

# **Development of Soybean Germplasm With Designed Resistance to Soybean Rust and Other Diseases**

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## IMBA Project 2007-8 **Project Description**

### **Objectives:**

Our overall goal is to develop and market soybean germplasm that expresses defense peptides for protection against soybean rust. Achievement of this goal requires selection of effective defense peptides and an ability to rapidly screen candidate peptides for plant protection. The objectives of this application include:

1. Development of plant virus vectors to deliver candidate defense peptides into soybean for rapid high-throughput assessment of rust resistance.
2. Evaluation of the vector system using selected peptides deleterious to the growth and development of *P. pachyrhizi*.
3. Development of transgenic soybean plants that express defense peptides and initiate evaluations of resistance or tolerance to rust.

### **Procedure:**

The researchers will introduce peptides inhibitory to *P. pachyrhizi* into soybean plants by virus inoculation for evaluation of protection against rust. The best candidate peptides identified in this high throughput assay will be expressed in transgenic plants and evaluated over time for induction of rust resistance or tolerance. The initial goal will be to protect soybean leaves because they are the major site of infection by *P. pachyrhizi*. Later, research will also focus on stems and seed pods that can also serve as infection targets.

### **Impact:**

This project should contribute significantly to the profitability of soybean. Project activities include innovative discovery and development research that translates to marketable, high-value soybean germplasm of importance to farmers, the soybean and seed industry, and the end-user markets.