

ROGER PHILIP WISE

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Web: <http://wiselab.org/> ; <http://barleygenome.org/>

Database: <http://plexdb.org/>

A. Professional Preparation

Michigan State University	Physiology	B.S. (High Honor), 1972-1976
Michigan State University	Genetics	Ph.D., 1978-1983
University of Florida	Mol Plant-Microbe Interact	Postdoctoral, 1984-1986
Max-Planck-Institut, Köln	Plant Molecular Biology	Postdoctoral, 1987-1989

B. Appointments

2015 – present	ST-00	Research Geneticist, USDA-ARS / Affiliate Professor, ISU
2003-2014	GS-15	Research Geneticist, USDA-ARS / Affiliate Professor, ISU
2000-2002	GS-14	Research Geneticist, USDA-ARS / Affiliate Professor, ISU
1998-2000	GS-14	Research Geneticist, USDA-ARS / Affiliate Associate Professor, ISU
1994-1998	GS-13	Research Geneticist, USDA-ARS / Affiliate Associate Professor, ISU
1989-1993	GS-12	Research Geneticist, USDA-ARS / Affiliate Assistant Professor, ISU

C. PROFESSIONAL AFFILIATIONS

American Association for the Advancement of Science
American Phytopathological Society
International Society for Molecular Plant-Microbe Interactions
Genetics Society of America
American Association of Plant Biologists

D. HONORS AND AWARDS

2015: Elected Fellow of AAAS
2011: USDA Secretary's Honor Award: Helping America promote sustainable agricultural production and biotechnology exports as America works to increase food security. Collectively awarded to the Barley, Wheat, Potato, and Tomato Coordinated Agricultural Projects (CAP)
2010: Elected Fellow of the American Phytopathological Society (APS)
2010: USDA-ARS-MWA Scientist of the Year
2006-2009: Honorary Fellow - Scottish Crop Research Institute (SCRI)
1987-1989: Max-Planck-Gesellschaft Postdoctoral Fellowship
1976: Magna Cum Laude, Michigan State University

E. DEVELOPMENT AND MENTORING OF RESEARCH SCIENTISTS

40+ Undergraduate
17 Graduate (8 M.S., 10 Ph.D.)
10 Postdoctoral Research Associates

F. SYNERGISTIC ACTIVITIES

- * Governing Board – European and Mediterranean Cereal Rusts Foundation, 2013-present
- * USDA-AFRI Competitive Grants Panel for Plant-Microbe Associations, Washington, D.C., 2013.
- * NIFA Fellowship Panel (2011)
- * Joint USDA/DOE Competitive Grants Panel – Feedstock Genomics (2010).
- * Editorial Board - Frontiers in Plant-Microbe Interaction (2010-present)
- * Chair, APS Molecular and Cellular Phytopathology Committee (2008)
- * Founding member and WWW site coordinator for the International Barley Sequencing Consortium (<http://barleygenome.org/>)
- * Co-coordinator for the community designed, 22K Affymetrix Barley1 GeneChip probe array, a joint University/ARS effort from 5 states, partnered with six countries on four continents (Close *et al.* 2004. *Plant Physiology* 134: 960-968).
- * Executive committee and database co-leader for barley USDA-NRI Coordinated Agricultural Project (CAP) “Leveraging Genomics, Genetics, and Breeding for Gene Discovery and Barley Improvement” <http://www.barleycap.org/>
- * Co-coordinator for development of MIAME-compliant, public expression database for GeneChip data (<http://barleybase.org/>; <http://plexdb.org/>).
- * Mentor for 2 minority high-school students in agriculture (summer 2001, fall 2007), 20 NSF-RET middle & high school science teachers (summer 2004 – 2015) and 8 NIH/NSF BBSI students in Bioinformatics (summer 2005 - 2008).
- * Established NSF-funded, K-12 “Research Experiences for Teachers (RET)” on state-of-the-art high school genetics curricula using the diverse Oregon Wolfe Barley population (**iTAG Barley**), including Advanced Placement courses. Used successfully in over 180 high school biology classes from 2010-2018 -- greater than 4,500 students, of which 1/3 were from underrepresented and underserved groups from urban to rural communities.

G. COMPETITIVE GRANT SUPPORT

PI or Co-PI for 37 uninterrupted, peer-reviewed, competitive grants in Agricultural Genetics and Genomics > \$23 million since hire in 1989; >\$11 million of these funds directly benefited research in the Wise lab; >\$7 million in the last 5 years.

PUBLICATIONS

Google Scholar: http://scholar.google.com/citations?user=UuA_BPwAAAAJ&hl=en).

a. REFEREED JOURNAL ARTICLES

(* indicates R. Wise is corresponding and senior author, † indicates students or postdocs mentored by Dr. Wise)

Surana P[†], R Xu, G Fuerst[†], AVE Chapman[†], D Nettleton, and **RP Wise***. 2017. Inter-chromosomal transfer of immune regulation during infection of barley with the powdery mildew pathogen. *G3: Genes | Genomes | Genetics* 7 (10): 3317-3329. DOI: 10.1534/g3.117.300125.

****P Surana received a Research Excellence award from the ISU graduate college as a result of this Ph.D. dissertation research**

- Mistry D[†], **RP Wise**, JA Dickerson. 2017. DiffSLC: A graph centrality method to detect essential proteins of a protein-protein interaction network. PLoS One 12:e0187091. DOI: 10.1371/journal.pone.0187091.
- Lu, X, B Kracher, IML Saur, S Bauer, SR Ellwood, **R Wise**, T Yaeno, T Maekawa, and P Schulze-Lefert. 2016. Allelic barley MLA immune receptors recognize sequence-unrelated avirulence effectors of the powdery mildew pathogen. PNAS 113 (42): E6486-E6495. DOI: 10.1073/pnas.1612947113.
- Zuo, T, J Zhang, A Lithio, S Dash, DF Weber, **R Wise**, D Nettleton, T Peterson. 2016. Genes and small RNA transcripts exhibit dosage-dependent expression pattern in maize copy-number alterations. GENETICS 203 (3): 1133-1147. DOI: 10.1534/genetics.116.188235.
- McGhee, L[†], N Hayes[†], R Schuck[†], L Maffin[†], G Hall[†], T Hubbard[†], E Whigham[†], G Fuerst[†], and **RP Wise***. 2016. iTAG Barley: A grade 7-12 curriculum to explore inheritance of traits and genes using Oregon Wolfe barley. Digital iBook for iPad; [via iTunes iBooks; Teacher (<https://itunes.apple.com/us/book/itag-barley-grade-7-12-curriculum/id1110510488?mt=11> 80 pp) & Student (<https://itunes.apple.com/us/book/itag-barley-grade-7-12-curriculum/id1108586855?mt=11> 46 pp) editions].
- Muñoz-Amatriaín, M, S Lonardi, M Luo, K Madishetty, JT Svensson, MJ Moscou, S Wanamaker, T Jiang, A Kleinhofs, GJ Muehlbauer, **RP Wise**, N Stein, Y Ma, E Rodriguez, D Kudrna, PR Bhat, S Chao, P Condamine, S Heinen, J Resnik, R Wing, HN Witt, M Alpert, M Beccuti, S Bozdag, F Cordero, H Mirebrahim, R Ounit, Y Wu, F You, J Zheng, H Šimková, J Doležel, J Grimwood, J Schmutz, D Duma, L Altschmied, T Blake, P Bregitzer, L Cooper, M Dilbirligi, A Falk, L Feiz, A Graner, P Gustafson, PM Hayes, P Lemaux, J Mammadov and TJ Close. 2015. Sequencing of 15,622 gene-bearing BACs clarifies the gene-dense regions of the barley genome. The Plant Journal 84(1): 216-227. DOI: 10.1111/tpj.12959.
- Xu W, Y Meng, P Surana, G Fuerst, D Nettleton, and **RP Wise***. 2015. The knottin-like *Blufensin* family regulates genes involved in nuclear import and the secretory pathway in barley-powdery mildew interactions. Front. Plant Sci. 6:409. DOI: 10.3389/fpls.2015.00409.
- Whigham, E, S Qi, D Mistry, P Surana, R Xu, GS Fuerst, C Pliego, LV Bindschedler, P Spanu, JA Dickerson, R Innes, D Nettleton, AJ Bogdanove, and **RP Wise***. 2015. Broadly conserved fungal effector BEC1019 suppresses host cell death and enhances pathogen virulence in powdery mildew of barley (*Hordeum vulgare* L.). Molecular Plant-Microbe Interactions 28(9): 968-983. DOI: 10.1094/MPMI-02-15-0027-FI
- Liu, J, X Cheng, D Liu, W Xu[†], **R Wise**, Q Shen. 2014. The miR9863 family regulates distinct *Mla* alleles in barley to attenuate NLR receptor-triggered disease resistance and cell-death signaling. PLoS Genetics 10 (12): e1004755. doi: 10.1371/journal.pgen.1004755.
- Cernadas, RA, E Doyle, DO Niño-Liu, KE Wilkins, T Bancroft, L Wang, C Schmidt, R Caldo[†], B Yang, FF White, D. Nettleton, **RP Wise**, and AJ Bogdanove. Code-assisted discovery of TAL effector targets in bacterial leaf streak of rice reveals contrast with blight and a novel susceptibility gene. PLoS Pathogens 10 (2): e1003972. doi: 10.1371/journal.ppat.1003972.
- Wise, RP***, P Surana, G Fuerst, D Mistry, J Dickerson, and D Nettleton. 2014. Flor revisited (again): eQTL and mutational analysis of NB-LRR mediated immunity to powdery mildew in barley. Journal of Integrated Agriculture 13 (2): 237-243. (Special Focus Issue -The Hot Spots in Cereal Rusts and Powdery Mildew Research: 13th International Cereal Rusts and Powdery Mildews conference, Beijing, China).

