

Jode W. Edwards

WORK ADDRESS:

University of Alabama at Birmingham
RPHB 327
1530 3rd Ave. S.
Birmingham, AL 35294-0022
Phone: (205) 975-7762
jode@uab.edu

HOME ADDRESS:

5017 Colony Park Dr.
Birmingham, AL 35243
Phone: (205) 967-9588

Education

Doctor of Philosophy in Agronomy, Iowa State University, Ames, IA 50011 (Major: Plant Breeding and Plant Genetics, Minor: Statistics) 1999.

Master of Science in Agronomy, University of Wisconsin-Madison, Madison, WI 53706 (Major: Plant Breeding and Plant Genetics) 1994.

Bachelor of Science in Agronomy, University of Wisconsin-Madison, Madison, WI 53706 (Natural Science Option) 1992 – Voted 1st runner up for the Theodore Herfurth Award for the outstanding male graduate from the University of Wisconsin-Madison for 1992.

Occupational and Research Experience

May, 2002 to present – Postdoctoral Fellow, Department of Biostatistics, University of Alabama at Birmingham, under the direction of Dr. David Allison. My primary duties are in statistical genomics and genetics with primary emphasis on analysis of data from DNA microarrays. Accomplishments include design of a SAS-based software package for statistical analysis of DNA microarray data which has been used to analyze approximately 20 data sets in research collaborations at the University of Alabama at Birmingham. An evaluation has been conducted of application of an empirical bayes analysis to microarray data which is the subject of a nearly completed manuscript for submission to a major journal. Research contributions have been made to at least four additional manuscripts submitted for publication.

February, 1999 to May, 2002 – Statistical Geneticist, Monsanto Company. My Primary duties were in statistical genomics and applied bioinformatics in industrial plant breeding programs. Accomplishments included increasing efficiency of DNA marker assisted selection programs for single-gene backcrossing and quantitative traits through statistical optimization of population sizes, population structures, and number of markers. A software system was designed and programmed in SAS® to improve data handling efficiency and improve interactive modeling and analysis capabilities in DNA marker-assisted selection programs. Additional responsibilities included statistical analysis, design, and consulting on quantitative genomics projects.

Occupational and Research Experience (continued)

August 1994 to January 1999 - Graduate Research Assistant in corn breeding, Department of Agronomy, Iowa State University, under the direction of Dr. Kendall Lamkey. Participated in regular research activities of the Federal-state cooperative maize breeding project and conducted dissertation research. Dissertation research resulted in two published manuscripts on the effects of inbreeding on genetic variance and response to selection in the BS13(S)C0 maize population. Dissertation research also contributed to two additional manuscripts on the theory of heterosis. Collaborative work was done on a project with Dr. Peter Peterson at Iowa State University on the estimation of effects of different alleles at the C-locus on color expression in maize kernels, resulting in one published manuscript.

June 1992 to July 1994 - Graduate Research Assistant in corn breeding, Department of Agronomy, University of Wisconsin-Madison, under the direction of Dr. James G. Coors. Participated in regular research activities on the University of Wisconsin Maize Breeding Project and conducted thesis research. Thesis research resulted in two published manuscripts on the agronomic performance effects of interactions between 11 maize cytoplasmic genomes and five maize nuclear genomes.

May 1991 to August 1991 - Research Assistant (summer internship), large seed vegetable breeding at the North Central States Station, Asgrow Seed Company, Sun Prairie, WI. Assisted with summer field operations in sweet corn, pea, and snap bean cultivar development research programs.

January 1990 to May 1992 - Undergraduate Independent Research Project. I conducted a 2-½ year project to investigate the use of barley in the Wisconsin Fast Plants system. Over 500 lines were screened in the Wisconsin Fast Plants system and a small set of lines was selected for a diallel inheritance study. The project resulted in the Hilldale Undergraduate/Faculty Collaborative Research Fellowship.

Occupational and Research Experience (continued)

May 1990 to August 1990 - Commercial Crop Scouting, Crop Control Consulting. My responsibilities included scouting commercial field corn, sweet corn, soybeans, wheat, snap beans, alfalfa, and seed corn production fields for pathogens, pests, and other agronomic problems.

