

## ABSTRACT

AYLOR, WILLIAM WESLEY II. Geminivirus movement protein interactions with host proteins in the yeast two-hybrid system. (Under the direction of Dr. I.T.D. Petty.)

Geminiviruses utilize two movement proteins in cell to cell movement within their plant hosts. The proteins, BR1 and BL1, enable the virus to move from the host nucleus into the cytoplasm and then through the plasmodesmata into a neighboring cell. The BR1 protein attaches to the viral DNA in the nucleus and moves the complex into the cytoplasm where BL1 interacts to complete the movement. Besides cell to cell movement, geminiviruses may also move systemically throughout the plant. In geminiviruses that are not well adapted to a given host the coat protein, AR1, is needed for systemic movement. Viral interactions with host proteins are vital for processes such as replication, however, little is known about virus-host interactions involved in intercellular movement. The yeast-two-hybrid system enables the detection of protein-protein interactions based on selective yeast growth. Interactions between a viral bait and host prey allow the growth of yeast on nutrient deficient plates. The viral baits were derived from geminiviruses bean golden mosaic virus (BGMV) and squash leaf curl virus (SLCV). BGMV BR1, BGMV AR1, and SLCV BR1 were screened against a cDNA library from the plant host *Nicotiana benthamiana*. Possible relevant interacting host proteins that allowed growth when co-expressed with one or more of these viral baits and not when co-expressed with irrelevant baits have been isolated and identified. In addition to screening a cDNA library of a plant host, the movement proteins and the coat protein were tested against each other for interactions using the yeast two-hybrid system.

**GEMINIVIRUS MOVEMENT PROTEIN INTERACTIONS WITH HOST PROTEINS IN THE  
YEAST TWO-HYBRID SYSTEM**

by  
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