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Research Area: EDM

Project Title: REMI mutagenesis in *Fusarium graminearum* for identifying genes important for fungal development and pathogenesis.

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PROJECT 1 ABSTRACT

(1 Page Limit)

Fusarium head blight (scab) is a disease of wheat and barley that can cause reduction both in crop yield and grain quality. The goal of this study is to use the REMI (restriction enzyme mediated integration) mutagenesis approach to study molecular mechanisms involved in fungal pathogenicity and infection processes in *F. graminearum*. Over 7, 000 REMI transformants have been generated in my lab. Objective 1 of this proposal is to screen these REMI transformants for mutants defective in conidiation. Because conidia are critical for initiating and spreading the scab disease in the field, it is important to characterize mutants defective in conidiation. The other objective is to identify genes responsible for reduced pathogenicity in two REMI mutants identified in our preliminary studies. These two mutants, 25C3 and 2G8, are dramatically reduced in plant infection. Overall, the forward genetics approaches proposed in this study is complimentary to the reverse genetics or genomics approaches. Results from proposed researches will improve our knowledge about genes important for fungal development processes and pathogenesis in *F. graminearum*. In the long run, it will be helpful to understand the life and disease cycle of this important pathogen, and may ultimately lead to the development of novel targets for fungicide screens or disease control strategies.