Academic Achievements

Honors and Awards

Cottrell Career Enhancement Award, 2002
Research Excellence Award, Iowa State University, 1999
Mid-America College Horticulture Society, Regional Paper Presentation Contest, 3rd place, 1991
Hilldale Undergraduate/Faculty Collaborative Research Fellowship, 1991
Wisconsin Alumni Association, Outstanding Junior (1991) and Senior (1992) Student Awards

Scholarships Received

G. O. Mott Award Nominee for Iowa State University, 1998
C. R. Weber Award, Iowa State University, 1997
Premium for Academic Excellence Award, Iowa State University, 1994-1995
Wisconsin Alumni Research Foundation Fellowship, 1992
Monsanto Agriscience Scholarship, 1988
John C. Imrie, 1988
Didion, Inc., 1988
Jefferson County Pork Producers, 1988
University of Wisconsin-Madison Scholarship Awards:
 Crow's Hybrid Corn, 1988-90
 Howard and Eunice Ream, 1989-90
 Dwayne A. Rowheder, 1990
 Henry Steenbock, 1991
 Laurence F. Graber, 1991

Leadership Activities and Professional Contributions

Membership in Professional Societies

American Society of Agronomy
American Statistical Association
Crop Science Society of America
Genetics Society of America

Organizations and Committee Service

Iowa State University, Department of Agronomy

- President, Agronomy Graduate Student Club, 1997-98
- Graduate student member, Department of Agronomy Courtesy Committee, 1997-99
- Graduate student member, Department of Agronomy Retreat Committee, 1998

University of Wisconsin-Madison, Department of Agronomy

- Student member, Plant Breeding and Plant Genetics Outside Speaker Committee, 1993
- Agronomy Graduate Student Council, 1992-94

University of Wisconsin-Madison Marching Band

- Rank Leader, 1992-93

University of Wisconsin-Madison, Agriculture Education and Extension Club

- Member 1988-92
- Vice President, 1991-92
- Served as a judge for high school FFA parliamentary procedure demonstration contests, 1989-1992

University of Wisconsin-Madison, Badger Crops and Soils Club

- Agronomy representative, 1991-92

University of Wisconsin-Madison, Residence Hall

- House treasurer, 1988-89
- Tripp/Adams Hall Association representative, 1989-90

Referee for peer-reviewed journals

Crop Science (1999-2002)

Computational Statistics and Data Analysis (2002-2003)

Trends in Genetics (2003)

Publications

Edwards, J. W. and K. R. Lamkey. *In press*. Dominance and genetic drift: Predicted effects of population subdivision in a maize population. *Crop Sci.*

Edwards, J. W. and K. R. Lamkey. 2002. Quantitative genetics of inbreeding in a synthetic maize population. *Crop Sci.* 42:1094-1104.

Edwards, J., D. Stoltzfus, and P. A. Peterson. 2001. The C1 locus in maize (*Zea mays* L): Effect of gene expression. *Theor. Appl. Genet.* 103:718-724.

Edwards, J. W., J. O. Allen, and J. G. Coors. 1996. Teosinte cytoplasmic genomes: I. performance of maize inbreds with teosinte cytoplasm. *Crop Sci.* 36:1088-1091.

Edwards, J. W., and J. G. Coors. 1996. Teosinte cytoplasmic genomes: II. performance of maize hybrids with teosinte cytoplasm. *Crop Sci.* 36:1092-1098.

Lamkey, K. R. and J. W. Edwards. 1999. The quantitative genetics of heterosis. p. 31-48. *In* J.G. Coors, S. Pandey, M.V. Ginkel, A.R. Hallauer, D.C. Hess, K.R. Lamkey, A.E. Melchinger, C.W. Stuber, and G. Srinivasan (ed.). *Proceedings of the International Symposium on the Genetics and Exploitation of Heterosis in Crops*, CIMMYT, Mexico City, Mexico, 17-22 Aug. 1997. ASA, CSSA, and SSSA, Madison, WI.

