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

Project Title: Transfer of FHB Resistance to NDSU Hard Red Winter Wheat Breeding Material.

PROJECT 1 ABSTRACT

(1 Page Limit)

The project is in support of a new hard red winter wheat breeding program that was initiated at NDSU in 2011. In North Dakota, winter-hardiness is the most important adaptation trait, yet production is also adversely affected by many diseases of which leaf rust, fusarium head blight and tan spot rank among the most damaging. Other significant diseases include the Septoria complex, stem and stripe rust, take all root rot, seedling blight and wheat streak mosaic virus. Present varieties and available breeding material have generally low levels of resistance. The objective of this project is to enrich the current germplasm using three different introgression approaches: (a) Transfer through backcrosses of single FHB resistance genes from spring wheat. (b) The use of generation acceleration methods to derive and characterize a large number of random inbred lines from crosses of winter wheat with FHB-resistant spring wheat. The most winter-hardy, resistant lines will then be used in further crosses with locally adapted winter wheat. (c) The utilization through conventional crossbreeding and selection of resistance genes in two winter wheat germplasm sources, obtained from Canada and Hungary, respectively. The resistance in the latter sources are provided by un-identified genes derived from Sumai 3 and Frontana.