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**Project Title: Global molecular surveillance of FHB species and their mycotoxin potential.**

PROJECT 1 ABSTRACT
(1 Page Limit)

The ultimate objective of this project is to provide information and molecular tools to scientists, plant breeders, and regulatory agencies that is essential for understanding the ecology and epidemiology of Fusarium Head Blight (FHB) pathogens, developing plant cultivars with broad-based resistance to a diverse array of FHB pathogens, and implementing disease control and global monitoring programs aimed at preventing the introduction of novel FHB pathogens or strains with novel toxigenic potential into the U.S. Therefore, we propose to 1) develop and validate multiplex PCR tests for the rapid and specific identification of FHB pathogens and their trichothecene chemotypes 2) utilize these markers to determine the geographic and host distributions of FHB pathogens and trichothecene mycotoxin chemotypes in a global collection of FHB strains, and evaluate the natural species/chemotype diversity in individual fields in the U.S., China and South America 3) generate a multilocus DNA sequence database for A trichothecene producers and develop molecular diagnostics for their accurate identification so that their host/geographic distribution can be examined and their contribution to FHB can be more fully understood. The proposed research will make a direct and substantial contribution to the goals of the USWBSI by making available for the first time detailed information on the geographic and host distributions of FHB pathogens and their trichothecene chemotypes, enhancing current knowledge of the ecology, epidemiology, and population dynamics of these mycotoxigenic cereal pathogens. In addition, the development of simple and accurate molecular methods for FHB species identification and chemotype determination will enhance disease surveillance and control programs, and will facilitate efforts to prevent introductions of novel FHB pathogens or toxins into the U.S.