

### References

1. Backes G., A. Granner, B. Foroughi-Wehr, G. Fischbeck, G. Wenzel, and A. Jahoor. 1995. Localization of quantitative trait loci (QTL) for agronomic important characters by the use of a RFLP map in barley (*Hordeum vulgare* L.). *Theor. Appl. Genet.* 90: 294-302.
2. Backes G., G Schwarz, G. Wenzel, and A. Jahoor. 1996. Comparison between QTL analysis of powdery mildew resistance in barley based on detached primary leaves and on field data. *Plant Breeding* 115: 419-421.
3. Bezant J., D. Laurie, N. Pratchett, J. Chojecki, and M. Kearsey. 1996. Marker regression mapping of QTL controlling flowering time and plant height in a spring barley (*Hordeum vulgare* L.) cross. *Heredity* 77: 64-73.
4. Bezant J. H., D. A. Laurie, N. Pratchett, J. Chojecki, and M. J. Kearsey. 1997. Mapping of QTL controlling NIR predicted hot water extract and grain nitrogen content in a spring barley cross using marker-regression. *Plant Breeding* 116: 141-145.
5. Bezant J., D. Laurie, N. Pratchett, J. Chojecki, and M. Kearsey. 1997. Mapping QTL controlling yield and yield components in a spring barley (*Hordeum vulgare* L.) cross using marker regression. *Molecular Breeding* 3: 29-38.
6. Borem, A., D.E. Mather, D.C. Rasmusson, R.G. Fulcher, and P.M. Hayes. 1999. Mapping quantitative trait loci for starch granule traits in barley. *Journal of Cereal Sci.* 29:153-160.
7. Chalmers K.J., U. M. Barua, C. A. Hackett, W. T. B. Thomas, R. Waugh, and W. Powell. 1993. Identification of RAPD markers linked to genetic factors controlling the milling energy requirement of barley. *Theor. Appl. Genet.* 87:314-320.
8. Chen, F., D. Prehn, P.M. Hayes, D. Mulrooney, A. Corey, and H. Vivar. 1994. Mapping genes for resistance to barley stripe rust (*Puccinia striiformis* f. sp. *hordei*). *Theor. Appl. Genet.* 88:215-219.
9. De la Pena, R. C., K P. Smith, F. Capettini, G. J. Muelbauer, M. Gallo-Meagher, R. Dill-Macky, D.A. Somers, and D.C. Rasmuson. 1999. Quantitative trait loci associated with resistance to Fusarium head blight and kernel discoloration in barley. *Theor. Appl. Genet.* 99:561-569.
10. El Attari, A., Rebai, P.M. Hayes, G. Barrault, G. Dechamp-Guillaume, and A. Sarrafi. 1998. Potential of doubled haploid lines and localization of quantitative trait loci (QTL) for partial resistance to bacterial leaf streak (*Xanthomonas campestris* pv. *hordei*) in barley. *Theor. Appl. Genet.* 96:95-100.
11. Ellis, R. P., B.P. Forster, R. Waugh, N. Bonar, L.L. Handley, D Robinson, D.C. Gordon and W. Powell. 1997. Mapping physiological traits in barley. *New Phytologist*, 137, 99-107.
12. Hackett, C. A., R. P. Ellis, B. P. Foster, J. W. McNicol, and M. Macaulay. 1992. Statistical analysis of linkage experiment in barley involving quantitative trait loci for height and ear-emergence time and two genetic markers on chromosome 4. *Theor. Appl. Genet.* 85: 120-126.
13. Han F., S. E. Ullrich, S. Chirar, S. Menteur, L. Jestin, A. Sarrafi, P. M. Hayes, B. L. Jones, T. K. Blake, D. M. Wesenberg, A. Kleinhofs, and A. Kilian. 1995. Mapping of  $\beta$ -glucan content and  $\beta$ -glucanase activity loci in barley grain and malt. *Theor. Appl. Genet.* 91: 921-927.

14. Han, F., S. E. Ullrich, J. A. Clancy, V. Jitkov, A. Killian, and I. Romagosa. 1996. Verification of barley seed dormancy loci via linked molecular markers. *Theor. Appl. Genet.* 92:87-91.
15. Han F., I. Romagosa, S. E. Ullrich, B. L. Jones, P. M. Hayes and D. M. Wesenberg. 1997 (a). Molecular marker assisted selection for malting quality traits in barley. *Molecular Breeding* 3: 427-437.
16. Han F., S. E. Ullrich, A. Kleinhofs, B. L. Jones, P. M. Hayes, and D. M. Wesenberg. 1997 (b). Fine structure mapping of the barley chromosome-1 centromere region containing malting-quality QTLs. *Theor. Appl. Genet.* 95: 903-910.
