

# Challenges for Meat Science Research

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Meat science research in the United States has been a development of the twentieth century. Much of the early research is recorded in the Cooperative Meat Investigations and in the Proceedings of this conference. The last 50 years have been marked by tremendous growth in meat research programs and in the last 10 years with the beginnings of some marked restructuring. We are on the verge of even more rapid restructuring of our research programs and organizations, of the way we set priorities, in the mechanisms for funding and in our accountability for the resources used in research. We face a number of challenges not faced to the same degree or in the same way in the past. In describing some of these challenges and suggesting ways we might approach them, I hope to stimulate your thinking and set the stage for the Reciprocity Session that will occur later today. Meat research priorities will not be addressed; that is the assignment of subsequent speakers.

Meat science research in the United States is conducted in three interrelated organizational settings. In the land-grant universities, meats research developed in the Animal Husbandry Departments. In the last 20 years, these have become Animal Science Departments and meat research has developed as well in Food Science Departments. Many institutions have joint research between both departments. Today, most United States publicly supported meats research is conducted in these departments of the land-grant universities. The meat industry developed extensive research units after World War II, which were very productive and tremendously important to the application of science and the progress of the industry. But these operations have been modified, reduced or terminated as the major companies of that era changed focus, were bought out or divested. Today, industry does not concentrate significant effort on basic research; most of the industry's research effort is directed toward quality assurance and toward process or product development. USDA continues to focus significant resources toward meat research at several locations. Probably the most significant development in the last 25 years is the advent of muscle biology and growth biology as part of the meat science research programs.

## Challenges for Research

### Changing Public Concerns

This challenge is listed first because in today's public climate, the most important fact is often what the public per-

ceives to be true, as opposed to the exact facts of the situation. Health and nutrition have had front billing in the public opinion of meat for at least 25 years; these are still important concerns, but other issues seem to have overshadowed them in recent years. Food safety is now given equal or more attention in the public press than are nutrition/health relative to meat. With the advent of biotechnology, there is heightened concern about the application of technology. Is it safe? Is it morally and socially acceptable to apply this technology to food products? The recent FDA decision to develop procedures for approval of genetically engineered food products and the reactions from a number of advocacy groups illustrate this concern as do the activities to block approval of BST for dairy cows. The most recent area of heightened debate revolves around the environment. What are we doing to our climate, air, water, soil, land fills and streams as a result of industrial activity in today's modern society? "Green" is in! The Earth Summit in Brazil last week is documentation of the media attention the environmental issue now receives. This is not a totally new concern. It has been developing slowly for at least the last decade as is evidenced by the growth of a variety of recycling programs. These concerns are linked by the trend toward greater "social responsibility." Last week, 40 to 50 regional and national companies launched a new association, "Businesses for Social Responsibility," to indicate their responsiveness to this area.

### Image of Science

"Scientist" is a somewhat tarnished word today. To put it bluntly, our image is not what it used to be. I received my Ph.D. in an era when the general public was somewhat in awe of the scientist. The public remembered all the miracles following World War II and into the 1960's—a multitude of electrical technologies, increases in crop yields, a flood of new and convenient products. It seemed that science could do magic! But now there is doubt scientists can control technology, or the way it is applied. Many years ago, the Frankenstein motion pictures implied scientists could make people but could not control the result. This seed of doubt has grown to where science is not totally trusted by the public. Toxic dumps, contaminated water, unanticipated secondary effects of drugs, industrial accidents all seem to confirm that science is not totally in control of its activities.

### Discordant Messages

In many respects, the science community does not help itself. The public is confronted with a multitude of conflicting messages from scientists. And it does not know who to believe. We air our disagreements and debates in public. We publish research, or at least call a news conference to

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describe it, before the work is fully complete or understood. We hypothesize in public. And the average citizen, who knows almost nothing about the ways of science, its need for debate, trial, error, replication, etc., is totally confused and eventually becomes distrustful. Advocacy groups who espouse a particular cause capitalize on this atmosphere of confusion. Perceptions become truth and have a great influence on policy decisions. The discordant messages are intensified with advertising claims from the industry itself and by direct competition between commodities, all trying to obtain a share of the consumer's food dollar.

