

206 The significance of phospholipids and their emerging importance in dairy foods. R. L. Clarke*, *California Polytechnic State University, San Luis Obispo.*

Phospholipids are an important biological molecule in milk and milk components. Although minor in quantity comparatively (0.2-1 percent), phospholipids are important in milk fat and widely distributed as components of body cells. They are composed of fatty acids, phosphorous, and contain groups such as lecithin, cephalin, and sphingomyelin. Phospholipids exist in complexes with proteins in milk. Cream, separated from milk, contains about 65% of the lipid bound phosphorous and because of the high degree of absorption of

the phospholipids by the fat molecules there is additionally provided stability. Phospholipids are distributed throughout cell membranes, and are emerging as an area of active research in Dairy products. Because the molecule is made up of two distinct regions, one hydrophobic and the other hydrophilic, they react in water to spontaneously form a bilayer. As well as being biologically significant, this property holds great many areas of nutrition and medicine. Since milk is a good source of these phospholipids it is understandable that there is current research to be able to obtain and preserve them in dairy foods such as milk powder and other products.

Key Words: Phospholipids, Milk Powder

Bio Ethics - Livestock and Poultry: The Ethics of Food

207 The ethics of food. J. M. Regenstein*, *Cornell University, Ithaca, NY.*

Believe Nothing That You Think! We all like to think of ourselves as ethical, and think carefully about our ethical standards, yet we often do not agree with each other on what is right and wrong. Why? Because our ideas are formed not just through our scientific/rational training but also from inputs that are beyond our scientific/rational education. Our ethical beliefs reflect who we are. But, as a society, the only way to approach ethics with a hope to reach agreement/compromise is to address ethical issues using rational arguments and reasoning. Therefore, ethical judgments must be offered in the "Marketplace of Ideas" and be able to withstand critical evaluation by those who may disagree. Formally, this is required within the field of philosophy: "Philosophy, like morality itself, is the first and last an exercise in reason, the ideas that should come out on top are the ones that have the best reasons on their sides." (Rachels, *The Elements of Moral Philosophy*, 1999. p. xii). So the challenge in participating in the debate is to use rational arguments when discussing controversial ethical principles? (And admit when one's arguments are emotional?) But what are rational arguments? This can be difficult to determine although irrational ones are probably easier to identify. An important irrational one centers around the following point: If something specific is wrong (rationally unacceptable? unethical?) with a particular system, i.e., such as a number of the concerns consumers have with the food system, especially animal agriculture; what does that mean? That we should analyze the specific problem, look for rationale solutions, and work hard to apply those solutions to correct that problem and then continue to evaluate how effective the solution is and continue to seek better solutions. What the problem does not rationally imply is that the system identified should not exist (e.g., eliminate animal agriculture) and/or that because of these problems, another system should replace it (e.g., veganism). The replacement needs to justify itself on its own rationale evaluation and merit. In the meantime, we need to work hard to find solutions to these critical problems.

Key Words: Animal Agriculture, Ethics, Food

208 The ethics of semantics: do we clarify or obfuscate reality to influence perceptions of food animal production? C. C. Croney*¹ and R. D. Reynnells², ¹*Oregon State University, Corvallis*, ²*US Department of Agriculture, Cooperative State Research, Washington, DC.*

According to linguists, the discourse of animal production uses metaphors, pronouns, and definitions that consistently represent animals as objects, machines, and resources, instead of as distinct, unique individuals. Thus, it is argued, genuine concern for animal welfare is either obscured by financial concerns or circumvented entirely, which permits animals to be kept and treated in ways people would otherwise find objectionable. Substituting euphemisms like "crops," "units," and "harvest" for "herds," "animals," and "slaughter," which are more likely to evoke images of grape plucking than of killing animals for food, might indeed seem disingenuous, especially given the common industry refrain that the public needs to be better educated about food production. However, the implication that the animal industries deliberately employ such techniques is debatable. What is clear is that the semantic obfuscations rampant in the language of modern farm animal production reflect underlying ambivalence about full and frank public education about many standard industry practices. First, consumers are unlikely to want full disclosure of all aspects of animal production. Second, there is real risk that certain realities of animal production would be aversive to consumers, who might consequently refuse (as is their right) to purchase particular products, thus causing significant industry losses. Yet, the animal industries' reluctance to "come clean" in public education efforts raises another problem---that adopting innocuous terminology and withholding information deemed likely to be unpalatable to the public is morally questionable in itself. Moreover, this provides an avenue for opponents of animal agriculture to exploit. In truth, animal extremists are now in a position to reveal facts about livestock production that might not only disturb consumers, but also cause speculation about the industries' failure to be forthcoming. As a matter of professional ethics and viability, animal industry members should reconsider the discourse of farm animal production to ensure that what is conveyed is accurate and intended.

