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Research Category: **DUR-CP** **Duration of Award: 1 Year**

Project Title: Characterization and Introgression of Hexaploid FHB Resistance Genes in Durum.

PROJECT 1 ABSTRACT

(1 Page Limit)

Hexaploid-derived FHB resistance remains the most effective sources of resistance identified in cultivated wheat. They are potentially useful for improving FHB resistance of durum. However, the complex effects of the durum background and D-genome chromosomes on FHB resistance have limited the progress of gene introgression for this disease from hexaploids into durum. An effective source of resistance to FHB has not been incorporated into durum. Here we propose to characterize the effects of durum background and D-genome chromosomes on FHB resistance by molecular mapping and chromosome analysis and to continue FHB resistance gene introgression from distinct hexaploid resistance sources into durum. The specific objectives of this proposed project are to: 1) Characterize the hexaploid-derived FHB resistance genes in durum background and the role of D-genome chromosomes in FHB resistance; 2) Incorporate FHB resistance QTL from hexaploid wheat into adapted durum backgrounds for gemplasm development; 3) Validate the molecular markers tagging resistance QTL in durum germplasm. We anticipate this research will enhance understanding of inheritance of hexaploid-derived FHB resistance genes in tetraploid durum background and the effect of D-genome chromosomes on FHB resistance. This will facilitate utilization of hexaploid resistance sources in durum breeding and germplasm development. In addition, we expect to develop durum germplasm with improved FHB resistance using distinct hexaploid resistance sources, including wheat-alien species derivatives, in this project. The durum germplasm with improved FHB resistance and molecular markers developed in this project will be made available immediately to the FHB research community for use in the development of durum germplasm and varieties. Overall, this proposed research project well aligns with the research priorities/objectives of the DUR-CP and will contribute to the research efforts of the CP.