### **Reduced Research Funding**

It is widely perceived that public funds for meat research have decreased in recent years. In the Agricultural Experiment Stations of the land-grant universities, appropriations in general have not kept pace with inflation or with our perception of the needs for support. State governments are under increasing pressure as more responsibility for mandated programs, particularly entitlement programs, is passed back to the states. There is extreme competition for resources, exacerbated by the latest recession. Thus, university research programs have become even more dependent on "soft" or grant funds. All of the public institutions obtain a significantly greater proportion of research expenditures from grant sources than at any time in the past. New faculty are hired today with the expectation they will generate a portion of their operating support from extramural sources. Will research programs in the land-grant universities come to resemble many private universities, particularly in the basic and medical sciences, where scientists are expected to generate part of their salary from grant funds? In this scenario, one could question the degree to which public research programs remain independent and are able to address the high priority issues that deserve public support. Will public research programs become too greatly directed by interests able to use their resources as grants to leverage significant public dollars for their objectives that may not be consistent with the wider good or greatest public need or priority?

### **Managing for Change**

A final challenge cited is the question of how we keep our research system's ability in line with our rapidly changing needs. Interdisciplinary research is even more important today; single disciplines may be able to attack and solve most narrow and more basic problems but many of the most pressing research needs require the expertise of several or many disciplines to develop solutions or make progress. Yet our image is that of tightly compartmented groups or disciplines within departments. We often struggle to develop the structures needed for interdisciplinary approaches or we develop them too slowly. We are constantly challenged to keep our graduate education program on the cutting edge of technology, yet relevant to the needs of future research training and the needs of industry for specific capabilities in new employees.

## **Addressing the Challenges**

Many other challenges could be discussed. Those listed represent a broad enough scope to stimulate later discussion. Our objective must be to develop strategies that answer the challenges and provide the resources and public support for meat science research in the future. I proceed from the premise that research is a necessary activity for continued progress in our industry, for our continued ability to meet human needs for nutritious muscle food products, and even to efficiently utilize available resources in food production. Further, I believe the public research organizations — universities and government — will continue as front-line sources for exploratory research and the training ground for future scientists for industry, universities and government research organizations. Last, public funds are essential for this country's research function to continue its world leadership position; industry will not in general provide the continuity of funding, long-range perspective or the wide dissemination and discussion of new knowledge essential for our future. The question is how meat science positions itself alongside all the other agendas to compete effectively for the limited resources available.

### **Address Broad Societal Concerns**

If meat scientists, or any other science community, expect to continue receiving public funding in the future, or even to hold our current relative position, we must first address the broad concerns and issues that dominate the thought of modern society. The concerns and issues must be identified, defined and, if possible, understood. What problems are presented within the issue that are amenable to solution through research approaches? Are these problems relevant to meat science? Or to put it another way, does meat science or the meat industry contribute to the problem or issue? Most importantly, we need to clearly articulate how meat scientists and meat research can or might provide answers and solutions.

### **Coalitions and Collaboration**

Too often, we try to operate in isolation, to go it alone. The independent tendencies in our nature take over and as a result, we have little effect on the final outcome of funding decisions. Meat scientists are a very small group among the science community. The bottom line is that coalitions are needed if we hope to influence the process or even be heard. It is imperative that we identify other groups interested in an issue, groups who have something in common with our interests and priorities and are looking for allies on an issue or for a particular position. Coalitions, collaboration and compromise are essential for us to exercise any influence in the decision-making process.

### **Identify Priorities**

We must identify our priorities! Language used to describe our priorities should address first the key societal issues we have identified. It is not adequate to say that we want to increase protein deposition, apply biotechnology or develop new processes, if we cannot articulate a clear

benefit to society and the benefit does not contribute to solving a high-priority problem. Potential beneficial outcomes must be emphasized in layman's terms.

