the microbial-associated interactions throughout the gut with intake, growth, and feed efficiency. Using a feed efficiency design in which steers were selected from two contemporary groups and were ranked based on their standardized distance from the bivariate mean (ADG and ADFI), four steers with the greatest deviation within each Cartesian quadrant were sampled (n = 16/group; 2 groups) to examine the association of the microbiome throughout the gut with ADG, average daily DMI (ADFI), and feed efficiency. In addition, phylogenetic analyses of the ruminal bacterial community were compared based on varying sequencing technologies, 16S variable region selection, and short read 16S amplicons, near full-length 16S amplicons, and metagenomic sequence. In all studies, although no differences in bacterial diversity and richness metrics were revealed among the quadrants, finer changes in the relative abundance of microbial populations and operational taxonomic units did reveal differences between feed efficiency groups ($P < 0.05$), suggesting throughout the GIT, the microbial communities differ at the 16S level in cattle that vary in ADG, ADFI, and feed efficiency. However, additional phylogenetic analyses on the rumen bacterial community demonstrated that utilizing near full-length 16S reads may be useful in conducting a more thorough study, or for developing a niche-specific database to utilize in analyzing data from shorter read technologies when budgetary constraints preclude use of near-full length 16S sequencing. Partially funded by National Institute of Food and Agriculture Grant no. 2011–68004–30214, National Program for Genetic Improvement of Feed Efficiency in Beef Cattle.

Key Words: feed efficiency, microbiome, 16S rRNA

CONTEMPORARY AND EMERGING ISSUES SYMPOSIUM: COMMUNICATING ANIMAL SCIENCES EFFECTIVELY

0452 Public perceptions of animal-sourced genetically modified food products. W. K. Hallman*, C. L. Cuite, and X. K. Morin, *Rutgers University, New Brunswick, NJ.*

The success of agricultural biotechnology depends as much on consumer acceptance of Genetically Modified (GM) products as it does on the ability to create them. To explore public perceptions of GM food products, we surveyed a nationally representative sample of 1148 American adults during October 23–27, 2013. The data was collected by GFK Knowledge Networks from an internet panel recruited using proportional random sampling. The data was weighted to project to the U.S. population, and has a margin of error of ± 3%. The results show that despite the ongoing controversy over GM foods, 50% of Americans report having heard or read little or nothing about them, 55% report that they know very little or nothing at all about them, and two-thirds (66%) say they have never discussed the issue of GM foods with anyone. Estimates are that 75% of processed foods in the U.S. contain ingredients derived from GM crops. However, only 43% of Americans say that they believe that there are foods containing GM ingredients in supermarkets right now, while 4% say there are no such foods in U.S. supermarkets, and 51% say they don't know. Many of those who believe that there are GM foods in the supermarket are confused about which products are available. For example, while 75% correctly believe that there are products in U.S. supermarkets containing GM corn, and 59% correctly believe that there are products containing GM soy, nearly as many (56%) believe that GM tomatoes, GM Wheat (55%), and GM Chicken (50%) products are available and 35% believe that GM salmon are currently for sale. Moreover, even though GM food products have been on the market in the U.S. for more than two decades, only 26% of Americans believe that they have ever eaten a food containing GM ingredients. Yet, while most Americans say they have heard and read little about GM foods, know little about them, have never had a conversation about them, don't believe they are currently in the supermarket, and don't believe they have ever eaten them, most are willing to express an opinion about the acceptability of GM food products. When asked directly, only 10% of consumers say they approve of GM animal-sourced food products, 44% say they disapprove of them, and 43% neither approve nor disapprove of them, or are unsure. However, there is much greater public acceptance expressed when specific product benefits are described.

Key Words: public perceptions, genetically modified, animal-sourced foods

0453 What is the science of science communication for? And why should animal scientists care? D. Kahan*, *Yale Law College, New Haven, CT.*

The source of nearly every science-communication misadventure can be traced to a single mistake: the confusion of the processes that make science valid for the ones that vouch for the validity of it. The scientific knowledge that individuals rely on in the course of their everyday lives is far too voluminous, far too specialized for any—including a scientist—to comprehend or verify for herself. So how do people manage to pull it off? What are social cues they rely to distinguish the currency of scientific knowledge from the myriad counterfeit alternatives to it? What processes generate those cues? What are the cognitive faculties that determine how proficiently individuals are able to recognize and interpret them? These questions not only admit of scientific inquiry; they demand it. Unless we understand how ordinary members of the public ordinarily do manage to converge on the best available evidence, we will never fully understand why they occasionally do not, and what can be done to combat these noxious sources of ignorance. I will discuss these basic themes and relate them to the stake that the animal science community has in the

advancement of the new science of science communication.

