

**ASSOCIATION OF THE P6 PROTEIN OF *Cauliflower mosaic virus* WITH PLASMODESMATA  
AND PLASMODESMAL PROTEINS**

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**ABSTRACT**

The P6 protein of Cauliflower mosaic virus (CaMV) forms inclusion bodies (IBs) responsible for viral gene expression, replication and virion assembly. Recent evidence indicates that ectopically expressed P6 IBs move in association with actin microfilaments. Since CaMV virions accumulate preferentially in P6 IBs, we hypothesized that P6 IBs have a role in delivering CaMV virions to the plasmodesmata. We recently discovered that the P6 protein interacted with a C2 calcium-dependent membrane targeting protein (designated AtSRC2-2) in a yeast two-hybrid screen and confirmed this interaction through co-immunoprecipitation and co-localization assays in the CaMV host, *Nicotiana benthamiana*. An AtSRC2-2 protein fused to RFP was localized to the plasma membrane and specifically associated with plasmodesmata. The AtSRC2-2-RFP fusion also co-localized with two proteins previously shown to associate with plasmodesmata: the host protein PDL1 and the CaMV movement protein (MP). Since P6 IBs were found to co-localize with AtSRC2-2 and had previously been shown to interact with CaMV MP, we investigated whether a portion of the P6 IBs might also be associated with plasmodesmata. We examined the co-localization of P6-GFP IBs with PDL1, the CaMV MP, and with aniline blue, a chemical stain for callose, and found that P6-GFP IBs were associated with each of these markers. Furthermore, a P6-RFP protein was co-immunoprecipitated with PDL1-GFP. Our evidence that a portion of P6-GFP IBs associate with AtSRC2-2, PDL1, and CaMV MP at plasmodesmata supports a model in which P6 IBs function to transfer CaMV virions directly to plasmodesma.