Randall J. Wisser

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Education

2006-2008 **Postdoctoral Fellow**, *North Carolina State University*, North Carolina, USA.
Research: *Quantitative Genetics of Multiple Disease Resistance and Response to Artificial Selection.*

2006 **Ph.D. Plant Breeding and Genetics**, *Cornell University*, New York, USA.
Dissertation: *The Genetic Architecture of Quantitative Resistance in the Cereals.*

2000 **B.S. (Hons) Biological Sciences**, *Florida International University*, Florida, USA.
Honors thesis: *Analysis of Heterokaryon Formation in Fusarium oxysporum f. sp. cubense.*

Appointments and Work Experience

2015-present **Joint Faculty Appointment**, *Statistics Unit; Department of Applied Economics & Statistics, University of Delaware*, Delaware, USA.

2015-present **Associate Department Chair**, *Department of Plant & Soil Sciences, University of Delaware*, Delaware, USA.

2015-present **Associate Professor**, *Department of Plant & Soil Sciences, University of Delaware*, Delaware, USA.

2009-2015 **Assistant Professor**, *Department of Plant & Soil Sciences, University of Delaware*, Delaware, USA.

2006-2008 **Postdoctoral Fellow**, *Joint Affiliation: Department of Plant Pathology; Department of Crop & Soil Sciences, North Carolina State University*, North Carolina, USA.

2001-2006 **Graduate Research Assistant**, *Department of Plant Breeding & Genetics*, Cornell University, New York, USA.

2000-2001 **Research Technician**, *Subtropical Horticulture Research Unit*, United States Department of Agriculture, Agricultural Research Service, Florida, USA.

1998 (summer) **Undergraduate Research Assistant**, *Department of Biochemistry*, George Washington University, District of Columbia, USA.

Grants (19 grants totaling ≈ $11 M USD)

Funding sources (i) National Science Foundation; (ii) United States Department of Agriculture National Institute of Food and Agriculture; (iii) Delaware Department of Agriculture; (iv) Binational Agricultural Research & Development Fund; (v) University of Delaware.

Publications (31 journal publications; 3 review articles; 3 book chapters)

8 recent and representative publications listed; *corresponding author

2018 *Nelson, R. J., T. Wiesner-Hanks, **R. J. Wisser**, and Peter Balint-Kurti (2018) Navigating complexity to breed disease-resistant crops. *Nature Reviews Genetics* 19:21-33.

2017 Gage, J., D. Jarquin, C. Romay, A. Lorenz, E. Buckler, S. Kaeppler, N. Alkhalifah, M. Bohn, D. Campbell, J. Edwards, D. Ertl, S. Flint-Garcia, J. Gardiner, B. Good, M. Gore, C. Hirsch, J. Holland, D. Hooker, J. Knoll, J. Kolkman, G. Kruger, N. Lauter, C. Lawrence-Dill, E. Lee, J. Lynch, S. Murray, R. Nelson, J. Petzoldt, T. Rocheford, J. Schnable, P. Schnable, B. Scully, M. Smith, N. Springer, S. Srinivasan, R. Walton, T. Weldekidan, **R. Wisser**, W. Xu, and J. Yu, and *N. de Leon (2017) The effect of artificial selection on phenotypic plasticity in maize. *Nature Communications* 8:1348.

2017 Saponaro, P., W. Treible, A, Kolagunda, T. Chaya, J. Caplan, *C. Kambhamettu, and ***R. Wisser** (2017) DeepXScope: segmenting microscopy images with a deep neural network. *The IEEE Conference on Computer Vision and Pattern Recognition (CVPR) Workshops; Computer Vision for Microscopy Image Analysis (CVMI)* Honolulu, Hawaii, July, 2017.