Lamkey, K. R. and J. W. Edwards. 1998. Heterosis: Theory and estimation. p. 62-77. *Proceedings 34th Illinois Corn Breeders' School*, Urbana, IL, 2-3 Mar. 1998. University of Illinois, Urbana, IL.

Publications (continued)

Page, G., J. Edwards, S. Barnes, R. Weindruch, and D. B. Allison. *In press*. A design and statistical perspective on microarray gene expression studies in nutrition: the need for playful creativity and scientific hard-mindedness.

Submitted for Publication

Brand, J.P.L., G. L. Gadbury, T. M. Beasley, G. P. Page, J. D. Long, J. W. Edwards, and D. B. Allison. Nonparametric alternatives for inferential testing in microarray research.

Gadbury, G. L., G. P. Page, J. Edwards, T. Kayo, T. A. Prolla, R. Weindruch, P. A. Permana, J. Mountz, and D. B. Allison. Power and sample size estimation in high dimensional biology.

Yang, D., S. Zakharkin, G. Page, J. Edwards, J. Brand, A. Bartolucci, and D. B. Allison. Applications of bayesian statistical methods in microarray research.

Published Abstracts

Edwards, J. W. and K. R. Lamkey, 1999. Breeding values, dominance deviations, and genotypic values of inbred individuals and their implications for breeding and selection. *Agron. Abstr.*

Edwards, J. W., and J. G. Coors. 1993. Teosinte cytoplasmic genomes: Interaction with maize (*Zea mays* L.) nuclear genomes. *Agron. Abstr.* p. 87.

Lamkey, K. R. and J. W. Edwards. 1999. Partitioning of genetic variance within and among breeding populations and choice of optimal metapopulation structure. *Agron. Abstr.*

Invited Presentations

Presented the paper "Modeling P-values with a Mixture Model for Error Control and Sample Size Estimation in Microarray Research" at Iowa State University, Ames, IA Apr. 11, 2003.

Presented the paper "Data Delivery and Data Modeling: Building an Efficient System with SAS AF and SAS Connect" to the DeKalb Area SAS Users Group (DASUG), Hoffman Estates, IL. Jan. 18, 2002.

Presentations

Coauthor of the paper "Mechanisms of Heterosis and Inbreeding Depression" presented by J.W. Edwards and K. R. Lamkey at the North Central Corn Breeding Research Committee (NCR-167) Meetings, Ames, IA. Feb. 5-6, 2001.

Coauthor of the paper "Mechanisms of Heterosis and Inbreeding Depression" presented by K.R. Lamkey and J.W. Edwards at the 55th Corn and Sorghum Research Conference of the American Seed Trade Association, Chicago, IL. Dec. 7-8, 2001.

Contributed the paper "Power and Sample Size Estimation in Microarray Research" at the Microarray Research Coordination Network annual retreat, New Paltz, NY, Sept. 9, 2002.

Contributed the paper "Inbreeding and the quantitative genetics of metapopulations: A case study in the BS13(S)C0 population" at the North Central Corn Breeding Research Committee (NCR-167) Meetings, Ames, IA. Feb. 8-9, 1999.

Presentations (continued)

Contributed the paper "Inbreeding and the quantitative genetics of metapopulations: A case study in the BS13(S)C0 population" to the Spring 1999 Iowa State University Plant Breeding Seminar. Jan. 28, 1999.

Contributed the paper "Genetic drift and inbreeding in the BS13(S)C0 population" at the North Central Corn Breeding Research Committee (NCR-167) Meetings, Ames, IA. Feb. 15-17, 1998.

Contributed the paper "Genetic drift and inbreeding in the BS13(S)C0 population" to the Spring 1998 Iowa State University Plant Breeding Seminar. Mar. 16, 1998.

Contributed the paper "The average degree of dominance of maize" to the Spring 1995 Iowa State University Plant Breeding Seminar. Mar. 9, 1995.

Contributed the paper "How do the genetic structures of host and pathogen populations correspond and interact" to the Spring 1994 University of Wisconsin-Madison Plant Breeding and Plant Genetics seminar series in Plant-Pathogen Genetic and Evolutionary Interactions. Apr. 15, 1994.