****Cover Article**

Xu, W[†], Y Meng[†], and **RP Wise***. 2014. *Mla-* and *Rom1*-mediated control of microRNA398 and chloroplast copper/zinc superoxide dismutase regulates cell death in response to the barley powdery mildew fungus. *New Phytologist* 201 (4): 1396-1412: DOI: 10.1111/nph.12598.

****Cover Article**

Kronmiller, BA and **RP Wise***. 2013. TEnest 2.0: Computational annotation and visualization of nested transposable elements. *In* "Methods in Molecular Biology: Plant Transposable Elements" T Peterson, Ed. Vol. 1057. pp. 305-320. Springer, New York. DOI 10.1007/978-1-62703-568-2_22.

Hayes, N[†], L Maffin[†], L McGhee[†], G Hall[†], T Hubbard[†], E Whigham[†], and **RP Wise***. 2013. iTAG Barley: A 9-12 curriculum to explore inheritance of traits and genes using Oregon Wolfe barley. Digital iBook for iPad. American Society of Plant Biologists (via iTunes iBOOKS; <https://itunes.apple.com/us/book/itag-barley/id715260619?mt=11> 51 pp).

Mascher, M, GJ Muehlbauer, DS Rokhsar, J Chapman, J Schmutz, K Barry, M Muñoz-Amatriaín, TJ Close, **RP Wise**, AH Schulman, A Himmelbach, KFX Mayer, U Scholz, JA Poland, N Stein*, R Waugh. 2013. Anchoring and ordering NGS contig assemblies by population sequencing (POPSEQ). *The Plant Journal* 76 (4): 718-727: DOI 10.1111/tbj.12319.

Ballini, E[†], N Lauter, and **R Wise***. 2013. Prospects for advancing defense to cereal rusts through genetical genomics. *Frontiers in Plant Science* 4: 117: DOI: 10.3389/fpls.2013.00117.

Pliogo, C, D Nowara, G Bonciani, DM Gheorghe, R Xu[†], P Surana[†], E Whigham[†], D Nettleton, AJ Bogdanove, **RP Wise**, P Schweizer, LV Bindschedler, P Spanu*. 2013. Host-Induced Gene Silencing in barley powdery mildew reveals a class of ribonuclease-like effectors. *Molecular Plant-Microbe Interactions* 26 (6): 633-642: DOI: 10.1094/MPMI-01-13-0005-R.

****Cover Article**

International Barley Sequencing Consortium - Mayer, K, R Waugh, P Langridge, TJ Close, **RP Wise**, A Graner, T Matsumoto, K Sato, A Schulman, GJ Muehlbauer, N Stein, R Ariyadasa, D Schulte, N Poursarebani, R Zhou, B Steuernagel, M Mascher, U Scholz, B Shi, K Madishetty, JT Svensson, P Bhat, M Moscou, J Resnik, P Hedley, H Liu, J Morris, Z Frenkel, A Korol, H Berges, S Taudien, M Felder, M Groth, M Platzer, A Himmelbach, S Lonardi, D Duma, M Alpert, F Cordero, M Beccuti, G Ciardo, Y Ma, S Wanamaker, F Cattonaro, V Vendramin, S Scalabrin, S Radovic, R Wing, M Morgante, T Nussbaumer, H Gundlach, M Martis, JA Poland, M Spannagl, M Pfeifer, C Moisy, J Tanskanen, A Zuccolo, J Russell, A Druka, D Marshall, M Bayer, D Sampath, M Febrer, M Caccamo, T Tanaka, M Platzer, G Fincher, and T Schmutzer. 2012. A physical, genetic and functional sequence assembly of the barley genome. *Nature* 491: 711-716: DOI: 10.1038/nature11543.

Meng, Y[†], and **RP Wise***. 2012. HvWRKY10, HvWRKY19, and HvWRKY28 regulate *Mla*-triggered immunity and basal defense to barley powdery mildew. *Molecular Plant-Microbe Interactions* 25 (11): 1492-1505.

****Cover Article**

Blake, VC*, JG Kling, PM Hayes, J Jannink, SR Jillella, J Lee, DE Matthews, S Chao, TJ Close, GJ Muehlbauer, KP Smith, **RP Wise**, and JA Dickerson. 2012. The Hordeum toolbox: the barley coordinated agricultural project genotype and phenotype resource. *The Plant Genome* 5 (2): 81-91: DOI: 10.3835/plantgenome2012.03.0002.

****Cover Article**

Moeller, JR[†], MJ Moscou[†], T Bancroft, RW Skadsen, **RP Wise**, and SA Whitham*. 2012. Differential accumulation of host mRNAs on polyribosomes during obligate pathogen-plant interactions. *Molecular BioSystems* **8**: 2153-2165 DOI: 10.1039/c2mb25014d.

Maffin, L[†], G Hall[†], T Hubbard[†], E Whigham[†], **RP Wise***. (2012). "[iTAG Barley: A 9-12 classroom module to explore gene expression and segregation using Oregon Wolfe Barley](#)". K-12 resource posted at the [American Society of Plant Biologists](#).

Dash, S[†], J Van Hemert, L Hong[†], **RP Wise**, and JA Dickerson*. 2012. PLEXdb: gene expression resources for plants and plant pathogens. *Nucleic Acids Research* (2012) **40** (D1): D1194-D1201. doi: 10.1093/nar/gkr938.

Meyer, J[†], D Pei[†], and **RP Wise***. 2011. *Rf8*-mediated *T-urf13* transcript accumulation coincides with a pentatricopeptide repeat cluster on maize chromosome 2L. *The Plant Genome* **4**(3): 283-299.

