PLENARY PANEL:
A 360-DEGREE VIEW OF SCIENCE AND AGRICULTURAL POLICY
Edited Transcript

Otto Doering (Moderator), Professor of Agricultural Economics, Purdue University Natural Resources Conservation Service, USDA
Kathie Olsen, Associate Director, White House Office of Science and Technology Policy
Michael J. Engler, CEO, Cactus Feeders
Elsa Murano, Vice Chancellor and Dean of Agriculture, Texas A&M University
Linda Detwiler, Adjunct Professor, Virginia-Maryland Regional College of Veterinary Medicine, University of Maryland

MR. DOERING: I'm Otto Doering from Purdue University. I am your moderator this morning. That means I control both the hook to move the speakers, and the ray gun to zap the questioners.

I am on the staff of Purdue University. I was asked to be moderator because you always have an outsider to be a moderator. However, the Department of Agriculture did this knowing that, in fact, I am here in the Department for a period of time right now. So instead of paying for my airfare, they're paying for $1.55 of Metro. And this is basically why I was chosen. I am the budget-cutter to help the deficit.

All right. What we are going to do this morning is talk about some very broad concerns with science and the use of science. And I think one of the things that may be helpful to you is, think of the sessions this morning in the context of it helping you in the sessions that go on for the rest of the day.

As I visit with you a little bit about each of the speakers, what you will see in each of them is a linkage between bench science on the one hand, and policy and practice on the other. All of these individuals started as real scientists and went downhill from there.

In a sense, this sessions is an umbrella to the conference. A number of the specific session topics come under what the people will do this morning. But more broadly, I hope what you will get from the people this morning is a little bit more about how we need to approach science, and the use of science.

Some years ago, if you came to the Ag Outlook, the topics were primarily production. That's no longer the case. Think in terms of the different streams of science that are now being brought together to deal with a tremendous range of problems that we didn't even have on our screen years ago.

We may have similar focal points to things that we're concerned about, but we're finding it essential to come at things from different perspectives. And if you listen this morning, I hope what you will get, and I know what you will get are some hints about the many ways that we are forced today to bring science to bear on a range of very different problems.

Each speaker is going to do her or his thing for 15 minutes. With luck, we will have plenty of opportunity for questions afterwards, and we will have the roving mikes. And when we get to that point, I'll lay down the ground rules.

We're going to start with Kathie Olsen, who is associate director with the Office of Science and Technology Policy in the White House. She was a chief scientist at NASA for a period of time, involved in the technology centers, in the National Science Foundation, had a stint on Capitol Hill as a scientists. And she started as a real scientist with a Ph.D. in neuro-science at the University of California, Irvine. Let's welcome her to the stage.

Dr. OLSEN: Thank you very much. And it's an honor to be here. And what he didn't say is, up until two years ago, we also had our family farm in Clatskanie, Oregon. So I'm very aware of a number of these issues.

It's actually an honor to be here. And also an honor to have listened to the new Secretary. Anne Venamen was outstanding, a strong supporter for science. And I was really taken by the new Secretary in emphasizing the importance that science plays, and research plays for the future of agricultural activities, and the future of USDA.

For the people that are not inside the Beltway, a lot of people go, well, what is the Office of Science and Technology Policy? We are mandated by law, and we're part of the Executive Branch of the government, but the Executive Office of the President. And our role is to advise the President and the Offices of the President. That includes the Office of Management and Budget, which does the budget.

We also, and this is what I'm really going to be talking about today, lead the interagency efforts to develop policies and budget for all areas of science, especially for areas that cross the different science agencies.

Similar to USDA, we're here to build strong partnerships, and also to develop clear and measurable goals and objectives for our R&D programs.

Again, I want to emphasize, one of the things that we do is the interagency coordination among the federal science agencies.

But one of the questions we always get is, "well, how does OMB and OSTP come up with what should be our priorities?" And it's very simple. I think we all can see that.

But actually, there is a process. And it really starts with people like you in this room. It's the bottoms-up approach. What are the ideas? What are the concepts? What is the planning? What's the capability development? And why should the U.S. Government invest in this? Why the government, and why now?

It also comes down from the top. OSTP, Office of Management Budget, your Secretary, their offices and Congress, in terms of priorities, in terms of what are our constraints of our budget, strategic planning, where finally decisions come. But it's really a combination of the two. And I'm going to be talking a little bit about some things that from the bottom up we're now going to be doing some top-down priorities.

Every year OSTP and OMB provides a memo to the agencies. And in this memo we state, each agency is required to request a budget that sustains the research important for that mission.