Contributed the paper "Migration" to the Spring 1993 University of Wisconsin-Madison Plant Breeding and Plant Genetics seminar series in Evolution. Mar. 19, 1993.

Contributed the paper "Teosinte cytoplasmic genomes: interaction with maize nuclear genomes" at the North Central Corn Breeding Research Committee (NCR-167) Meetings, Bettendorf, IA. Feb. 23-24, 1993.

Attendance at Scientific Meetings

American Seed Trade Association Meetings: 1994, 1995, 1997, 1999, 2000, 2001

American Society of Agronomy Annual Meetings: 1992, 1993, 1996,

Bioinformatics in the Post-Genomics Era, San Francisco, CA: 2000

Gordon Research Conference on Quantitative Genetics and Biotechnology: 1997, 2001, 2003

Gordon Research Conference on Genomics and Structural/Evolutionary Bioinformatics: 2002

Illinois Corn Breeders School: 1999, 2000, 2002

Joint Statistical Meetings: 2002

Microarray Research Coordination Network: 2002

North Central Corn Breeding Research Committee (NCR-167) meetings: 1993, 1995, 1996, 1997, 1998, 1999, 2001

Plant Breeding in the 21st Century (sponsored by LSU Chapter of Sigma Xi): 2001

Advanced Training

Summer Institute in Statistical Genetics, North Carolina State University. Enrolled in two modules of instruction: "Population genetic data analysis" taught by Dr. B. S. Weir and "Mapping quantitative trait loci" taught by Dr. Z. B. Zeng: 1996

Occupational skills

Statistical Analysis System (SAS®): Ten years of SAS® programming experience. Expertise in SAS® statistical procedures, database management system facilities (SQL), User interface development facilities (AF and SCL), and networking facility (SAS® Connect).

Teaching Experience

January 1998 to May 1998 - Teaching assistant at Iowa State University in Genetics 320 (introductory genetics course) taught by Dr. Arden Campbell. My responsibilities included holding weekly office hours to provide individual help for students and conducting an evening review session once per week to help students work problems. In addition, I presented three lectures and wrote parts of one midterm exam.

January 1996 to December 1996 - Plant breeding journal club, Iowa State University. I initiated and moderated a journal club that met weekly to discuss papers related to plant breeding research.

February 1994 to May 1994 - Graduate student "Chalk Talk," University of Wisconsin-Madison. I initiated and chaired an informal discussion group for agronomy graduate students to discuss thesis research with other graduate students in Agronomy.

January 1994 to May 1994 - Teaching assistant at the University of Wisconsin-Madison in Agronomy 770 (Graduate level course in experimental design) taught by Dr. M. D. Casler. My responsibilities included grading papers and leading a 2-hour lab session once per week. The focus of the lab sessions was on examples and SAS programming.

References

Dr. David B. Allison, Professor of Biostatistics, University of Alabama at Birmingham, RPHB 327, 1530 3rd Ave. S., Birmingham, AL 35294-0022. Ph: (205) 975-9169. Email: dallison@ms.soph.uab.edu.

Dr. Kendall Lamkey, Professor of Agronomy, Department of Agronomy, Iowa State University, Ames, IA 50011. Ph: (515) 294-7826. Email: krlamkey@iastate.edu.

Dr. James Coors, Professor of Agronomy, Moore Hall Room 459, 1575 Linden Dr., Madison, WI 53706-1597. Ph: (608) 262-7959. Email: jgcoors@facstaff.wisc.edu.

Dr. Arnel Hallauer, C. F. Curtiss Distinguished Professor of Agriculture and Emeritus Professor of Agronomy, Department of Agronomy, Iowa State University, Ames, IA 50011. Ph: (515) 294-7823. Email: hallauer@iastate.edu.

Dr. William F. Tracy, Professor of Agronomy, Moore Hall Room 457, 1575 Linden Dr., Madison, WI 53706-1597. Ph: (608) 262-2587. Email: wftracy@facstaff.wisc.edu.