Key Words: science communication

0454 Cracking the code: Making complex information understandable. A. Perry*, *The Center for Food Integrity, Gladstone, MO.*

Consumer beliefs do not always align with the scientific consensus. Consumers may not accept an idea even though science says it is true. Consumers do not fully understand the science that individuals in animal agriculture find so simple. Our challenge is to find better ways to bridge the communication gap by using shared values to earn consumer trust. In partnership with Iowa State University, CFI was the first to build a research-based consumer trust model. Our peer-reviewed and published model for building consumer trust in today's food system shows that shared values are more important than skills and technical expertise in building consumer trust. The social decision-making process is complex. Building trust is step one. Explaining the complex scientific concepts around animal agriculture is step two. The ability to break down existing communication barriers is critical to fostering informed decision making that leads to consumer confidence.

Key Words: consumers, complex, communication, food

0455 Communicating animal science effectively. D. R. Williams*, *National Cattlemen's Beef Association, Centennial, CO.*

Having spent the past 25 yr of my career helping companies and organizations communicate during crises ranging from Alar in apples to Pink Slime in ground beef, I have learned a number of lessons about what works and does not work in communicating science effectively. The first lesson is to not lead with science! People react to issues that could impact their family's health and well-being with emotion. Responding with facts and figures is unlikely to calm their fears. So the first step in communicating effectively is to acknowledge their concerns, whether you believe they are rational or not. By acknowledging that their concerns are legitimate you open the door to sharing factual information. I have a formula for responding effectively I call the "Two Cs." We care, and we're capable. We care about the same things they do: the safety of our food, the care of animals, the future of our planet and the health and well-being of our families. Once you have established that common ground, you can focus on addressing differing viewpoints on the "facts" of the matter. In this panel discussion I will share real-life examples of how this technique has been used to communicate animal science effectively.

CSAS GRADUATE STUDENT ORAL COMPETITION I

0456 Ensiling barley varieties selected for varied levels of in vitro NDF degradability. N. G. Preston*[1,2], J. Nair[1], P. Yu[1], D. A. Christensen[1], J. J. McKinnon[3], and T. A. McAllister[4], *[1]University of Saskatchewan, Saskatoon, Canada, [2]Lethbridge Research and Development Centre, Agriculture and Agri-food Canada, AB, Canada, [3]Department of Animal and Poultry Science, University of Saskatchewan, Saskatoon, Canada, [4]Lethbridge Research and Development Centre, Agriculture and Agri-Food Canada, AB, Canada.*

This study characterized the ensiling traits and digestibility of three barley varieties ranked for in vitro NDF degradability (NDFD). CDC Cowboy (H-NDF), CDC Copeland (I-NDF), and Xena (L-NDF) were ranked as high, intermediate, and low NDFD based on commercial silage samples ($n = 80$) collected over 2 yr. Barley varieties were planted the same day in one location and ensiled at the mid-dough stage in replicated mini or bunker silos. Silos were opened after 60 d of ensiling for chemical and microbial analysis. Silage from mini silos was exposed to air with temperature continuously measured and samples collected at 3, 7, 14, and 21 d. Silage was collected periodically from bunker silos during feed out. In vitro NDFD after 30 h of incubation in rumen fluid was estimated for silage collected after 60 d. Data were analyzed using the Proc Mixed procedure of SAS as a complete randomized design with fixed effect of variety and ensiling method, and random effect of silo within variety, and day as a repeated measure for aerobic stability. In vitro NDFD did not differ among varieties. Terminal pH was lowest ($P < 0.01$) for H-NDF in mini silos. The pH of H-NDF was higher ($P < 0.01$), and I- and L-NDF lower ($P < 0.01$) in bunker than mini silos. Lactate and acetate levels were higher ($P < 0.05$) in H-NDF mini silos, with acetate levels of all varieties being lower ($P < 0.01$) after ensiling in mini silos as compared with bunker silos. Day 60 I-NDF in mini silos had higher ($P < 0.01$) ADF and NDF levels, with method of ensiling affecting fiber levels ($P < 0.01$) with increased ADF and NDF in H-NDF and L-NDF in bunker as compared with the mini silos. The H-NDF silage was less aerobically stable than other silages as reflected by increasing ($P < 0.01$) temperature and pH ($P < 0.05$) and decreased levels of lactic acid ($P < 0.05$) and water-soluble carbohydrates ($P < 0.01$) over the exposure period. Using in vitro NDFD of field silage to select barley silage varieties for improved fiber digestibility proved difficult due to the effects of time of harvest and the fermentation process on this trait.

Key Words: barley silage, NDF degradability, aerobic stability0