But on top of that, there are some cross-agency activities. And I highlight the activities in purple are the ones that USDA actually plays a role, and in many cases, a major role, especially in terms of the biology of complex systems, genomics, environmental management, obesity, infectious diseases, which we've also heard the previous speakers discuss. But it is an important memo that we take seriously when we sit down to do our budget.

I just want to mention that the President's budget was released a couple weeks ago. It is the largest request for R&D. It was based on, obviously, as the Secretary said, monitoring growth of our overall spending. This is very important. But also, making our people safe and strengthening our economy. And as you know, USDA science plays a major role in both of these.

I also want to point in terms of the trend, the last five years have been the strongest years for R&D even as compared with constant 2000 dollars, and most of the R&D budget basically comes out of the discretionary spending. And this year the discretionary spending is the highest in 37 years. And actually, the bleep at the very beginning is for the Apollo years and NASA.

And I also want to point out that although the non-defense discretionary program budget was reduced by 0.26 percent, again, reducing our growth of overall spending, the actual non-defense R&D funds increased by 0.74 percent because, again, this is important for our economy and for our security.

But what about the USDA budget? In terms of research, education, economics, since you come from Washington, you need to see the budget slides. And in 2005, you see what was enacted in the 2006 budget. What was enacted, the $1.102 contained a lot of directives; (we don't call them earmarks) directed information by Congress for what USDA wants to do. And OMB does not recognize that. And so that's why you see much of that reduction is from that quote, directed or earmarked research.

But we also made some changes. And one of the changes is to phase out some of the formula-based research in favor of increased funding for competitive grants. This is part of the

President's management plan. And indeed, I think, USDA will create a $75 million dollar competitive research grant program for these initiatives.

But an important point that the President has proposed is to eliminate the count for indirect costs. We feel that this is very important, because universities now, and even our federal laboratories, are paying for the privilege of doing research on American tax dollars.

The fact that we have an artificial path really hurts in the long run the science and technology enterprise in USDA. Universities are reluctant to hire people in these fields and have them come in for USDA grants, when you compare to NIH, because NIH covers the full cost of research.

So again, in eliminating the cap for just a small program, hopefully will open up the door, because it is very important for the vitality of our programs.

I also want to just mention the Danforth report that was released July 2004. And this report proposes to establish over and above the existing programs, a new activity for fundamental basic research, and agricultural research based on competitive and peer review.

And again, some of the changes moving from the formula to more competitive was really reflecting the Danforth report, which was presented to USDA, but also to the administration. And we strongly support the Comsat (satellite).

As you know, while the President proposes in his budget, in the end, Congress disposes. And our office spends a lot of time up on the Hill talking about the importance of R&D for our future.

I wanted to pause for one minute and talk about, as I said at the very, very beginning, one of the roles of our office, interagency coordination. And we do this through the National Science and Technology Council. And it's actually a cabinet level council of advisors. But it's primarily directed from our office.

And we have, through this coordination, a committee on environment and natural resources, on science, technology, and homeland security. And I wanted to point out a couple that really impact USDA activities.

We have a working group on plant genome. As you know, Joe Jen was very supportive of the rice genome project and it's success that we celebrated about a year ago.

We also have an interagency group on genomics of domestic animals. And again, USDA just launched under Joe Jen's directorship the bovine genome. And I worked for the Senator Conrad Burns from Montana, and it's my understanding that the cow is from Montana. So they were very happy with that.

Based on the BSE activities, we've now started an interagency working group on prion science, really getting a handle on what do we need? Where do we need to put our money to address these really important activities?

Ecosystems is also chaired by USDA. And what I would like to say, coming soon, and Phyllis Johnson of ARS really was the bottoms-up that convinced OSTP and the office that we really need to do something in systematic biology and in collections, because it's important for our trade, it's important for our security, as well as advancing science. And we are, based on our interactions with the ARS, out at Beltsville, and Phyllis Johnson is going to move in that direction, and obesity is going to be very big.

We also have, through our biotech, oh yes, but we're going to make it smaller, okay.

We also have a biotech subcommittee on agriculture risk analysis. Actually, we have two, one on agriculture biotech group, and one on more of the regulation.

We strongly believe that biotechnology is developing a set of tools with potential, as already pointed out by the previous speaker, to revolutionize global health and well being for all.

But we also know that we face hurdles in terms of biotechnology. And so we have this group that's looking at the research, the risk assessment, and across agencies, to look at where we can focus the research in the area.

We also have an ag biotech group that's chaired by the White House, actually Chuck Connor of the National Economic Council. And this one gets more into the regulation.

For example, one of the highlights last year, they looked at regulation of agriculture plants that are now grown for pharmaceutical use. These kinds of activities are important for trade. Presently they're looking at regulatory oversight of transgenic animals and are about ready to present something that will be put into the Federal Register.