2017 Yang, Q., Y. He, M. Kabahuma, A. Kelly, E. Borrego, Y. Bian, F. E. Kasmi, L. Yang, J. Dunne, J. Kolkman, M. Kolomiets, R. Nelson, J. Holland, X. Li, N. Lauter, T. Chaya, J. Caplan, **R. J. Wisser**, and *Peter Balint-Kurti (2017) A maize caffeoyl-CoA O-methyltransferase gene confers quantitative resistance to multiple pathogens. *Nature Genetics* 39:1364-1372.

2017 Manching. H., S. Segupta, K. Hopper, S. Polson, Y. Ji, and ***R. J. Wisser** (2017) Phased genotyping-by-sequencing enhances analysis of genetic diversity and reveals divergent copy number variants in maize. *Genes, Genomes, Genetics* 7:2161-2170.

2017 Francis, F., M. Dumas, and ***R. J. Wisser** (2017) ThermoAlign: a genome-aware primer design tool for tiled amplicon resequencing. *Scientific Reports* 16(7):44437.

2016 Minker, K., M. Biedrzycki, K. Kolagunda, S. Rhein, F. Perina, S. Jacobs, M. Moore, T. Jamann, R. Nelson, Q. Yang, P. Balint-Kurti, ***R. J. Wisser**, and *J. Caplan (2016). Semiautomated confocal imaging of fungal pathogenesis on plants: Microscopic analysis of macroscopic specimens. *Microscopy Research and Technique* 141-152. In: Special Issue: Intact Organs: Super Resolution Multimodal Optical 4D Imaging. 2018. Volume 81, Issue 2.

2015 Teixeira, J., T. Weldekidan, N. De Leon, S. Flint-Garcia, N. Lauter, J. Holland, S. Murray, W. Xu, D. Hessel, A. Kleintop, J. Hawk, A. Hallauer, and ***R. J. Wisser** (2015) Hallauer´s Tuson: a decade of selection for tropical-to-temperate phenological adaptation in maize. *Heredity* 114(2):229-240.

Invited Seminars and Speaking Events

2009-present 38 invited presentations at regional, national and international conferences, student symposia, universities, government institutions and industry.

Synergistic Activities

Mentoring and Supervision (i) [since 2009] Supervision of 15 scientists, technicians and research assistants; (ii) [since 2009] Mentorship and training of 4 postdoctoral associates, 21 graduate students, 30 undergraduate students and 65 high school students; (iii) [since 2010] Annual summer plant genetics and breeding internship program for high school and undergraduate students; (iv) Tenure track faculty mentor.

Curriculum Development and Teaching (i) Development of a Genome Science major at Univ. of Delaware: a 4+1 program for training undergraduates and professionals in genome science; (ii) Development and teaching of five courses in genetics, genomics and breeding; (iii) Expertise in active learning pedagogy; (iv) Steering committee member for Univ. of Delaware's Bioinformatics and Systems Biology graduate and professional programs.

Resource Development (i) Plant germplasm for disease resistance research, experimentally evolved populations for diversifying maize and studying environmental adaptation; (ii) AccreteGB: software for plant breeding laboratories; (iii) RedRep, ThermoAlign and C3S-LAA: software and pipelines for genetics and genomics research.

Scientific Community Contributions (i) Co-PI of Genotype-by-Environment team for U.S. Genomes To Fields Initiative; (ii) Panel member and ad hoc reviewer for NSF, USDA-NIFA, Trust Foundation, and State Commodity funding programs; (iii) Associate Editor: [a] *Crop Science* (2010-2017), [b] *Genes, Genomes and Genetics* (2017-present); (iv) Peer reviewer: *Bioinformatics*, *BMC Genomics*, *Crop Science*, *G3*, *Genetics*, *Molecular Breeding*, *Nature Genetics*, *Phytopathology*, *Plant Cell*, *PLoS ONE*, *Plant Pathology*, *Plant Physiology*, *Theoretical and Applied Genetics*, *The Plant Genome*, and *The Plant Journal*.

Society Memberships (i) National Association of Plant Breeders; (ii) Genetics Society of America; (iii) American Phytopathological Society