Heterosis: *the foundation for food, fuel, and fiber*

KSU Plant Breeding and Genetics Club

Thursday, April 2, 2015, 8:00am-5:00pm
Kansas State University, K-State Alumni Center

KANSAS STATE UNIVERSITY

Symposium Schedule

8:00 am	*Registration and Breakfast*
9:00 am	**Ernie Minton**, Kansas State Opening remarks
9:30 am	**Gerald Myers**, Louisiana State Cotton breeding
10:15 am	*Morning break*
10:45 am	**Eric Jackson**, General Mills Genomic selection breeding strategies
11:30 am	**Bob Weaber**, Kansas State Beef breeding and genetics
12:15 pm	*Lunch*
1:30 pm	**Ismail Dweikat**, University of Nebraska Sorghum genetics
2:15 pm	**Bill Rooney**, Texas A&M Sorghum breeding
3:00 pm	*Afternoon break*
3:45 pm	**Ian King**, Univ. of Nottingham Wheat germplasm development
4:30 pm	**Jesse Poland**, Kansas State Closing remarks
5:00 pm	*Reception at Alumni Center*

Ernie Minton

Dr. Minton currently serves as Associate Dean for Research and Graduate Programs for the College of Agriculture and Associate Director for Research for the Kansas Agricultural Experiment Station (KAES). He provides budgetary management and leadership for the broad research portfolio in the College of Agriculture and for KAES investments in research faculty in the partner Colleges of Veterinary Medicine, Engineering, Arts and Sciences, and Human Ecology.

Prior to his move from the Department of Animal Sciences and Industry to his current administrative role, his research aimed to identify non-antibiotic alternatives, thereby reducing dietary antibiotic use in food animals, primarily swine. There is significant interest in identifying alternatives to antibiotic use for growth promotion in meat animals, but mechanisms underlying growth stimulated by antimicrobials are not fully understood.

Gerald Myers

Gerald Myers is a Professor of Plant Breeding and Genetics with the Louisiana State University Agricultural Center. He received an B.A. degree from Wabash College in biology, an M.Sc. in plant physiology from Southern Illinois University and his Ph.D. in plant breeding from the University of Missouri-Columbia. He was a postdoctoral fellow and associate scientist at the International Institute of Tropical Agriculture from 1989-1993 where he conducted research on insect resistance in cowpeas, varietal development for the humid tropics, and coordinated the International Trial Program. Since 1994 his research has been focused on germplasm and variety development of cotton at LSU.

Major focus areas have been fiber quality, genotype by environment interactions, and germplasm characterization. He is a past chair of the Cotton Improvement Conference, Multi-State projects, and serves on multiple national committees. Gerald is editor for several journals and serves as Editor-in-Chief for the Journal of Cotton Science. Recently, sorghum breeding for the South and Southeast has been become a new research area and Gerald looks forward to investigating new ways to exploit the potentials of heterosis in crop improvement.

Eric Jackson

Dr. Eric Jackson received his Bachelors of Science in Biology from Missouri Southern State University in 1998. He then earned his Masters of Science in Plant Pathology in 2000 and a PhD in Plant Sciences in 2004 from the University of Arkansas. Dr. Jackson joined General Mills in 2012 after a seven-year career in small grains genetics with the USDA-ARS in Aberdeen, ID where he conceived and led the Collaborative Oat Research Enterprise (CORE). The CORE project produced various genotyping technologies and the first physically anchored genetic map for common oat. Based on his leadership and foundational work, Dr. Jackson received the USDA-ARS Herbert L. Rothbart Outstanding Early Career Research Scientist Award and the Presidential Early Career Award for Scientists and Engineers in 2011.

At General Mills, Dr. Jackson leads day-to-day research on plant genomics with an emphasis on genomic selection and novel crop development. He has worked closely with SAS to develop new statistical approaches in genetic linkage analyses, QTL mapping, predictive modeling, cross simulations, and progeny simulations in JMP Genomics. He has also continued his passion for connected innovation through the development of the Plant Pathway Elucidation Project at the North Carolina Research Campus in Kannapolis, NC.

