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PROJECT 1 ABSTRACT
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FHB is one of the biggest challenges for the wheat growers in the state of Maryland and the broader Mid-Atlantic region. Maryland has wet spring seasons, which is the time of highest susceptibility to *Fusarium graminearum* infections, leading to high disease incidence in the state. Breeding for resistance against FHB is the most sustainable solution for managing this devastating disease. Development and release of high-yielding FHB resistant varieties are required to keep wheat production profitable for the farmers in the Mid-Atlantic region. The overall goal of this proposal is to develop and release high yielding scab resistant cultivars with excellent quality traits. We will be integrating native resistance, known QTL, and TILLING based knockout mutants of identified susceptibility factors in the elite MD lines and perform marker assisted selection for their deployment for the control of scab.

To accomplish this overall goal three objectives are proposed:

1) Breeding soft red winter wheat adapted to the Mid-Atlantic with resistance to scab and to increase the increase the adaptation of FHB resistant lines by the wheat growers in Mid-Atlantic region.
2) Evaluation of advanced lines in Uniform Scab nurseries, Maryland State Test and Uniform Regional Nurseries.
3) Map and integrate new sources for Scab resistance in to breeding germplasm and to enhance collaborations with regional breeders using Mason-Dixon trials, DHs, screening nurseries, and other resources. Data on resistant germplasm will be disseminated to ensure that the work completed by MD-wheat breeding program will have regional impact in support USWBI's objectives.