****Cover Article**

Moscou, MJ[†], N Lauter, RA Caldo[†], D Nettleton, and **RP Wise***. 2011. Quantitative and temporal definition of the *Mla* transcriptional regulon during barley-powdery mildew interactions. *Mol Plant Microbe Interactions* **24**:6, 694-705 DOI: 10.1094/MPMI-09-10-0211.

Moscou, MJ[†], N Lauter, B Steffenson, and **RP Wise***. 2011. Quantitative and qualitative stem rust resistance factors in barley are associated with transcriptional repression of defense regulons. *PLoS Genetics* **7**(7): e1002208. doi:10.1371/journal.pgen.1002208.

****Selected as Featured Research (August 2, 2011).**

****M Moscou received a Research Excellence award from the ISU graduate college as a result of this Ph.D. dissertation research**

Xi, L[†], MJ Moscou[†], Y Meng[†], W Xu[†], RA Caldo[†], M Shaver[†], D Nettleton, and **RP Wise***. 2009. Transcript-based cloning of *RRP46*, a regulator of rRNA processing and *R*-gene-independent cell death in barley – powdery mildew interactions. *The Plant Cell* **21**(10): 3280–3295.

****Highlighted as an "In Brief" by Jennifer Mach. 2009. Loss of an exosome complex component potentiates R-gene independent cell death in barley. *The Plant Cell* **21**(10):2986.**

Kronmiller BA[†] and **RP Wise***. 2009. Computational finishing of large sequence contigs reveals interspersed nested repeats and gene islands in the *rf1*-associated region of maize. *Plant Physiol* **151**:483-95.

Zhou S, F Wei, J Nguyen, M Bechner, K Potamosis, S Goldstein, L Pape, C Churas, S Pasternak, DK Forrest, **R Wise**, D Ware, R Wing, M Waterman, and DC Schwartz. 2009. A single molecule scaffold of the maize genome. *PLoS Genetics* **5**(11): 1-14.

Meng, Y[†], MJ Moscou[†] and **RP Wise***. 2009. *Blufensin1* negatively impacts basal defense in response to barley powdery mildew. *Plant Physiology* **149**: 271-285.

****Invited contribution - Focus issue on grasses**

Hu, P[†], Y Meng, and **RP Wise***. 2009. Functional contribution of chorismate synthase, anthranilate synthase, and chorismate mutase to penetration resistance in barley-powdery mildew interactions. *Mol Plant-Microbe Interactions* **22**(3): 311-320.

****Selected as MPMI Editors pick**

- Abebe T, K Melmaiee, V Berg, and **RP Wise**. 2009. Transcriptome analysis identifies differences in the response of organs of the barley spike to drought stress. *Functional and Integrative Genomics*: DOI 10.1007/s10142-009-0149-4
- Abebe T, **RP Wise**, and R Skadsen. 2009. Comparative transcript profiling establishes awn as the major photosynthetic organ of the barley spike while lemma and palea primarily protect the seed. *The Plant Genome* 2(3): 247-259.
- Schreiber A, T Sutton, R Caldo[†], E Kalashyan, B Lovell, G Mayo, G Muehlbauer, A Druka, R Waugh, **RP Wise**, P Langridge, and U Baumann. 2009. Comparative transcriptomics in the Triticeae. *BMC Genomics* 10:285
- Schulte D, TJ Close, A Graner, P Langridge, T Matsumoto, G Muehlbauer, K Sato, AH Schulman, R Waugh, **RP Wise**, N Stein. 2009. The International Barley Sequencing Consortium--At the threshold of efficient access to the barley genome. *Plant Physiol.* 149:142-7.
- Wang K, B Frame, X Xu, L Moeller, K Lamkey, and **RP Wise**. 2009. Strategies for the production of maize-derived pharmaceuticals using cytoplasmic male sterile lines: in vitro tissue culture/transformation and field breeding approaches. *Maydica* 54: 199-210
- Druka, A, I Druka, AG Centeno, H Li, Z Sun, WTB Thomas, N Bonar, BJ Steffenson, SE Ullrich, A Kleinhofs, **RP Wise**, TJ Close, E Potokina, Z Luo, C Wagner, GF Schweizer, DF Marshall, MJ Kearsey, RW Williams and R Waugh. 2008. Towards systems genetic analyses in barley: Integration of phenotypic, expression and genotype data into GeneNetwork. *BMC Genetics* 9:73.
- Potokina, E, A Druka, Z Luo, M Moscou[†], **R Wise**, R Waugh, and M Kearsey. 2008. Tissue-dependent limited pleiotropy affects gene expression in barley. *Plant Journal* 56(2): 287-296.
- Hu, P[†] and **RP Wise***. 2008. Diversification of *Lrk/Tak* kinase gene clusters is associated with subfunctionalization and cultivar-specific transcript accumulation in barley. *Functional and Integrative Genomics* 8(3): 199-209.
- Druka, A, E Potokina, ZW Luo, N Bonar, I Druka, L Zhang, DF Marshall, B Steffenson, T Close, **RP Wise**, A Kleinhofs, RW Williams, MJ Kearsey, and R Waugh. 2008. Exploiting regulatory variation to identify genes underlying loci of quantitative resistance to the wheat stem rust pathogen *Puccinia graminis* f. sp. *tritici* in barley. *Theoretical and Applied Genetics* 117:261–272.
- Kronmiller, BA[†] and **RP Wise***. 2008. TE_nest: Automated chronological annotation and visualization of maize nested transposable elements. *Plant Physiology* 146: 45-59.
- **Cover Article; Selected for CSREES NRI highlight**
- **B Kronmiller received a Research Excellence award from the ISU graduate college as a result of this Ph.D. dissertation research**
- Potokina, E, A Druka, ZW Luo, **R Wise**, R Waugh, and MJ Kearsey. 2008. eQTL analysis of 16,000 barley genes reveals a complex pattern of genome wide transcriptional regulation. *The Plant Journal* 53(1):90-101.
- Luo ZW, E Potokina, A Druka, **R Wise**, R Waugh, and MJ Kearsey. 2007. SFP genotyping from Affymetrix arrays is robust but largely detects *cis*-acting expression regulators. *Genetics* 176: 789-800.

