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**Project ID: 0405-BD-071**

**FY03 ARS Agreement #: NA**

**Research Area: BIO**

**Duration of Award: 1 Year**

**Project Title: Function of Secreted Proteins from *Gibberella zeae*.**

PROJECT 1 ABSTRACT

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The long-term goal of our proposed research project is to discover fungal genes that can be exploited for controlling Fusarium Head Blight. This project will focus on secreted proteins from *G. zeae* because they have the potential to play a direct role in the host/parasite interaction as R-gene effectors, adhesives, cell wall degraders, digestive enzymes, virulence factors, etc. We propose to begin our investigations of secreted proteins with fungal sex pheromones because they can affect intercellular communication, germination, filamentous growth, chemotaxis, female sexual development, and pathogenicity. There are two mating type-specific pheromone precursor genes (*ppg*) in Ascomycete fungi. They have different names in different species, so we will call them *ppg1* and *ppg2* for simplicity. *ppg1* encodes a large peptide that is cleaved to produce multiple copies of a short peptide. *ppg2* encodes a single copy of a short lipopeptide with a CAAX motif at the C-terminus.

The specific objectives of this research proposal are:

**Objective 1.** Identify the *ppg2* homolog pheromone gene from *G. zeae*.

**Objective 2.** Develop a laboratory bioassay for sex pheromone activity.

**Objective 3.** Determine effect of deletion and over-expression of both *ppg1* and *ppg2* pheromones on *G. zeae*