

The NABGMP/USBGP/RBGMP: A brief history of a long record of accomplishment

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The United States Barley Genome Project (USBGP) was established eighteen years ago as the North American Barley Gene Mapping Project (NABGMP). The NABGMP was born at Montana State University in 1987 – the singularly fruitful outcome of a conference organized by Tom Blake. Meeting participants were dazzled by the new horizons for barley genetics and breeding afforded by molecular marker technology and analysis of quantitative traits. We were naïve to think we would determine the genetic basis of yield and malting quality in the Steptoe x Morex mapping population. But with the strength of the innocent we rose to the challenge posed by Don Rasmusson (University of Minnesota), the father of American six-row malting barley. Don said “it can’t be done”. Well, we’ve done some of it anyway. And if we keep doing it, we may finally understand Don’s secret recipe for successful plant breeding. The barley research community, under the distinguished leadership of Bob Nilan (Washington State University) went in search of a funding mechanism. Competitive grant agencies of the day were not able to deal with the novel concept of the NABGMP - a multi-institutional collaborative project involving cereal chemists, entomologists, molecular biologists, plant breeders, plant pathologists, plant physiologists, and statisticians. Mike Davis (American Malting Barley Association), harnessed the energies of the National Barley Improvement Committee (NBIC), educated Congress, and obtained a USDA Special Grant for the Regional Barley Gene Mapping Project (RBGMP). The NABGMP funded the RFLP mapping powerhouse at Washington State University, developed by Andris Kleinhofs, which quickly produced the best crop plant linkage map of the day. The map laid the foundation for breeders and statistical geneticists to produce the first comprehensive QTL analysis of agronomic and quality traits in a crop of economic importance. Special Grant funding, and contributions from the Anheuser Busch Companies, have continued for 18 years. This “earmark” has not built a “bridge to nowhere” - it has built national and international bridges between scientists and disciplines. Nearly every barley researcher in the U.S. was, or is, involved in the NABGP and/or the USBGP. Over its 18 year run, the Project has awarded over 11 million dollars to 82 researchers in 17 states who conducted 140 different research projects. Extensive international linkages were forged throughout the world, including close partnerships with ICARDA/CIMMYT (Mexico, Syria), the IPK (Germany), the RIB (Japan) and the SCRI (Scotland). NABGMP/ USBGP researchers developed a comprehensive set of genetic stocks which have served as the basis for national and international breeding and genetics efforts. NABGMP/ USBGP-supported research contributed directly to 180 publications, with many more to come. The project was instrumental in leveraging milestones in plant genetics research. These include the Affymetrix Barley 1 GeneChip (led by Tim Close, University of California-Riverside and Roger Wise, USDA/ARS-Iowa) and the Barley Coordinated Agricultural Project (Barley CAP), led by Gary Muehlbauer (University of Minnesota). Thanks all, and Think Barley!