38 Effect of Breed Composition and Genome-Wide Association Study on Epidermis Thickness in a Multibreed Angus-Brahman Population. Andrea N. Nunez Andrade[1], Aakilah Hernandez[1], Eduardo E. Rodriguez[1], Kaitlyn M. Sarlo Davila[2], Raluca Mateescu[1], Eduardo Rodríguez[1], [1]*University of Florida,* [2]*ORISE/NADC*

Abstract: Heat stress in cattle has recently received growing attention because of anticipated increases in environmental temperature by global warming. Heat stress limits the production efficiency of cattle, and it is one of the principal causes of economic loss for beef cattle producers in these environments. Thermotolerance can be defined as the ability to maintain optimal growth, feed intake, and reproduction under the presence of heat stress, and it varies among individual animals and breeds. The objectives of the analysis were to investigate the amount of variation on epidermis thickness, test the effect of breed composition and age group on skin histology traits and to conduct a genome-wide association study on skin properties of beef cattle, focusing on the epidermis thickness. Skin biopsy samples were collected from 318 heifers from a UF multibreed population (animals ranging from 100% Brahman to 100% Angus), genotyped with the Bovine GGP F250K chip. Quality control was conducted with BLUPF90 software, including a call rate of 0.90 and a MAF < 0.01. BLUPF90 software was used to fit a single locus mixed model to test the effect of each marker. Breed group and age group were included as fixed effects. There is a significant effect in breed group ((P < 0.0001) and in age group (P < 0.0001). This study shows there is a large amount of variation in epidermis thickness across and within breed groups. Significant SNPs for the thickness of the epidermis were found in the HBEGF gene, which is a protein coding involved in several processes, including epidermal growth factor receptor signaling pathway and there is a variation across breed Skin histology traits are fundamental for the ability to lose heat more efficiently and allow the maintenance of normal body temperatures under extreme conditions. This study could contribute toward improving cattle's adaptation to thermal stress.

Keywords: age, breed, epidermis, heat stress, skin, thermotolerance

39 Genetic Associations between Feeding Behavior and Economic Interest Traits in Group-Housed Broilers. Anderson A. Carvalho Alves[1], Arthur F. A. Fernandes[2], Fernando B. Lopes[2], Vivian Breen[2], Rachel Hawken[2], Guilherme J. J. M. Rosa[1], [1]*University of Wisconsin-Madison,* [2]*Cobb-Vantress, Inc.*

Abstract: This study aimed to assess the genetic relationship among feeding behavior (FB), feed efficiency (FE), and production traits in broilers. A total of 44,234,350 feeders visit logs from 55,400 birds allocated into 88 trials were recorded by radio-frequency identification system. The daily data were averaged per animal for FB traits, considering the entire trial period. FB traits included the number of meals (NMEAL, count/day), time spent at feeders (TSF, hours/day), average portion size (PS, g), feeding rate (FR, g/hour), feeding activity range (FAR, hours/day), number of visited stations (NVS, count/day), and number of visited feeders (NVF, count/day). The total feed intake (FI), residual feed intake (RFI), and feed conversion rate (FCR) were also considered. Further, the body weight was measured at the start (SBW) and ending (FBW) of the trial. Multi-trait animal models were fitted for estimating the (co)variance components, considering the effects of sex and contemporary group as fixed. FB traits presented moderate to high heritability (h^2) values, ranging from 0.26±0.02 (FAR) to 0.58±0.02 (TSF), whereas for FE and growth traits the h^2 ranged from 0.16±0.01 (FBW) to 0.27±0.02 (RFI). The traits NMEAL, NVS, NVF, and FAR presented negative genetic correlations with FI, SBW, and FBW (-0.36 to -0.13) while PS and FR were positively correlated with all FE and production traits (0.12 to 0.43). RFI only presented non-null genetic correlations with PS (0.26±0.04), FR (0.23±0.03), and NVS (-0.11±0.04). Similarly, NMEAL and NVS also presented a weak negative correlation with FCR (-0.12±0.05 and -0.17±0.05, respectively). FB traits have a sizable genetic component and, therefore, may present a fast response to selection. The results also suggest that future selection for welfare-related feeding behavior (e.g., NMEAL, NVS, and NVF) would not affect negatively FE traits, although it might result in lighter animal lines in the long term.

Keywords: feeding events, genetic correlation, radio-frequency identification