Key Words: Ethics, Semantics, Animal Production

209 What would the world be like without animals for food, fiber, and labor? Are we morally obligated to do without them? S. L. Davis*, *Oregon State University, Corvallis.*

Numerous animal rights theorists have concluded that nonhuman animals have moral standing and non-interference rights. Therefore, they say that humans are morally obligated to stop using animals for food, fiber, labor and research. I disagree with that conclusion for at

least two reasons. First because it has been demonstrated that food production models are possible using large herbivores that might actually cause less harm to animals than a vegan food production model. This is because intensive crop production used to produce food for a vegan diet kills (harms) far more animals of the field than extensive agriculture (pasture production). So, a combined food production system that includes crops, and pasture harvested by large herbivores to be used for human food may kill fewer animals than would a vegan/crop model. Second, I say no for pragmatic reasons. It is improbable that all peoples of the world could ever be convinced that they must give up animals. In fact it may be unethical to try to do that because in poor countries these animals are essential to the survival of the human populations. But what about the richer nations? Maybe they will/should be convinced to do without animals because of the moral strength of the animal rights theories. However, I believe that there are far too many obstacles for that to happen. What then are we morally obligated to do about animals? I suggest that animals do have moral standing and that we are morally obligated to recognize their unique species-specific natures, and treat them accordingly. That would mean treating animals according to their physical and behavioral needs or telos. That, I believe is the most likely outcome of the conversation about animal rights.

Key Words: Animal Rights, Welfare, Moral Obligations

210 Ethics and the role of academics, scientists and veterinarians in the formation of public attitudes and societal decisions. W. R. Stricklin*, *University of Maryland, College Park.*

Ethics has to do with “doing the right thing,” but reaching a societal-wide consensus on the right thing to do is often difficult. For example in the USA, there is a wide range of opinions regarding the right thing to do about the use and treatment of food animals. On the one-hand, some persons within both academia and the public at large contend that it is wrong for humans to use other sentient beings as simply a means to an end, i.e., food. Further, they contend that eating animal-based food products should be phased out. On the other hand, some persons - including a significant number of animal scientists - contend that providing food for humans is a greater good that justifies the treatment of food animals across basically all current agricultural housing systems and production practices. And there is a middle position that includes the majority of persons who wish to continue to consume animal food products but also want assurance that the welfare of the animals is appropriately considered. In the USA, the viewpoint of the

educated expert or authoritarian figurehead is still generally respected by the public. However, to maintain this credibility, the public must continue to feel that the information they are presented is unbiased. In some instances, animal scientists are becoming viewed as being too closely tied to industry viewpoints and not giving a balanced view of some issues, including animal welfare. Ultimately, both veterinarians and animal scientists have roles to play in helping the public at large gain a greater understanding of the importance of doing the right thing in terms of how animals are to be treated in our society. Thus, it is important that these professionals acknowledge the importance of ethics in their research, teaching, and other professional activities.

Key Words: Animal Welfare, Bioethics, Public Attitudes

211 Production, processing and marketing: an integrated industry’s view of ethical issues. C. Klippen*, *Klippen & Associates, LLC, Audubon, PA.*

Decision making is a part of everyday living. In satisfying our basic needs, decisions are made about what to eat, what to wear, how to get where we are going, when to sleep. There is another type of decision that we also make that could be described as ethical. There’s a purity about a decision labeled “ethical”. What’s the basis for that claim of its being “ethical”. Whose values judgment underscore that ethical decision? In making a decision we try to balance an outcome that we perceive as morally right with what is practical and logical from our set of values. We may view the importance of the outcome as justifying the means in making that decision. Is that “ethical”? We may not know or understand all the facts, yet is it better to decide rather than be indecisive? So, we decide, basing our decision on competing moral perspectives. Evaluating complex and sometimes ambiguous scenarios adds to the dilemma in making a decision. When operating in a framework of proven principles that are reliable, our skills for decision-making are more self-assuring. We center on our beliefs about what we perceive to be right or wrong. Is this ethical? As it relates to producing animals for food, processing and marketing meat, milk or eggs, what proven principles aid the decision as to how that animal is raised, processed, or how the animal product is marketed? Is its efficiency in production, processing coupled with profitability in marketing that dictates the “ethical decision”? Or is it a practical decision that is expedient based on the current needs of society? Is there a reasoning approach from history that can help shape our ethical decisions?

Key Words: Marketing, Processing, Production

Breeding and Genetics - Livestock and Poultry: Beef Cattle

212 Identification and characterization of microRNA from the bovine adipose tissue and mammary gland. Z. Gu*, S. Eleswarapu, and H. Jiang, *Virginia Polytechnic Institute and State University, Blacksburg.*

MicroRNA (miRNA or miR) are a new class of small RNA molecules (~22 nucleotides) that are processed from precursor sequences that form hairpin secondary structures. miRNA inhibit translation or induce degradation of protein-coding mRNA by base-pairing. Increasing evidence suggests that these small RNA molecules play an important role in many processes of animal development and physiology. We have conducted a study to identify miRNA in cattle. By cloning and

sequencing small RNA from the bovine adipose tissue and mammary gland and by predicting and folding the precursors of these small RNA sequences, we have identified 59 distinct bovine miRNA. Five of them were not homologous to any known mammalian miRNA, hence potentially novel miRNA. Twenty-five of them had 3’ and (or) 5’ end variants, suggesting that miRNA precursors may be alternatively processed. Ribonuclease protection assays (RPA) of 12 selected miRNA confirmed their expression in adipose tissue or the mammary gland, from which they were originally cloned. The RPA also indicated tissue-specific or tissue-enriched expression for several miRNA. For example, miR-122a was only detected in the liver, and miR-133 was detected in the heart, skeletal muscle and rumen but not in ten other