

Summary of the 1999 National Fusarium Head Blight Forum Biotechnology Breakout Sessions

Transformation Breakout Session

The group participating in the transformation breakout session discussed their current needs, the actions that they will take in the year 2000, and various issues regarding transformation.

Current Needs. Through group discussion various needs were identified. They are the following: 1) New genes. 2) Standardized testing and facilities for testing. 3) Toxin cellular locations and modes of action. 4) More information regarding the pathogen infection route. 5) Locations for the targeting of transgenes.

Action Items for 2000. It was decided that lab visits to different transformation labs will be organized. These visits are going to be modeled after field days and help to keep everyone up-to-date on the progress that is being made, the techniques that are being used, the types of facilities that are available, etc. The group will also set up a listserver for transformation researchers that will serve as a forum for answering questions, providing information, and circulating research updates. In addition to the listserver, a web site will be created. The website will have two tiers, one for public use and one password protected for scientist use. The contents are to include research updates; testing methods; availability of primers, antibodies, and other resources; and distribution procedures.

Other Issues. The group discussed the sharing of homozygous transgenic lines with breeding programs nationwide, intellectual property rights, and the breeders' knowledge of intellectual property rights issues. Effects of different versions of the same gene and altering the control and expression of genes from wheat and barley were topics of conversation as well. During the conversation it was suggested that antifungal genes that aren't effective against Fusarium head blight may help reduce other disease problems.

Molecular Marker Breakout Session

Four topics were discussed during the molecular marker breakout session.

Topic 1. Molecular Markers Database. A database of markers linked to Fusarium head blight resistance genes from different genetic sources is needed and should include all marker information such as allele size and possibly images. It was suggested that the database could be part of the biotechnology website and that the best markers would be polymorphic in many populations.

Topic 2. Genomics and marker/QTL associations. The projects regarding genomics and marker/QTL associations should eventually allow cloning of the resistance genes, but the group decided that this will involve a major effort. Very close linkages are needed between the markers and genes.

Topic 3. Microsatellite markers (SSRs). A set of Microsatellite markers is being developed by Dr. Perry Cregan of USDA-ARS. This set should be used to negotiate access to non-public SSR markers. These markers are being tested on mapping parents at MN and ND to determine their usefulness in detecting polymorphism.

Topic 4. High Through-Put Utilization. SSRs may not be the marker of choice. Other markers may be better for screening in breeding programs, such as molecular beacons and single nucleotide polymorphisms (SNIPs). However, these have not yet been developed for wheat and barley.