- Caldo RA[†], D Nettleton, J Peng, and **RP Wise***. 2006. Stage-specific suppression of basal defense discriminates barley plants containing fast- and delayed-acting *Mla* powdery mildew resistance alleles. *Molecular Plant-Microbe Interactions* 19(9): 939-947.
- Rossi C, A Cuesta-Marcos, I Vales, L Gomez-Pando, G Orjeda, **R Wise**, K Sato, K Hori, F Capettini, H Vivar, X Chen, and P Hayes. 2006. Mapping multiple disease resistance genes using a barley mapping population evaluated in Peru, Mexico, and the USA. *Molecular Breeding* 18: 355-366.
- Nettleton D, JTG Hwang, RA Caldo[†], and **RP Wise**. 2006. Estimating the number of true null hypotheses from a histogram of *p*-values. *Journal of Agricultural, Biological, and Environmental Statistics* 11: 337-356.
- Druka, A, G Muehlbauer, I Druka, R Caldo[†], U Baumann, N Rostoks, A Schreiber, **R Wise**, T Close, A Kleinhofs, A Graner, A Schulman, P Langridge, K Sato, P Hayes, J McNicol, D Marshall and R Waugh*. 2006. An atlas of gene expression from seed to seed through barley development. *Functional and Integrative Genomics* 6: 202-211.
- **Selected for CSREES-NRI highlight - Represents the first coordinated International effort to characterize gene function from seed to seed in this important cereal crop**
- Kirst M, R Caldo[†], P Casati, G Tanimoto, V Walbot, **RP Wise**, and ES Buckler*. 2006. Genetic diversity contribution to errors in short oligonucleotide microarray analysis. *Plant Biotechnology Journal* 4: 489-498.
- Halterman, DA[†] and **RP Wise***. 2006. Upstream open reading frames of the barley *Mla13* powdery mildew resistance gene function co-operatively to down-regulate translation. *Molecular Plant Pathology* 7(3): 167-176.
- Shen, L, J Gong, RA Caldo[†], D Nettleton, D Cook, **RP Wise**, JA Dickerson. 2005. BarleyBase – An expression profiling database for plant genomics. *Nucleic Acids Research* 33 (Database issue): D614-D618.
- **Prototype interactive expression profiling database – selected for highlight in 2005 & 2006 Interagency Plant Genome annual report**
- Caldo, RA[†], D Nettleton and **RP Wise***. 2004. Interaction-dependent gene expression in *Mla*-specified response to barley powdery mildew. *Plant Cell* 16: 2514-2528.
- **Highlighted in “In This Issue” by Nancy Eckardt. 2004. Cutting Edge Transcriptome Analysis: It's All about Design. Plant Cell 16: 2249-2251.**
- Halterman, D[†] and **RP Wise***. 2004. A single amino acid substitution in the sixth leucine-rich repeat of barley MLA6 and MLA13 alleviates dependence on RAR1 for disease resistance signaling. *Plant Journal* 38: 215-226.
- **Cover Article; First to show the single amino acid residue in any plant R-protein that directs downstream signaling**
- Close, TJ, S Wanamaker, R Caldo[†], SM Turner[†], DA Ashlock, JA Dickerson, RA Wing, GJ Muehlbauer, A Kleinhofs and **RP Wise***. 2004. A new resource for cereal genomics: 22K barley GeneChip comes of age. *Plant Physiology* 134: 960-968.
- **First publicly available, off-the-shelf, GeneChip for crops. Changed Affymetrix paradigm for developing agricultural arrays**

- Halterman, D[†], F Wei[†], and **RP Wise***. 2003. Powdery mildew induced *Mla* mRNAs are alternatively spliced and contain multiple upstream open reading frames. *Plant Physiology* 131: 558-567.
- Cui, XQ, A-P Hsia, F Liu, DA Ashlock, **RP Wise**, and PS Schnable. 2003. Alternative transcription initiation sites and polyadenylation sites are recruited during *Mu* suppression at the *rf2a* locus in maize. *Genetics* 163: 685-698.
- Wei, F[†], R Wing, and **RP Wise***. 2002. Genome dynamics and evolution of the *Mla* (powdery mildew) resistance locus in barley. *Plant Cell* 14: 1903-1917.
- **First NBS-LRR resistance gene complex positionally cloned in the large-genome Triticeae**
- **F Wei received a Research Excellence award from the ISU graduate college as a result of this Ph.D. dissertation research**
- Yu, GX[†], E Braun, and **RP Wise***. 2001. *Rds* and *Rih* mediate hypersensitive cell death independent of gene-for-gene resistance to the oat crown rust pathogen, *Puccinia coronata* f. sp. *avenae*. *Mol Plant-Microbe Interact* 14: 1376-1383.
- **Cover Article**
- Halterman, D[†], F Zhou, F Wei[†], **RP Wise***, and P Schulze-Lefert. 2001. The MLA6 coiled-coil, NBS-LRR protein confers *AvrMla6*-dependent resistance specificity to *Blumeria graminis* f. sp. *hordei* in barley and wheat. *Plant Journal* 25: 335-348.
- Zhou, F, J Kurth, F Wei[†], C Elliott, G Vale, N Yahiaoui, B Keller, S Somerville, **RP Wise**, and P Schulze-Lefert. 2001. Cell-autonomous expression of barley *Mla1* confers race-specific resistance to the powdery mildew fungus via a *Rar1*-independent signaling pathway. *Plant Cell* 13: 337-350.
- Yu, GX[†] and **RP Wise***. 2000. An anchored AFLP and retrotransposon-based map of diploid *Avena*. *Genome* 43: 736-749.
- Yu, Y, JP Tomkins, R Waugh, DA Frisch, D Kudrna, A Kleinhofs, RS Brueggeman, GJ Muehlbauer, **RP Wise**, and RA Wing. 2000. A bacterial artificial chromosome library for barley (*Hordeum vulgare* L.) and the identification of clones containing putative resistance genes. *Theor Appl Genetics* 7: 1093-1099.
- Gobelman-Werner, K[†] and **RP Wise***. 2000. RAPD-derived markers flanking the *Mla* resistance gene cluster in barley. *Journal of Agricultural Genomics*. Online at <http://wheat.pw.usda.gov/jag/papers00/paper400/indexpage400.html>
- Wei, F[†], K Gobelman-Werner[†], SM Morroll[†], J Kurth, L Mao, R Wing, D Leister, P Schulze-Lefert, and **RP Wise***. 1999. The *Mla* (powdery mildew) resistance cluster is associated with three NBS-LRR gene families and suppressed recombination within a 240-kb DNA interval on chromosome 5S (1HS) of barley. *Genetics* 153: 1929-1948.
- Wise, RP***, K Gobelman-Werner[†], P Deqing[†], CL Dill[†], and PS Schnable. 1999. Mitochondrial transcript processing and restoration of male fertility in T-cytoplasm maize. *Journal of Heredity* 90: 380-385.
- Bush, AL[†] and **RP Wise***. 1998. High resolution mapping adjacent to the *Pc71* crown-rust resistance locus in hexaploid oat. *Molecular Breeding* 4: 13-21.

- Dill, CL[†], **RP Wise***, and PS Schnable. 1997. *Rf8* and *Rf** mediate unique T-*urf13*-transcript accumulation, revealing a conserved motif associated with RNA processing and restoration of pollen fertility in T-cytoplasm maize. *Genetics* 147: 1367-1379.
- Wise, RP***, CL Dill[†], and PS Schnable. 1996. *Mutator*-induced mutations of the *rf1* nuclear fertility restorer of T-cytoplasm maize alter the accumulation of T-*urf13* mitochondrial transcripts. *Genetics* 143: 1383-1394.
- Cui, XQ, **RP Wise**, and PS Schnable. 1996. The *rf2* nuclear restorer gene of male-sterile, T-cytoplasm maize. *Science* 272: 1334-1336.
- **First gene to be cloned for pollen-fertility restoration of 150 CMS systems in the plant kingdom**
- **Highlighted in "Perspectives" by CS Levings III. 1996. Infertility Treatment--A Nuclear Restorer Gene in Maize. Science 272: 1279-1280.**
- DeScenzo, RD[†] and **RP Wise***. 1996. Variation in the ratio of physical to genetic distance in intervals adjacent to the *Mla* locus on barley chromosome 1H. *Molecular & General Genetics* 251: 472-482.
- Bush, AL[†] and **RP Wise***. 1996. Crown rust resistance loci on linkage groups 4 and 13 in cultivated oat. *Journal of Heredity* 87: 427-432.
- Wise, RP***, M Lee, and PJ Rayapati. 1996. Recombination within a 5-cM region in diploid *Avena* reveals multiple specificities conferring resistance to *Puccinia coronata*. *Phytopathology* 86: 340-346.
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- Mahadevappa, M[†], RD DeScenzo[†], and **RP Wise***. 1994. Recombination of alleles conferring specific resistance to powdery mildew at the *Mla* locus in barley. *Genome* 37: 460-468.
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- Penner, GA*, AL Bush[†], **RP Wise** W Kim, L Domier, K Kasha, A Laroche, G Scoles, ST Molnar, and G Fedak. 1993. Reproducibility of random amplified polymorphic DNA (RAPD) analysis

among laboratories. PCR Meth. and Applic. (currently Genome Research) 2: 341-345.

Wise, RP* and KS Gobelman-Werner[†]. 1993. Resistance to oat crown rust in diploid and hexaploid *Avena*. Plant Disease 77: 355-358.

