads in (B) and (D) indicate enlarged thylakoid interspaces.

n: nucleus, v: vacuole, m: mitochondrion, cw: cell wall; ch: chloroplast



Supplemental Figure 4. Detection of PLMVd-sRNAs in GF-305 Peach Leaves Infected by Three Viroid Variants.

Northern-blot hybridizations of different RNA preparations with a riboprobe for detecting (+) PLMVd strands following fractionation by denaturing PAGE in a 8% gel. The position of the DNA size marker of 22 nt is indicated at the left. PLMVd-sRNAs were not detected in parallel experiments with GF-305 healthy leaves, thus confirming their viroid origin.



Supplemental Figure 5. Detection of PLMVd (+) and (-) Strands in the Shoot Apical Meristem (SAM) of GF-305 Seedlings Infected by Different Viroid Variants.

(A) to (D) *in situ* hybridizations with riboprobes for detecting (+) (left) and (-) (right) PLMVd strands in longitudinal SAM sections from shoots infected by the mosaic-inducing variant GDS6 (A) and (B), and by the latent variant PC-P1.159 (C) and (D). Hybridization signals appear with a blue-violet color different from the brown precipitates of unknown origin.