Bob Weaber

Bob Weaber, Ph.D., Associate Professor, joined the faculty of the Department of Animal Sciences and Industry at Kansas State University in August of 2011 as Cow-Calf Extension Specialist and faculty coordinator of the K-State's Purebred Unit. Previously, Dr. Weaber served in the Division of Animal Sciences at the University of Missouri (MU) as Extension Specialist-Beef Genetics and was responsible for educational programming in the area of beef cattle genetics.

Dr. Weaber's extension and research focus has been to broaden the availability, use, and understanding of genetic selection tools and performance data collection schemes implemented by cattle producers. In addition to his work in selection systems, Dr. Weaber works to expand the use of structured crossbreeding systems by beef producers to leverage breed complementarity and heterosis to improve production efficiency, sustainability, and profitability.

Dr. Weaber grew up on a cow-calf operation in southern Colorado and went on to earn a BS in Animal Science followed by a Master of Agriculture degree in the Beef Industry Leadership Program at Colorado State University. He completed his doctoral studies in the Animal Breeding and Genetics Group at Cornell University.

Ismail Dweikat

Ismail Dweikat is a professor in the Department of Agronomy and Horticulture, University of Nebraska-Lincoln. His program focuses on the identification of the genetics components that influence total biomass production of sweet sorghum and pearl millet, and on the identification of DNA-based markers and mapping systems useful in practical selection schemes of traits associated with bioenergy biomass production. He holds a Ph.D. in Plant Breeding and Genetics from the University of Florida.

Bill Rooney

Dr. William L. Rooney is a Professor and Sorghum Breeder in the Department of Soil and Crop Sciences at Texas A&M University in College Station, Texas. His sorghum breeding program focuses on the genetic improvement of sorghum for use as a grain, forage and bioenergy crop in addition to training graduate students in plant breeding and genetics.

He earned his B.S. and M.S. degrees in Agronomy and Plant Breeding at Texas A&M University and holds a Ph.D. in Plant Breeding and Genetics from the University of Minnesota. Prior to returning to Texas A&M University in 1995, Dr. Rooney was on the faculty at Kansas State University from 1992 to 1995.

Ian King

Together with his wife Dr. Julie King, Ian King leads the wheat/ancestral introgression program at the University of Nottingham. The aim of this program is to transfer genetic variation into wheat from its distant relatives for agronomically important traits. They operate on an industrial scale, making thousands of crosses per year and screening for the presence of introgressions using a new 35K SNP array which they developed in collaboration with the University of Bristol and Affymetrix.

Major focuses include wide hybridization, trait analysis, plant breeding, molecular cytogenetics (GISH/FISH), comparative genomics, genetic mapping, map-based cloning, and tissue culture.

Jesse Poland

Dr. Jesse Poland is an assistant professor at Kansas State University. Dr. Poland completed his Ph.D. in Plant Breeding and Genetics at Cornell University in 2009. His research group is located on the KSU campus with field research across the state. Dr. Poland currently supervises six graduate students.

Research in Dr. Poland's group is focused on wheat genetics and germplasm improvement (www.wheatgenetics.org). They are developing new marker technologies for use in breeding, diversity studies, and association genetics. In collaboration with public breeding programs, Dr. Poland is exploring the use of genomic selection methods in wheat breeding. In the area of germplasm development, Dr. Poland's group is focused on developing new breeding lines with resistance to major pests of wheat including stem rust, strip rust, leaf rust, and Hessian Fly. Dr. Poland's lab is developing high-throughput phenotyping approaches for field-based evaluation of breeding lines with the primary focus being genetic characterization of heat and drought tolerance and development of improved germplasm.

Acknowledgements

Sponsors

Dow AgroSciences

Organizing Committee

Sandra Dunckel
Trevor Rife

Brent Christenson
Daljit Singh