

# Expression of Anti-Nematode Proteins in Transgenic Soybean to Control Soybean Cyst Nematode

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IMBA Project 2007-6  
**Project Description**

## Objective

Confirmation of soybean cyst nematode control in stable transgenic soybean plants expressing ANPs

## Procedure

This research is taking a two-step approach to identify proteins which when expressed in plants provide protection against soybean cyst nematodes. The first step identifies small proteins from a variety of sources that have activity against soybean cyst nematodes. The second step uses protein modeling and structural homologies to identify structural motifs in the nematode-active proteins. Preliminary results presented in the proposal show how seven small proteins, when expressed in root tissue, confer resistance to plant-parasitic nematodes including soybean cyst nematodes. The proposed research outlines how these proteins will be further tested *in planta* and how structural motifs will be used to identify key regions that are necessary for activity.

## Impact

The development of new tactics for controlling SCN will be necessary for Illinois and Missouri soybean growers to stay competitive in the soybean market. Current strategies of SCN management include crop rotations and use of SCN resistant varieties of plants (Concibido et al., 2004). Unfortunately, SCN resistance in soybean is breaking down due to overuse of resistant varieties and the ability of the SCN population to shift its virulence profile (Bekal et al., 2003). New methods of SCN resistance are needed to help prolong the use of current resistant varieties.

Preliminary evidence suggests that transgenic host resistance to SCN can be achieved by the expression of AMPTs, a novel set of biologically active proteins, in transformed soybean plants.