Also, I wanted to point out, as some of the previous speakers talked about, the importance of biomass research and development. Our office is involved in helping the interagency coordination, correlation of this. It's chaired by USDA and DOE. Alternative fuels and also clean fuels are very important; we just need to make them economical.

And finally, invasive species are something that USDA is, especially in terms of forestry, very well aware of, and a robust science and technology research program is important if we are going to be able to get a handle on that.

This is the second to last slide. I just want to point out that a very fast growing area, and one of critical importance to USDA, is their role in terms of food safety. And in this year's budget, we are going to finish constructing the center in Ames (Iowa), but it is growing, because it is an important issue for safety of all Americans.

I want to end by sort of restating what the Secretary said. He said the world is getting smaller. I say the universe is getting smaller. We can see where we are. And he says, we need to adapt, innovate, and lead through advances in science and technology. I can't agree more.

He also says that for us to continue to be successful, we need to open up the new wonders that science and technology will bring, because it will bring a better world, will bring a better universe. And I just want to say that the research at USDA in science and technology has already changed the world, but can actually even continue making greater impact on our world and our universe. Thank you very much.

MR. DOERING: Okay. What we hope this has provided is a little bit of an overview to you in terms of how policymakers, and in this case it's visibly the White House, effect the kinds of science that is undertaken.

We want to move from this a little bit and talk about the impact of science and technology on consumers, ultimately.

Mike Engler started on a good, valid, course as a good scientist, with a Ph.D. in biology at Johns Hopkins. He had a post-doc at Harvard Medical School. He taught for a while at the University of Texas Medical School. He was a senior project manager for biologicals for some subsidiaries of American Cyanamind, particularly on vaccine research.

Then he really fell a long way and entered the real world, and Mike is now senior, excuse me, he is now president and chief executive of Cactus Feeders in Amarillo, Texas. Mike, you're on.

MR. ENGLER: Thank you, Dr. Doering, and also, my thanks to the organizers of this sessions. First let me thank Will Houston, for letting me -- from the University of Minnesota -- for letting me borrow several data slides to illustrate my remarks. I will not be giving his talk. He's on the program later. But it was useful for me to make some points on policy.

Let me state the obvious, and I didn't do any market research for this, consumers want safe and wholesome foods that taste good. They also want meals that are convenient to prepare, and

sometimes even precooked, and they want consistency and quality.

Let's consider taste. Absent your mother's influence or hunger, does anyone really eat anything they don't want to? We all know that bland and boring weight reduction programs don't work. Just how sick do you have to get to take your doctor's recommendations on diet?

Consumers want food that tastes good. Flavor, aroma, juiciness, texture, all contribute to a pleasing eating experience. Individual tastes may vary, but everyone knows what they like.

And what does wholesomeness mean? I think nutritious or healthy comes to mind first, but do attributes such as locally grown, free-range, non-GMO, humanely produced, environmentally friendly, fresh, natural, and even organic mean anything to the average consumer?

Most are marketing claims with little objective differences. Since most of these come at higher prices, this must mean that some consumers prefer these qualities. Again, it seems to be very subjective.

Finally, how does one decide what is safe. And I think this would be the paramount issue of what consumers want, or the paramount attribute.

Can consumers further and further removed from the farm and the food they eat determine this for themselves? Surely, the government must take the lead here. And how is safety communicated to the public? How much information is necessary to deliver the message?

We are all deluged with too much information. How will consumers process this information? Several speakers this morning talked about the educational component. I think it's one of the keys. We don't know how consumers will judge the information we give them.

Now, common sense is sometimes defined as sound judgment. It's the combination of experience and empirical research. What you know combined with what you can figure out yourself.

Human experience is the most likely way that consumers will try to relate to new information. A common sense approach, common sense is not so common.

I've been using this thought without attribution for years, thinking it was my own idea. Today I make amends to Voltiare. And if he was thinking this in his time, what are we to think today?

Consider the BSE situation here in North America. How does the consumer of beef deal with such a mysterious disease? It certainly doesn't fit normal experience. It's infectious but not contagious. It has a very long incubation period, and is universally fatal. Infectious agent is a protein without nucleic acids called a prion. And unlike viruses and bacteria, the prion is very resistant to inactivation.

Additionally, humans can come down with a fatal disease called variant CJD that is somehow related to exposure to BSE. Common sense and intuition aren't very effective when dealing with such an unusual disease, and consequently, the fear factor is very high.

I would like to give three examples from the BSE situation of regulations based on sound science that may have been questionable at the time they were put in place by the uninformed.

