

**0203-TR-082 Use of gene expression analysis to study pathogenicity in *Gibberella zeae*.**

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PROJECT ABSTRACT

(1 Page Limit)

*Gibberella zeae* (anamorph *Fusarium graminearum*) causes head scab of wheat and barley and stalk rot and ear rot of corn. As conventional control measures have not produced effective control of this devastating pathogen, a deeper understanding of the life cycle and biology of the fungus is necessary. Our long-term goal is to understand the production and spread of inoculum for head scab, and the role of the two types of spores (sexual and asexual) in completing the disease cycle. Studies on the development and mechanisms of dispersal of the inoculum will provide valuable insight into effective control procedures for this disease. Our goals are to understand the biology of the *F. graminearum* especially with regard to spore production and to develop strategies for elimination of the inoculum of the scab disease. Specifically, this research will provide (1) an understanding how field colonized vegetative host tissue supports perithecial production over the course of 1 year; (2) identification of genes and gene products involved early in perithecial initiation and development. Using strains with mutations involved in initial stages of perithecial production or lacking perithecia, we can begin the genetic and physiological analysis of this early phase on inoculum production. Our approach is twofold: to combine basic, laboratory research with field research aimed at the ultimate control of inoculum production. Our research combines studies of the basic biology of *G. zeae* with behavior of the fungus in the field. These two approaches will result in novel approaches to interruption of the disease cycle.