Glab, N, **RP Wise**, DR Pring, C Jacq, and P Slonimski. 1990. Expression in *S. cerevisiae* of a gene associated with cytoplasmic male sterility from maize: Respiratory dysfunction and uncoupling of yeast mitochondria. Mol Gen Genet 223: 24-32.

Wise, RP*, W Rhode, and F Salamini. 1989. Nucleotide sequence of the *Bronze 1* homologous gene from *Hordeum vulgare*. Plant Mol Biol 14:277-279.

Pring, DR, BG Gengenbach, and **RP Wise**. 1988. Recombination is associated with polymorphism of the mitochondrial genomes of maize and sorghum. Phil Trans R Soc Lond B 319: 187-198.

Kennell, JC, **RP Wise**, and DR Pring. 1987. Influence of nuclear background on transcription of a maize mitochondrial region associated with Texas male sterile cytoplasm. Mol Gen Genet 210: 399-406.

Wise, RP, AE Fliss, DR Pring, and BG Gengenbach. 1987. *urf13-T* of T-cytoplasm maize mitochondria encodes a 13-kDa polypeptide. Plant Mol Biol 9: 121-126.

Wise, RP, DR Pring, and BG Gengenbach. 1987. Mutation to male fertility and toxin insensitivity in Texas (T)-cytoplasm maize is associated with a frameshift in a mitochondrial open reading frame. Proc Nat Acad Sci USA 84: 2858-2862.

****Proof that T-urf13 is causal to male sterility and disease toxin sensitivity, and thus, the molecular basis for the southern corn leaf blight epidemic of 1970**

Wise, RP* and AH Ellingboe. 1985. Fine structure and instability of the *Mla* locus in barley. Genetics 111: 113-130.

Wise, RP* 1983. Genetic analysis of the *Mla* locus in barley conditioning reaction to *Erysiphe graminis* f. sp. *hordei*. (Ph.D. Thesis)

Wise, RP* and AH Ellingboe. 1983. Infection kinetics of *Erysiphe graminis* f. sp. *hordei* on barley with different alleles at the *Mla* locus. Phytopathology 73: 1220-1222.

b. INVITED REVIEWS AND BOOK CHAPTERS

(* indicates R. Wise is corresponding and senior author, [†] indicates students or postdocs mentored by Dr. Wise)

Kronmiller, BA[†] and **RP Wise***. 2013. TEnest 2.0: Computational annotation and visualization of nested transposable elements. In "Methods in Molecular Biology: Plant Transposable Elements" T Peterson, Ed. Vol. 1057. pp. 305-320. Springer, New York. DOI 10.1007/978-1-62703-568-2_22.

Wise, RP*, Y Meng[†], MJ Moscou[†], and W Xu[†]. 2010. Regulators of innate immunity in cereal-fungal interactions. in Biology of Plant-Microbe Interactions, Volume 7. H. Antoun, T. Avis, L. Brisson, D. Prévost, and M. Trepanier, eds. International Society for Molecular Plant-Microbe Interactions, St. Paul, MN.

Wise, RP*, N Lauter, L Szabo, and P Schweizer. 2009. Genomics of Biotic Interactions in the Triticeae. In C. Feuillet and G. Muehlbauer (Eds.), *Genetics and Genomics of the Triticeae*. Vol. 7 (pp. 559-589). New York: Springer.

- Moscou, M[†], RA Caldo[†], N Lauter, and **RP Wise**.* 2007. Construction of coexpression networks to explore barley-powdery mildew interactions. *In Plant-Microbe Interactions: Molecular and Genetic Perspectives*. APS Press.
- Wise, RP***, MJ Moscou[†], AJ Bogdanove, and SA Whitham. 2007. Transcript Profiling in Host – Pathogen Interactions. *Ann. Review of Phytopathology* 45: 329-369. [**peer reviewed**]
- Wise, RP***, RA Caldo[†], L Hong[†], L Shen, JA Dickerson. 2007. BarleyBase/PLEXdb: A Unified Expression Profiling Database for Plants and Plant Pathogens. Pages 347-363 *In Methods in Molecular Biology, Vol. 406, Plant Bioinformatics - Methods and Protocols*. Edwards, D. ed. Humana Press, Totowa, NJ. 2007.
- Caldo, RA[†], D Nettleton and **RP Wise***. 2006. Interplay of Gene-Specific Disease Resistance, Basal Defense, and the Suppression of Host Responses to Barley Powdery Mildew. *In “Biology of Plant-Microbe Interactions”* Vol. 5 pp. 620-624. ed. Frederico Sanchez, Carmen Quinto, Isabel Lopez-Lara, Otto Geiger. International Society of Molecular Plant-Microbe Interactions, St. Paul, MN.
- Wise, RP***, DR Pring. 2002. Nuclear-mediated mitochondrial gene regulation and male fertility in higher plants: Light at the end of the tunnel? *Proc Nat Acad Sci USA* 99: 10240-10242.
- **Invited commentary on first report of the molecular identification of a nuclear gene that controls the expression of an organellar gene encoding cytoplasmic male sterility**
- Wise, RP***. 2000. Disease resistance: What’s brewing in barley genomics. *Plant Disease* 84: 1160-170. [**peer reviewed**]
- Kianian SF, SL Fox , S Groh, N Tinker, LS O’Donoughue , PJ Rayapati , **RP Wise**, M Lee, ME Sorrells, SD Tanksley, G Fedak, SJ Molnar, HW Rines and RL Phillips. 2000. Molecular marker linkage maps in diploid and hexaploid oat (*Avena* sp.). *In “DNA-based markers in plants”, 2nd edition* ed. R.L. Phillips and I.K. Vasil. Chapter 25 pp. 443-462. [**peer reviewed**]
- Wise, RP**, CR Bronson, PS Schnable, and HT Horner. 1999. The genetics, pathology and molecular biology of T-cytoplasm male sterility in maize. *In “Advances in Agronomy”* 65: 79-130.
- Schnable, PS* and **RP Wise***. 1998. The molecular basis of cytoplasmic male sterility and fertility restoration. *Trends in Plant Science* 3: 175-180. [**peer reviewed**]
- Wise, RP***, Pring, DR and Gengenbach, BG. 1987. A mitochondrial open reading frame associated with mutation to male fertility and toxin insensitivity in T- cytoplasm maize. *In Molecular Strategies for Crop Protection. UCLA Symposia on Molecular and Cellular Biology, Vol. 78, pp. 107-114*. C. Arntzen and C. Ryan, ed. Alan R. Liss, Inc. New York. [**peer reviewed**]

C. TECHNICAL PUBLICATIONS AND RESEARCH HIGHLIGHTS

(* indicates R. Wise is corresponding and senior author, † indicates students or postdocs mentored by Dr. Wise)

- Wise, RP*** and B Kronmiller. 2008. New Bioinformatic Tools Accelerate Genome Assembly. USDA-CSREES NRI Research Highlight. 11-8-08, pgs. 1-2. [http://www.csrees.usda.gov/newsroom/impact/2008/nri/11171_genome.html]

Wise, RP* and G Muehlbauer. 2006. High-throughput gene expression studies provide clues for how cereal crops grow. USDA-CSREES NRI Research Highlight no. 3: 1-2. [http://www.csrees.usda.gov/funding/nri/highlights/2006_no6.pdf]

Halterman, D[†] and **RP Wise**. A single amino acid substitution in the sixth leucine-rich repeat of barley MLA6 and MLA13 alleviates dependence on RAR1 for disease resistance signaling. CSREES National Research Initiative Competitive Grants Program NRI Cover Story No. 7. 2006. [http://www.csrees.usda.gov/funding/nri/nri_covers.html]

Wise, RP. *Rds* and *Rih* mediate hypersensitive cell death independent of gene-for-gene resistance to the oat crown rust pathogen, *Puccinia coronata* f. sp. *avenae*. CSREES National Research Initiative Competitive Grants Program NRI Cover Story. No. 8. 2002. [http://www.csrees.usda.gov/funding/nri/nri_covers.html]

Wise, RP* Researchers study genetics to prevent cereal diseases. USDA-CSREES NRI Research Highlight no. 1: 1-2. 2001. [http://www.csrees.usda.gov/funding/nri/nri_highlights.html]

Wise, RP*, F Wei[†], and R Wing. 2000. Sequence Analysis of the 270-kb *Mla*-Spanning Region Reveals Coupled Defense Gene Families. Proceedings of the 8th International Barley Genetics Symposium. Vol. II, pp. 208-210. Adelaide, Australia.

