0203-MU-044 Mechanisms and essential genes for wheat and barley scab resistance.

PI: Muehlbauer, Gary; E-mail: gary.j. muehlbauer-1@tc.umn.edu
University of Minnesota, Department of Agronomy and Plant Genetics, St. Paul, MN 55108

Grant #: 59-0790-9-055; $58,000; 1 Year
Research Area: BIO

PROJECT ABSTRACT
(1 Page Limit)

Fusarium head blight (FHB), a fungal disease of small grain crops caused by *Fusarium graminearum*, threatens to reduce wheat and barley to economically unviable crops in the United States. Substantial losses are occurring due to reduced grain yield and quality. To complement the major wheat and barley breeding efforts, several laboratories have established genetic engineering approaches to enhance resistance to FHB. However, a limitation of the genetic engineering efforts is the lack of useful resistance genes. This proposal aims to develop a gene discovery effort for FHB resistance genes. We will use genomics tools to identify the mechanisms and genes that are involved in resistance to FHB in wheat and barley. We will continue to establish an EST database for wheat and barley genes expressed before and during *F. graminearum* infection. Large-scale gene expression and bioinformatics efforts will be utilized to identify mechanisms and genes for FHB resistance. Potentially useful resistance genes will be provided to the genetic engineering groups for transformation and to the breeding programs for use as molecular markers. The proposed research meets the objectives of the U.S. Wheat and Barley Scab Initiative and fits within the biotechnology area of research because we are identifying mechanisms and genes that are involved in FHB resistance.