FY16 USWBSI PROJECT ABSTRACT

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

Project Title: Pyramiding Multiple FHB Resistance QTLs in Different Winter Wheat Backgrounds.

PROJECT 1 ABSTRACT

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The goal of this project is to deliver germplasm combining multiple resistance genes with multiple elite germplasm to the winter wheat breeders in this region. The rationale is the need to introgress additional FHB resistance QTLs, as well as to study their effect on diverse genetic backgrounds. In the last funding periods this project has developed double haploid populations (>200 individuals) from few selected families derived using 3- and 4-way crosses between different sources of resistance to FHB (Ernie, Freedom, Lyman, Overland and NE06546 in addition to existing elite lines with *Fhb1* such us Wesley-*Fhb1* and AL-107-6106). We are using these lines as breeding parents and to validate QTLs we have previously identified. In the next funding cycle we propose to focus on: *Mapping and introgressing FHB resistance QTL from 'AC Emerson'*. Emerson (McClintock/CDCOsprey) is a recent release from Canterra Seeds (Ag Canada initiative) and has shown very good levels of FHB resistance; Emerson does not carry the *Fhb1* locus. For this, we propose to use and IBD-mapping approach using multiple early generation families generated from 4 way crosses. All families will have Emerson, a second non-*Fhb1* (such as those mentioned above i.e.; Freedom, Overland and Lyman) and an *Fhb1*-source (such us Wesley-*Fhb1*) in their pedigree. We have used this approach in previous published studies on FHB resistance, bacterial blight resistance and preharvest sprouting resistance in wheat.