Schnable PS, X Cui, F Liu, R Meeley, B Scheffler, TJ Wen, H Yao, and **RP Wise**. 2000. A challenge from the post- post-genomic era: Identification of the physiologically significant substrate of the RF2 protein required for male fertility in maize. Proceedings of the Bio-Oriented Technology Research Advancement Institution Conference, Tokyo, JAPAN.

Rayapati, PJ, AL Bush[†], HS Moser, M Lee, and **RP Wise**. 1995. Genetic analysis of resistance to *Puccinia coronata* in *Avena* using DNA markers. *In Progress in Genome Mapping of Wheat and Related Species: Proceedings of the 4th Workshop of the International Triticeae Mapping Initiative*, pp. 33-39.

Schnable, PS, **RP Wise** and B Nikelou. 1992. Transposon tagging agronomically important genes in maize. Proceedings of the 28th Annual Illinois Corn Breeders School.

d. PATENTS

Nuclear restorer genes for hybrid seed production (continuation in part): **RP Wise*** and PS Schnable, U.S. Patent No. 5,981,833 Issued Nov. 9, 1999.

Nuclear restorer genes for hybrid seed production: PS Schnable and **RP Wise**, U.S. Patent No. 5,684,242 issued Nov. 4, 1997.

e. POPULAR PUBLICATIONS

Researchers cheer barley genome map. Capital Press (The Wests Ag website; <http://www.capitalpress.com/results/?operator=search&keyword=barley>), November 15, 2012.

Barley genome gives insight into future pest and disease resistance, Iowa State University Daily, November 5, 2012. http://www.iowastatedaily.com/news/article_be4585b6-26ab-11e2-a63c-001a4bcf887a.html

USDA Radio News: Advancing barley genome sequencing and its impacts - Roger Wise of USDA's Agricultural Research Service explains research into barley genome sequence and how USDA and other global partners are working to advance such research. October 19,

2012.

http://audioarchives.oc.usda.gov/audio/newsline/mp3/NEWSLINE_BE1D733B5DC94C5FB67723677BC0DFE5.MP3

http://audioarchives.oc.usda.gov/audio/newsline/mp3/NEWSLINE_C5D0315B4037415BA77C162EEF30A745.MP3

Barley genome means better beer and whiskey thanks to science. International Business Times. October 17, 2012. <http://www.ibtimes.com/barley-genome-means-better-beer-whiskey-thanks-science-848297>

USDA scientist at Iowa State part of team that brings barley into the genomics age. ISU College of Agriculture and Life Sciences news release, October 22, 2012. <http://www.ag.iastate.edu/news/releases/1056/>

USDA scientists collaborate with global researchers to advance the mapping of the barley genome. USDA News Service, Release No. 0327.12. October 17, 2012: <http://www.usda.gov/wps/portal/usda/usdahome?contentid=2012/10/0327.xml&contentidonly=true>

http://www.csrees.usda.gov/newsroom/news/2012news/10171_barley_genome.html

http://www.eurekalert.org/pub_releases/2012-10/usdo-usc101712.php

Iowa State University Research to Study Plant Responses to Pathogens. ISU College of Agriculture and Life Sciences news release, April 29, 2010: <http://www.cals.iastate.edu/news/releases/iowa-state-university-research-study-plant-responses-pathogens>

Iowa State University research to study plant responses to pathogens. ISU Press release, April 2010. <http://www.ag.iastate.edu/news/releases/854/>

Cloning defense genes. Iowa State University Plant Sciences Annual Report – A decade of discovery, December 2009. <http://www.plantsciences.iastate.edu/annualreport/>

Helping crops with self-defense. Iowa Farmer Today December 1, 2006. http://www.iowafarmertoday.com/articles/2006/11/30/top_stories/02cropdefense.txt

National Barley Project Involves Iowa State Researchers. ISU Press release, March 2006: <http://www.ag.iastate.edu/aginfo/news/2006releases/barley.html>

ISU researchers get \$2 million grant to study plant disease defenses. ISU Press release, September 2005: <http://www.ag.iastate.edu/aginfo/news/2005releases/nsfgrant.html>

Researchers receive grant for crop disease resistance project. Iowa State University Daily, September 6, 2005.

Barley database holds promise for plants. ISU Plant Sciences Institute Newsletter Vol. 5, Num. 2 – January 2005 @ <http://www.plantsciences.iastate.edu/newsletter/>

Gene research helps study plant pathogen effects, Iowa State Daily, July 29, 2003

System aids gene research, Inside Iowa State, July 25, 2003 Vol. XIII, No. 2, @ <http://www.iastate.edu/Inside/2003/0725/genechip.shtml>

****R. Wise was PI for the NSF-MRI grant that established this facility**

GeneChip technology gives Iowa State scientists an edge. ISU Plant Sciences Institute Newsletter Vol. 3, Num. 4 - July 2003 @ <http://www.plantsciences.iastate.edu/newsletter/>

f. INVITED PRESENTATIONS

Dr. Wise has had more than 90 invitations to write reviews and book chapters, make presentations at national and international symposia, and teach graduate courses in Australia, Brazil, Canada, China, Denmark, Finland, Germany, Hungary, Italy, Japan, Mexico, Spain, Switzerland, Turkey, United Kingdom and the United States. The following presentations are representative of his international, interdisciplinary recognition.

1. Presented invited seminar "Analysis of recombination at the *Mla* locus in barley", Plant Pathology, International Plant Research Institute, San Carlos, CA, 1982.
2. Presented invited seminar "Modification of specificity by intragenic recombination at the *Mla* locus in barley", Agricultural Research Division, Risø National Laboratory, Roskilde, Denmark, 1982.
3. Invited to give a plenary presentation on "The molecular basis of male sterility and susceptibility to disease in T-cytoplasm maize" at the 5th International Congress of Plant Pathology, Kyoto, Japan, 1988 (declined due to funding constraints).
4. Presented invited seminar "Approaches to mapping and cloning disease resistance and disease response genes" North American Cereal Rust Workshop, University of Minnesota, St. Paul, Minnesota, 1991.
5. Presented invited talk "Evaluation of diploid oats for resistance to *Puccinia coronata*". Oat Biotech VI. Chicago, Illinois, 1991.
6. Presented invited talk "High resolution mapping of the *Mla* disease resistance locus on barley chromosome 5 (1H)". Oat Biotech VII. Chicago, Illinois, 1993.
7. Presented invited "Specificity of host resistance to obligate fungal pathogens". Department of Agronomy, Iowa State University, Ames, Iowa. 1994.
8. Presented invited seminar "Molecular models of fertility restoration in maize". University of Florida, Gainesville, Florida, 1997.
9. Presented invited seminar "Molecular models of nuclear fertility restorers in T-cytoplasm maize". Division of Plant Industry, CSIRO, Canberra, Australia, 1997.
10. Presented invited seminar "Genetic and physical analysis of the *Mla* resistance-gene cluster in barley". Plant Breeding Institute (Cobbitty) University of Sydney, Sydney, Australia, 1997.
11. Presented invited seminar "Nuclear genes that mediate mitochondrial transcript processing and restoration of male fertility in *cmsT* maize". Genetics and Molecular Biology of Plant Mitochondria - Sponsored by the American Genetic Association, North Carolina State University, Raleigh, North Carolina, 1998.
12. Presented invited seminar "Chromosome landing at the *Mla* resistance gene cluster in barley" Clemson University, Clemson, South Carolina, 1998.

