National Association of Animal Breeders

NAAB ANNOUNCES RECIPIENT OF 2023 RESEARCH AWARD
DR. KENT WEIGEL

Madison, WI [September 14, 2023] – The National Association of Animal Breeders is pleased to announce Dr. Kent Weigel as the 2023 NAAB Research awardee. Dr. Weigel is the Judge John J. Crown Chair of Dairy Genetics and Department Chair, Department of Animal & Dairy Sciences at the University of Wisconsin-Madison. In addition to teaching undergraduate students and mentoring graduate students in the animal genetics program, he also manages the academic departments that include 30 faculty, 60 academic and university staff, 80 graduate students, 250 undergraduate students and 10 animal units. Dr. Weigel earned a B.S. in Animal Science in 1987 and a B.S. in Biology that same year at the University of Wisconsin-Platteville, a M.S. in Animal Science from Iowa State University in 1989, M.S in Biometry and a Ph.D. in Dairy Science in 1992 from the University of Wisconsin-Madison.

Dr. Kent Weigel's independent and collaborative research program, which has spanned thirty years, focuses on translational research and impactful outreach that will improve the lives of dairy farmers and their cattle in Wisconsin, North America, and beyond. The topics have evolved over the years as new needs have emerged and new technologies have become available. A primary focus has been the study of novel traits that cannot be measured in traditional milk recording or type appraisal programs. For example, his group published the first studies in North America involving the estimation of breeding values for common health disorders in dairy cattle, such as mastitis, lameness, ketosis, and displaced abomasum, using health event data from on-farm herd management software programs. This work, coupled with subsequent studies by other groups, eventually led to the implementation of national genetic evaluations for health traits in U.S. dairy cattle.

More recently, and in collaboration with partners at several other leading land-grant universities, his group has invested tremendous resources in establishing a genomic reference population for dry matter intake, residual feed intake, and its component energy sinks. This project led to the recent implementation of national genetic evaluations for Feed Saved, an index comprised of residual feed intake and maintenance energy requirements, in U.S. dairy cattle. A second focus has been the development and evaluation of novel tools and strategies related to the genetic improvement of dairy cattle. For example, his group was the first to apply genotype imputation methods in the context of genome-enabled selection in dairy cattle.

These studies, coupled with those of external collaborators, led to the design and implementation of low-density single nucleotide polymorphism arrays that reduced the cost of genomic testing by nearly ten-fold. As a result, more than 100,000 dairy calves are genotyped per month in North America, and the Council on Dairy Cattle Breeding database now contains genomic data of more than 8 million animals. Other examples include the first published analysis of founder contributions to inbreeding depression in Jersey cattle, as well as one of the earliest studies to utilize runs of homozygosity to assess inbreeding at the genome level. A third focus has been the coupling of genome-enhanced management strategies with precision dairy management tools. This has included, for example, the use of machine learning algorithms to predict insemination outcomes and the use of lift chart analysis to develop economical breeding strategies. It has also included studies on the prediction of whole genome risk for hyperketonemia, as well as the prediction of daily dry matter intake from sensor and metabolite data.

Going forward, Dr. Weigel is focused on several novel and exciting topics. The first is continued expansion of the genomic reference population for feed efficiency, with emphasis on understanding feeding behaviors, social competition, and their relationships with residual feed intake. The second is extension of this multi-state effort into the realm of methane emissions, in which Dr. Weigel and his collaborators will develop a genomic reference population to enable selection for reduced enteric methane production and study the interplay between host genetics and the rumen microbiome. The third topic is resilience, in which he will use high-frequency phenotypes for milk yield, dry matter intake, and behavior to identify animals that can perform consistently in the presence of environmental/management perturbations.

Previous honors and awards include the Robert G.F. and Hazel T. Spitze Land Grant Faculty Award for Excellence, College of Agricultural and Life Sciences, UW-Madison in 2020, the Lush Award in Animal Breeding and Genetics in 2010 as well as a two-time recipient of the Pound Extension Award from the College of Agricultural and Life Sciences, UW-Madison in 2005 and 2008. Dr. Weigel has generated approximately 225 publications in leading peer-reviewed journals to date with over 14,000 citations.

Dr. Weigel, his wife, Mindy, and their dogs live on a small acreage near Lodi, Wisconsin. Their son, Brady, is a mechanical engineer, and their daughter, Darby, is a substance abuse counselor, both live and work in the Madison area.

2023 NAAB Research Awardee Dr. Kent Weigel receiving his award from NAAB Board Chair, Paul Hunt at the NAAB 77th Annual Meeting in Chicago, Illinois on August 22, 2023.

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