17. Hayes, P.M., T. Blake, T. H. H. Chen, S. Tragoonrung, F. Chen, A. Pan, and B. Liu. 1993 (a). Quantitative trait loci on barley (*Hordeum vulgare* L.) chromosome 7 associated with components of winterhardiness. *Genome* 36:66-71.
18. Hayes, P.M., B.H. Liu, S.J. Knapp, F. Chen, B. Jones, T. Blake, J. Franckowiak, D. Rasmusson, M. Sorrells, S.E. Ullrich, D. Wesenberg, and A. Kleinhofs. 1993 (b). Quantitative trait locus effects and environmental interaction in a sample of North American barley germplasm. *Theor. Appl. Genet.* 87:392-401.
19. Hayes, P.M., D. Prehn, H. Vivar, T. Blake, A. Comeau, I. Henry, M. Johnston, B. Jones, and B. Steffenson. 1996. Multiple disease resistance loci and their relationship to agronomic and quality loci in a spring barley population. *J.QTL*. <http://probe.nalusda.gov:8000/otherdocs/jqtl/index.html>
20. Heun M. 1992. Mapping quantitative powdery mildew resistance of barley using a restriction fragment length polymorphisms map. *Genome* 32: 1019-1025.
21. Jefferies S. P., A. R. Barr, A. Karakousis, J. M. Kretschmer, S. Maning, K. J. Chalmers, J. C. Nelson, A. K. M. R. Islam, and P. Langridge. 1999. Mapping of chromosome regions conferring boron toxicity tolerance in barley (*Hordeum vulgare* L.) *Theor. Appl. Genet.* 98: 1293-1303.
22. Kandemir N., D.A. Kudrna, S.E. Ullrich, A. Kleinhofs. 2000. Molecular marker assisted genetic analysis of head shattering in six-rowed barley. *Theor. Appl. Genet.* 101:203-210.
23. Karsai, I., K. Meszaros, P.M. Hayes, and Z. Bedo. 1997. Effects of loci on chromosome 2 (2H) and 7 (5H) on developmental patterns in barley (*Hordeum vulgare* L.) under different photoperiod regimes. *Theor. Appl. Genet.* 94: 612-618.
24. Kjaer B., J. Jensen, and H. Giese. 1995. Quantitative trait loci for heading date and straw characters in barley. *Genome* 38: 1098-1104.
25. Kjaer B, and J. Jensen. 1996. Quantitative trait loci for grain yield and yield components in a cross between a six-rowed and a two-rowed barley. *Euphytica* 90: 39-48.
26. Komatsuda T., T. Annaka, and S. Oka. 1993. Genetic mapping of a quantitative trait locus (QTL) that enhances the differentiation rate in *Hordeum vulgare* L. *Theor. Appl. Genet.* 86:713-720.
27. Larson S.R., G. Bryan, W. Dyer and T. Blake. 1996. Evaluating gene effects of a major barley seed dormancy QTL in reciprocal backcross populations. *Journal of Quantitative Trait Loci*, Volume 2, Article 4. <http://probe.nalusda.gov.800/otherdocs/jqtl>.
28. Larson S. R., D.K. Habernicht, T. K. Blake, and A. A. Adamson. 1997. Backcross gains for six-rowed grain and malt qualities with introgression of a feed barley yield QTL. *J. Am. Soc. Brew. Chem.* 55:52-57.

29. Larson, S.R., D. Kadyrzhanova, M. McDonald, M. Sorrells, and T.K. Blake. 1996. Evaluation of barley chromosome-3 yield QTLs in a backcross F2 population using STS-PCR. *Theor. Appl. Genet.* 93:618-625.
30. Laurie D.A., N. Pratchett, J. H. Bezant, and J. W. Snape. 1995. RFLP mapping of five major genes and eight quantitative trait loci controlling flowering time in a winter x spring barley (*Hordeum vulgare* L.) cross. *Genome* 38: 575-585.
31. Mano Y., H.Takahashi, K. Sato, and K. Takeda. 1996. Mapping genes for callus growth and shoot regeneration in barley (*Hordeum vulgare* L.). *Breeding Science* 46: 137-142.
32. Mano Y., and K Takeda. 1997. Mapping quantitative trait loci for salt tolerance at germination and the seedling stage in barley (*Hordeum vulgare* L.). *Euphytica* 94: 263-272.
33. Marquez-Cedillo, L.A., P.M. Hayes, B.L. Jones, A. Kleinhofs, W.G. Legge, B.G. Rossnagel, K. Sato, S.E. Ullrich, D.M. Wesenberg, and the NABGMP. 2000. QTL analysis of malting quality in barley based on the doubled haploid progeny of two elite North American varieties representing different germplasm groups. *Theor. Appl. Genet.* (In press).