13. Presented invited seminar "Mitochondrial transcript processing and restoration of male fertility in T-cytoplasm maize" for the Genetics Colloquium, University of Wisconsin, Madison, WI, 1998.
14. Presented invited talk "Genomic approaches to biotic stress" and participate in panel discussion "A template for barley genomics" Plant and Animal Genome VII, San Diego, CA, 1999.
15. Presented invited seminar "Mitochondrial transcript processing and restoration of male fertility in T-cytoplasm maize". Sainsbury Laboratory, John Innes Centre, UK, 1999.
16. Presented invited seminar "Chromosome landing and sequence analysis of the *Mla* resistance-gene cluster in barley" Sainsbury Laboratory, John Innes Centre, UK, 1999.
17. Presented invited talk "Physical organization of the NBS-LRR gene families at the *Mla* (powdery mildew) resistance cluster in barley" at the PAGVIII "Barley Genomics Workshop", San Diego, CA, 2000.
18. Presented invited seminar "Signaling pathways in *Mla*-mediated interactions with barley powdery mildew" at the University of Illinois graduate Genetic Engineering/ Physiological and Molecular Biology seminar series, 2001.
19. Invited to present "Parallel Expression Analyses Using Barley Oligo Arrays" at the International Triticeae Mapping Initiative. Dundee, Scotland. September 12, 2001. Cancelled due to September 11 attack.
20. Presented invited talk "Genomic expansion of the *Mla* plant-defense complex is driven by transposon insertion and heterochromatic replication" at the PAGX "International Grass Genome Workshop", San Diego, CA, 2002.
21. Presented invited seminar "Genome dynamics and evolution of the *Mla* (powdery mildew) resistance locus in barley" University of Florida, Gainesville, Florida, 2002.
22. Presented invited seminar "Genome dynamics and evolution of the *Mla* (powdery mildew) resistance complex in barley" at the University of Arkansas graduate Molecular and Cellular Biology seminar series, Fayetteville, AK, 2002.
23. Presented invited talk "Parallel Expression Analyses Using Cereal Microarrays" at the meeting of the International Triticeae Mapping Initiative, Winnepeg, Canada, 2002.
24. Presented invited talk "Parallel Expression Analyses Using Barley Microarrays" at 17th Triennial North American Barley Researchers Workshop, Fargo, ND, 2002.
25. Presented invited talk "Parallel Expression Analyses Using Barley Microarrays" at the PAGXI "Barley Genomics Workshop", San Diego, CA, 2003.
26. Presented invited seminar "Parallel Expression Analyses Using Barley Microarrays" at the Affymetrix workshop on expression profiling at 7th International Congress on Plant Molecular Biology, Barcelona, Spain, June 23-28, 2003.
27. Presented invited talk and chair session on molecular biology and biochemistry of host-parasite interaction at the Annual Meeting of the American Phytopathological Society, Charlotte, NC, 2004.
28. Presented invited talk "Probe level analysis of Gene-for-Gene Specified Responses to Barley Powdery Mildew" at the PAGXII "Affymetrix Workshop on expression profiling" San Diego, CA, 2004.

29. Presented invited talk "Parallel Expression Analyses of Gene-for-Gene Specified Responses to Barley Powdery Mildew" at the PAGXII "Barley Genomics Workshop", San Diego, CA, 2004.
30. Presented invited seminar "Flor Revisited: Systems Biology in Barley Powdery Mildew Interactions" at the Ellingboe Symposium on Host-Microbe Interactions, Madison, WI. May 17, 2004.
31. Presented invited seminar "Systems Biology in Barley Powdery Mildew Interactions" at the International Triticeae Mapping Initiative, Minneapolis, MN. May 22-25, 2004.
32. Presented invited keynote lecture "Flor Revisited: Systems Biology in Barley Powdery Mildew Interactions" at the 11th International Cereal Rust and Powdery Mildew Conference, John Innes Centre, Norwich, England. August 22-27, 2004.
33. Presented invited seminar "Systems Biology in Barley Powdery Mildew Interactions" at the Fall Gatersleben Lecture Series, IPK, Gatersleben, Germany, August 31, 2004.
34. Presented invited seminar "Interplay of gene-specific resistance to barley-powdery mildew and the suppression of host-responses" at the University of Halle, Germany, September 2, 2004.
35. Presented invited seminar "Interplay of gene-specific resistance to barley-powdery mildew and the suppression of host-responses" at the University of Minnesota, St. Paul MN, April 21, 2005.
36. Presented invited talk "BarleyBase/WheatPLEX: The Triticeae hub of PLEXdb plant expression database" at the International Triticeae Mapping Initiative, Bozeman, MT, May 30, 2005.
37. Presented invited seminar "Interplay of gene-specific resistance, basal defense, and the suppression of host-responses" at the Annual Meeting of the Society for In Vitro Biology, Baltimore, MD, June 5, 2005.
38. Presented invited symposium talk "Interplay of gene-specific resistance, basal defense, and the suppression of host-responses" at the 12th International Congress for Plant Microbe Interactions, Merida, Mexico, December 17, 2005.
39. Presented invited seminar "A global view of gene-specific disease resistance, basal defense, and the suppression of host-responses" at the Annual Meeting of the American Phytopathological Society, Austin, TX, August 2, 2005.
40. Presented invited seminar "Gene-specific regulation of innate immunity to barley powdery mildew" at Mendel Biotech, Emeryville, CA, September 26, 2005.
41. Presented two invited talks on the "Functional genomics of plant disease defense pathways" and a seminar on "Interplay of gene-specific resistance, basal defense, and the suppression of host-responses" at the DAFGRI workshop, The Royal Veterinary and Agricultural University, Copenhagen, and the Cereal Network meeting in Slagelse "Quality from feed to food", (3) Denmark, November 1-4, 2005.
42. Presented invited lectures "Functional Genomics of Gene-Specific Disease Resistance, Basal Defense, and the Suppression of Host Responses", "PLEXdb: A Unified Expression Profiling Database for Plants and Plant Pathogens", and "Phenotype Based Cloning" at the Nordic plant genomics course in Mustiala (Helsinki), Finland, June 4-8, 2006.
43. Presented invited talk "Gene Specific Regulation of Innate Immunity to Plant Disease" at the International Plant Receptor Signaling Symposia, Ames, IA, June 22-25, 2006.