Animal agriculture has developed statements of research priorities twice in the last 12 years. The Boyne Mountain Symposium in 1980 led to the first jointly supported statement of research priorities for animal agriculture. I believe it produced the impetus for establishment of a competitive grants program for animal agriculture in CSRS in 1985. The Lexington, Kentucky symposium in 1986 was a continuation of this process.

## FAIR '95

FAIR '95 is the current project to update our research priorities. We have taken seriously some of the challenges listed and the approaches and strategies suggested to implement the process. FAIR '95 is the acronym for Food Animal Integrated Research for 1995. Our goal is to develop a statement of research priorities that integrates across the disciplines, types of research (applied, basic, etc.), and commodities of animal agriculture, that represents a consensus of scientists, producers and industry, and most importantly, addresses the major, broad societal issues relevant to animal agriculture. The intent is to influence funding priorities beginning with the FY 1995 budget.

Priorities must be broadly supported. Thus, the process has as inclusive input as possible from the various entities in animal agriculture. FASFAS and its constituent societies, AVMA, commodity groups and farm organizations through the Forum for Animal Agriculture, industry and government are included in the process.

Development of priorities for FAIR '95 will be accomplished beginning with a symposium, October 18-20, 1992. Symposium participants will represent the broad base of animal agriculture constituency groups and will also include consumer, environment and other interest groups. Papers and discussion from the symposium/workshop will provide the basis for consensus on food animal research priorities. A publication outlining the priorities and a "lay" priorities document will be completed by February, 1993, along with a detailed proceedings of the symposium manuscripts. These priority documents will form the basis of a unified message and meaningful dialogue with key agencies and organizations that directly influence the research funding process.

An Executive Planning Committee, which includes representatives from the Forum for Animal Agriculture, FASFAS and the AVMA, provides overall direction and coordination. A Steering Committee with representatives from more than 40 industry and commodity groups, scientific societies and government research agencies reviews, evaluates and responds to the concepts and strategies of the Executive Committee. The Program Committee, which I chair, has developed the symposium format and program,

and will compile and edit the proceedings. A Consensus group of approximately 30 individuals will develop the broad consensus viewpoints and priorities immediately after the symposium.

A Writers Committee of about five people will prepare the priorities document and recommend the format and content for the shortened lay version. These documents will be shared with the Consensus group and the Executive and Program Committees for approval.

The symposium will focus on broad issues of concern to the general public/society and identify research priorities for animal agriculture to provide solutions. The issues identified are: **Competitiveness and Sustainability, Animal and Environmental Well-being, and Animal Products and the Consumer.** The program is envisioned as a matrix of issues in one direction and several Research and Result areas in the other direction. Research and Result areas include the Animal (as a biological entity), the Process (of animal production), the Product (food and fiber), and People (as users of or affected by the research). Each issue will be addressed in a plenary session to be followed by breakout sessions of small groups to identify researchable objectives. Authors/speakers at the plenary sessions will address the issue from the viewpoint of the public or consumer, the animal producer or industry, and the scientist. Their mission is to present the challenges for breakout groups to address. Rapporteurs will summarize the discussion of the breakout groups and report to the symposium participants on the final afternoon. The authors'/speakers' manuscripts and the records from breakout sessions will be the material used by the Consensus group to develop the broad viewpoints and priorities.

FAIR '95 is an ambitious project. Success will require effort, input, cooperation and compromise from all who participate. It will also require strong support from the sponsoring organizations in FASFAS and the FORUM. Remember the importance of coalitions. This is an essential effort if animal agriculture is to successfully communicate its research agenda and needs, inform the public of animal agriculture's important contributions to human well-being, and affect the research funding process to direct resources toward the critical research needs.

Active and aggressive participation by the American Meat Science Association and its members is essential. AMSA members and our association have given progressive and aggressive leadership to similar efforts in the past. We can be proud of our accomplishments. We cannot let narrow vision, independence, provincialism and insistence on autonomy lead to fragmentation of the effort. We all lose in that scenario. Our objective must be to define clearly how meat science research needs and priorities mesh with those of other societies, disciplines and organizations, and how they meet the needs of industry and provide solutions to society's broad concerns.