34. Mather D. E., N. A. Tinker, D. E. LaBerge, M. Edney, B. L. Jones, B. G. Rossnagel, W. G. Legge, K. G. Briggs, R. B. Irvine, D. E. Falk, and K. J. Kasha. 1997. Regions of the genome that affect grain and malt quality in a North American two-row barley cross. *Crop Sci.* 37: 554-554.
35. Moharramipour S., H. Tsumuki, K. Sato, H. Yoshida. 1997. Mapping resistance to cereal aphids in barley. *Theor. Appl. Genet.* 94:592-596.
36. Oberthur L., T. K. Blake, W.E. Dyer and S. E. Ullrich. 1995. Genetic Analysis of Seed Dormancy in Barley (*Hordeum vulgare* l.). <http://probe.nalusda.gov:8000/otherdocs/jqtl1995-05/dormancy.html>
37. Oziel, A., P.M. Hayes, F.Q. Chen, and B. Jones. 1996. Application of quantitative trait locus mapping to the development of winter habit malting barley. *Plant Breeding.* 115:43-51.
38. Pan, A., P.M. Hayes, F. Chen, T. H. H., Blake, T.K., S. Wright, I. Karsai, and Z. Bedö. 1994. Genetic analysis of the components of winterhardiness in barley (*Hordeum vulgare* L.). *Theor. Appl. Genet.* 89:900-910.
39. Pecchioni N., P. Faccioli, H. Toubia-Rahme, G. Vale, and V. Terzi. 1996. Quantitative resistance to barley leaf stripe (*Pyrenophora graminea*) is dominated by one major locus. *Theor. Appl. Genet.* 93:97-101.
40. Pecchioni N., G. Vale, H. Toubia-Rahme, P. Faccioli, V. Terzi and G. Delogu. 1999. Barley-*Pyrenophora graminea* interaction: QTL analysis and gene mapping. *Plant Breeding* 118: 29-35.
41. Powell W., W. T. B. Thomas, D. M. Thompson. J. S. Swanston and R. Waugh. 1992. Association between rDNA alleles and quantitative traits in doubled haploid populations of barley. *Genetics* 130: 187-194.

42. Powell W., W. T. B. Thomas, E. Baird, P. Lawrence, A. Booth, B. Harrower, J. W. McNicol and R. Waugh. 1997. Analysis of quantitative traits in barley by the use of amplified fragment length polymorphisms. *Heredity* 79: 48-59.
43. Romagosa I., S.E. Ullrich, F. Han and P.M. Hayes. 1996. Use of the additive main effects and multiplicative interaction model in QTL mapping for adaptation in barley. *Theor Appl Genet* 93:30-37
44. Romagosa, I., F. Hang, S. E. Ullrich, P. M. Hayes, and D. M. Wesenberg. 1999(a). Verification of yield QTL through realized molecular marker-assisted selection responses in barley cross. *Molecular Breeding* 5: 143-152.
45. Romagosa, I., F. Han, J.A. Clancy and S.E. Ullrich. 1999(b). Individual locus effects on dormancy during seed development and after ripening in barley. *Crop Sci.* 39:74-79.
46. Qi, X., E. E. Nicks, P. Stam, and P. Lindhout. 1998. Identification of QTLs for partial resistance to leaf rust (*Puccinia hordei*) in barley. *Theor. Appl. Genet.* 96:1205-12135.
47. Spaner, D., L.P. Shugar, T. M. Choo, I. Falak, K. G. Briggs, W. G. Legge, D. E. Falk, S. E. Ullrich, N. A. Tinker, B. J. Steffenson, and D. E. Mather. 1998. Mapping of disease resistance loci in barley on the basis of visual assessment of naturally occurring symptoms. *Crop Sci.* 38:843-850.
48. Spaner, D., B.G. Rosnagel, W.G. Legge, G.J. Scoles, P.E. Eckstein, G.A. Penner, N.A. Tinker, K.G. Briggs, D.E. Falk, J.C. Afele, P.M. Hayes and D.E. Mather. 1999. Verification of a quantitative trait locus affecting agronomic traits in two-row barley. *Crop Science* 39:248-252.
49. Steffenson, B. J., P. M. Hayes, and A. Kleinhofs. 1996. Genetics of seedling and adult plant resistance to net blotch (*Pyrenophora teres* f. *teres*) and spot blotch (*Cochlibus sativus*) in barley. *Theor. Appl. Genet.* 92: 552-558.