44. Presented invited talk “PLEXdb: A Unified Expression Profiling Database for Plants and Plant Pathogens” at the American Phytopathological Society, Quebec, Canada, July 31, 2006.
45. Presented invited talk “GeneChip Analysis of Innate Immunity to Plant Disease” at the International Triticeae Mapping Initiative, Victor Harbor, Australia, Sept. 2-7, 2006.
46. Presented invited talk “Regulation of Resistance to Powdery Mildew and Genes Associated with the Green Island Effect in Barley” at the PAGXV “International Grass Genome Initiative (IGGI) Workshop” in San Diego, CA, 2007.
47. Presented invited talk “A genetical genomics approach to understanding parasitism by stem rust race TTKS” at the North American Cereal Rust Workshop, University of Minnesota, St. Paul MN, April 4, 2007.
48. Presented invited talk “Dissection of coexpression networks in barley-powdery mildew interactions: a multi-dimensional approach to understanding parasitism by obligate biotrophs” at the 13th International Congress for Plant Microbe Interactions, Sorrento, Italy, 2007.
49. Presented invited seminar “From *T-urf13* to *Rf1* in T-cytoplasm maize” at the symposia on Mitochondrial Behavior and Reproductive Development. University of Florida, Gainesville, Florida, August 15, 2007.
50. Presented invited talk “New concepts and applications in whole-genome transcript profiling with a 100 K maize GeneChip” at the PAGXVI “Affymetrix Parallel Expression Workshop”, San Diego, CA, January 14, 2008.
51. Presented invited symposium talk “Regulation of basal defense in barley-powdery mildew interactions” at the Joint Annual Meeting of The Geological Society of America, Soil Science Society of America, American Society of Agronomy, Crop Science Society of America, and Gulf Coast Association of Geological Societies, Houston, Texas, 5-9 October, 2008.
52. Invited to present “*Blufensin1* negatively regulates basal defense in response to barley powdery mildew” at the PAGXVII “Barley Genomics Workshop”, San Diego, CA, January 10, 2009.
53. Invited to present plenary lecture “(Negative) regulators of innate immunity in cereal fungal interactions” at the 14th International Congress for Plant Microbe Interactions, Quebec, Canada, July 19-23, 2009.
54. Invited to present symposium lecture “(Negative) regulators of basal defense in cereal fungal interactions” at the Annual meeting of the American Phytopathological Society, Portland, OR, August 1-5, 2009.
55. Invited to present “Regulators of basal defense in cereal fungal interactions” at the University of Northern Iowa Graduate Biology Seminar series, September 28, 2009.
56. Invited to present plenary lecture “Regulation of innate immunity in barley-powdery mildew interactions” and short talk “Genetical genomics of stem rust infection identifies master regulators of defense in barley” at the 12th International Cereal Rust and Mildews conference, Antalya, Turkey, October 12-16, 2009.
57. Invited to present “Regulation of basal defense in the interactions among cereals and obligate fungal pathogens” at the Iowa State University fall Bioinformatics and Computational Biology graduate seminar series, November 5, 2009.

58. Invited to present “Genetical genomics of Ug99 stem rust infection identifies master regulators of defense in barley” at the PAGXVIII “Genomics for Plant Disease Resistance: Harnessing Pathogen Genomics to Protect World Grain Supplies Workshop” San Diego, CA, January 9, 2010.
59. Invited to present “Genetical genomics of Ug99 stem rust infection identifies master regulators of defense in barley” at Broad-Spectrum Resistance: Molecular Mechanisms Involved in Pathogen Reception and Resistance Signaling Symposia, Annual meeting of the American Phytopathological Society, Charlotte, NC, August 7-11, 2010.
60. Presented invited talk “Blufensin-mediated regulation of innate immunity in barley-powdery mildew interactions” at Plant & Animal Genome XIX. San Diego, CA. January 15 - 19, 2011.
61. Presented invited talk “Genetical genomics of stem rust infection identifies master regulators of defense in barley” at the 20th North American Barley Researchers Workshop (NABRW), Corvallis, OR, June 6-8, 2011.
62. Presented invited talk “Blufensin-mediated regulation of innate immunity in barley-powdery mildew interactions” at the International Workshop on Cereal VIGS at Rothamsted Research Station (outside London, U.K.), June 22-24, 2011.
63. Presented invited talk “Regulation of innate immunity in barley-powdery mildew interactions” at the University of Reading, U.K. June 25-29, 2011.
64. Presented invited talk “Genome-wide transcript profiling of barley *rar3* in response to powdery mildew” at Barley Genomics workshop at Plant & Animal Genome XX. San Diego, CA. January 14, 2012.
65. Presented invited seminar “Regulation of innate immunity in barley-powdery mildew interactions” at the Institute of Plant Biology at the University of Zurich. February 29, 2012.
66. Presented invited talk “Regulation of innate immunity in barley-powdery mildew interactions” and chair concurrent session on Systems Biology at XV International Congress on Molecular Plant-Microbe Interactions. Kyoto, Japan, August 1, 2012. (Only ARS scientist to present invited presentation)
67. Presented invited lecture “Regulation of immunity in barley-powdery mildew interactions” at Dept of Agrobioscience, Graduate School of Agricultural Science, Kobe University, Japan, August 6, 2012.
68. Presented invited lecture “Regulation of immunity to fungal pathogens barley” at Okayama University, Kurashiki, 710-0046, Japan, August 8, 2012.
69. Presented invited lecture “Regulation of innate immunity in cereal crops” at the Plant-Fungal Interaction & Plant Reproduction Group, Shanghai Institute for Biological Sciences, Shanghai, China, August 14, 2012.
70. Presented invited lecture “Regulation of innate immunity in cereal crops” at College of Agronomy, Northwest Agriculture and Forestry University, Yangling (Xi’an) China, August 16, 2012.
71. Presented invited Keynote lecture “Flor revisited (again): Systems biology in barley-powdery mildew interactions” *and* invited talk “Effector mediated suppression of defense” at the TritNonHost workshop - Nonhost resistance in cereal crops: Is this the way forward for crop disease control? at the 13th International Cereal Rusts and Powdery Mildews Conference, Beijing, China, August 28 – Sept. 1, 2012.

72. Presented invited plenary lecture “Intersection of eQTL and functional mutagenesis in barley-powdery mildew interactions” at the 10th Annual Symposium in Plant Biology "WAR or PEACE? Interactions between plants and microbes." The Plant Biology Graduate Program at University of Massachusetts Amherst, October 5, 2012.
73. Presented invited seminar “Flor revisited: A framework to dissect regulatory networks in barley-powdery mildew interactions” at the Plant Pathology Department, Kansas State University, Manhattan, Kansas, October 25, 2012.
74. Presented invited lecture “Broadly conserved fungal effector BEC1019 enhances virulence and suppresses host cell death”. Networks in Immunity Workshop, Davis, CA, 2014.
75. Presented invited Keynote lecture “Suppression of Host Cell Death by a Broadly Conserved Fungal Effector” North American Barley Researchers Workshop, Minneapolis, MN, 2014.
76. Presented invited lecture “Suppression of Host Cell Death by a Broadly Conserved Fungal Effector”, 4th International Powdery Mildew Conference, Kew Gardens, London, UK, 2014.
77. Presented invited seminar “Suppression of Host Cell Death by a Broadly Conserved Fungal Effector”, Sainsbury Laboratory, Norwich, UK, 2014.
78. Presented invited talk “Broadly conserved fungal effector BEC1019 suppresses host cell death and enhances virulence to powdery mildew in barley (*Hordeum vulgare* L.)” Pests and Pathogens Workshop. Plant and Animal Genome XXIII, San Diego, CA, 2015.
79. Presented invited talk “To sense or not-to-sense: Expression of *Blumeria* effector repertoires on barley loss-of-function mutant hosts” 14th International Cereal Rusts and Powdery Mildews Conference, Helsingoer, Denmark, 2015.
80. Presented invited Gatersleben Lecture “Regulation of host and pathogen gene sets in barley-powdery mildew interactions: Some new insights and some new questions” Institute of Plant Genetics and Crop Plant Research (IPK), Gatersleben, Germany, 2015.
81. Presented invited Plenary lecture “Broadly conserved fungal effector BEC1019 suppresses host cell death and enhances virulence of barley powdery mildew” 3rd Plant Genomics Congress USA, St. Louis, MO, 2015.
82. Presented invited talk “Can you hear me now? Differential expression of *Blumeria* effector repertoires on barley loss-of-function mutant hosts” 11th International Plant Molecular Biology Congress, Iguazú Falls, Brazil, 2015.
83. Presented invited talk “[Connecting Genotype to Phenotype in 7-12 Classrooms with iTAG Barley](#)” in the Teaching Genetics, Genomics, Biotechnology, and Bioinformatics Workshop, Plant & Animal Genome XXVI, San Diego, CA, 2016.