50. Swanston J. S., W. T. B. Thomas, W. Powell, G. R. Young, P. E. Lawrence, L. Ramsay, and R. Waugh. 1999. Using molecular markers to determine barleys most suitable for malt whisky distilling. *Molecular Breeding* 5: 103-109.
51. Taketa S., H. Takahashi, and K. Takeda. 1998. Genetic variation in barley of crossability with wheat and its quantitative trait loci analysis. *Euphytica* 103: 187-193.
52. Teulat, B., P. Monneveux, J. Wery, C. Borries. I. Souyris, A. Charrier, and D. This. 1997. Relationships between relative water content and growth parameters under water stress in barley: a QTL study. *New Phytol.* 137: 99-107.
53. Teulat, B., D. This, M. Khairallah, C. Borries, C. Ragot, P. Sourdille, P. Leroy, P. Monneveux, and A. Chalmers. 1998. Several QTLs involved in osmotic-adjustment trait variation in barley (*Hordeum vulgare* L.). *Theor. Appl. Genet.* 96:688-698.
54. Tinker, N.A., D.E. Mather, T.K. Blake, K.G. Briggs, T.M. Choo, L. Dahleen, S.M. Dofing, D.E. Falk, T. Ferguson, J.D. Franckowiak, R. Graf, P.M. Hayes, D. Hoffman, R.B. Irvine, A. Kleinhofs, W. Legge, B.G. Rosnagel, M.A. Saghai Maroof, G.J. Scoles, L.P. Shugar, B. Steffenson, S. Ullrich, and K.J. Kasha. 1996. Regions of the Genome that Affect Agronomic Performance in Two-Row Braley. *Crop Sci.* 36:1053-1062.
55. Thomas, W.T.B., W. Powell, R. Waugh, K.J. Chalmers, U.M. Barua, P. Jack, V. Lea, B.P. Forster, J.S. Swanston, R.P. Ellis, P.R. Hanson, and R.C.M. Lance. 1995. Detection of quantitative trait loci for agronomic, yield, grain and disease characters in spring barley (*Hordeum vulgare* L.). *Theor. Appl. Genet.* 91:1037-1047.
56. Thomas, W. T. B., W. Powell, J. S. Swanston, R. P. Ellis, K. J. Chalmers, U. M. Barua, P. Jack, V. Lea, B. P. Forster, R. Waugh, and D. B. Smith. 1996. Quantitative trait loci

- for germination and malting quality characters in spring barley cross. *Crop. Sci.* 36: 265-273.
57. Toojinda, T., Broers, X.M. Chen, P.M. Hayes, A. Kleinhofs, J. Korte, D. Kudrna, H. Leung, R.F. Line, W. Powell, and H. Vivar. 2000. Mapping qualitative and quantitative disease resistance genes in a doubled haploid population of barley (*Hordeum vulgare*). *Theor. Appl. Genet.* (in press).
  58. Tuberosa R., G. Galiba, M. C. Sanguineti, E. Noli and J. Sutka. 1997. Identification of QTL influencing freezing tolerance in barley. *Acta Agronomica Hungarica* 45: 413-417.
  59. Ullrich S. E., F. Han, and B. L. Jones. 1997. Genetic complexity of the malt extract trait in barley suggested by QTL analysis. *J. Am. Soc. Brew. Chem.* 55: 1-4.
  60. Yin, X., P. Stam, C. Johan Dourleijn and M.J. Kropff. 1999(a). AFLP mapping of quantitative trait loci for yield-determining physiological characters in spring barley. *Theor Appl Genet* 99: 244-253.
  61. Yin X., M. J. Kropff, and P. Stam. 1999(b). The role of ecophysiological models in QTL analysis: the example of specific leaf area in barley. *Heredity* 82: 415-421.
  62. Zhu, H., G. Briceño, R. Dovel, P.M. Hayes, B.H. Liu, C.T. Liu, T. Toojinda, and S.E. Ullrich. 1999. Molecular breeding for grain yield in barley: an evaluation of QTL effects in a spring barley cross. *Theor. Appl. Genet.* 98:772-779.
  63. Zhu, H., L. Gilchrist, P. Hayes, A. Kleinhofs, D. Kudrna, Z. Liu, L. Prom, B. Steffenson, T. Toojinda, and H. Vivar. 1999. Does function follow form? QTLs for Fusarium Head Blight (FHB) resistance are coincident with QTLs for inflorescence traits and plant height in a doubled haploid population of barley. *Theor Appl Genet* 99:1221-1232
  64. Zwickert-Menteur S., L. Jestin, and G. Branland. 1996. Amy2 polymorphism as a possible marker of  $\beta$ -Glucanase activity in barley (*Hordeum vulgare* L.). *Journal of Cereal Science* 24: 55-63