First is the prohibition of feeding ruminant protein to ruminants. This slide shows the epidemic curve of BSE in the United Kingdom. Early on in the outbreak it was discovered that the disease was being spread through rendered bovine material in the feed, possibly the first case that the rendering process failed to protect animals, because it didn't inactivate the infectious agent.

Therefore, in 1988, a ban was put into place on the feeding of ruminant protein. Although much of the cattle population had already been exposed, the steady climb in cases after 1988, as shown here, must have caused great concern about the effectiveness of this measure. However, the long incubation period had to be completed for the epidemic to peak.

Today, we know that the feed ban worked to stop this epidemic. We also can be assured

that with the ban in place here since 1997, BSE will not take hold in our cattle herds. Any undetected cases would be unlikely to spread, and indeed, whatever the prevalence of the disease, we are on the declining side of the curve.

The next example, it concerns the removal of specific risk materials, SRM's, from the human food supply. As shown in this slide, infectious agent is found in specific tissues that can be excluded at slaughter. This information, plus the time course of infectivity, forms the basis for the SRM removal regulation.

No matter how often the media says that variant SJD is caused by consumption of beef, the data says that tissues other than those listed here have undetected infectivity.

My third example from the BSE situation concerns the expanded surveillance program now ongoing that has targeted the highest risk populations,and not the entire national herd.

As you can see from this European data, animals showing clinical signs and have fallen in the disabled classes, are much more likely to yield positives than the healthy slaughter. There are many times more cattle in the healthy category, but if one wants to find the disease, the high risk populations are the appropriate target.

This surveillance program is designed to estimate the prevalence of BSE in the herd, and it is not a human health measure. SRM removal is a human health measure. And all the cattlemen in the United States, and indeed, I think, all consumers should be pleased to know that as of last week, there were over 240,000 animals that have been tested, in this expanded surveillance program since last June, with no positives.

We've all heard the marketing axiom, perception is reality; that what consumers think about your product is their reality. Certainly, consumer preferences are colored by their perceptions. But what if their perception is wrong?

Misconception doesn't change the facts. For many years the public had a perception that fat makes you fat. Somehow, a recommendation to cut fat in the diet has turned into a low fat diet for all Americans, well, many Americans. Excuse me.

More recently, it seems that consumers have the belief that carbohydrates make you fat. The reality is that calories are what count, and that's always been true no matter what the popular conception.

How the USDA communicates the nutritional guidelines is very important. The answer is to close the gap between perception and reality with education.

Let me close by returning to the BSE situation and make the point, the government policy and programs can become educational statements, just like the food pyramid has been. And that they are subject to misinterpretation by the public.

Many wondered why the government wouldn't allow packers to test cattle to assure consumers both here and abroad that the beef they were eating wasn't from BSE-positive cattle. Subsequently, the government started their own large-scale testing program, and excluded the vast majority of cattle destined for human consumption.

It is easy for the uninformed to jump to the conclusions that testing the healthy slaughter would have had the most benefit to human health. But as I've mentioned before, the surveillance program isn't a human health program. Indeed, BSE isn't as much a human health concern as it is an animal health issue.

The removal of the SRM's and the other changes and procedures in the packing plants, they protect human health. We've not communicated this to the public, and perceptions formed are hard to change.

I'll end with thanks to Will Houston and the Star Tribune for the use of this cartoon, and since my remarks are so brief, I would also look forward to the panel discussion when I would entertain questions on other topics of food safety, genomics programs, anything that's the audience's pleasure. Thank you very much.

MR. DOERING: We now get to visit with Elsa Murano who is Vice Chancellor and Dean of Agriculture of Texas A&M University. And that, in and of itself, makes her a superhero. Anyone who can deal with the Texas Aggies is well beyond my competence or anything like it.

She got a Ph.D. in food science from Virginia Tech. She was on the staff at Iowa State for a number of years. And she served until recently as Undersecretary for Food Safety here in USDA. And anyone who does that, and did it during this period, has all sorts of scars from the slings and arrows. But she has recovered enough so she is able to walk to the podium and visit with you.

MS. MURANO: Thank you, Dr. Doering, very much. I was wearing flack jacket while I was here, so that protected me.

Well, I'm very happy to be here with you this morning, and I come to speak to you as a research scientist who has returned to academia after having had the privilege to serve the President as Under Secretary of Public Safety, as you heard.

And in that capacity, I helped develop policies to protect public health, some of which Dr. Engler mentioned to you.

Well, since I left USDA, I've had some time, a little bit more than two months, to think about the question of what should be the role of research or of science in developing policy.

And specifically, I chose to talk about food safety policy, since it's certainly near and dear to my heart. But also, I think it is something that, as
Dr. Engler mentioned, is very important to just about everybody.

Well, before we figure out the role of research, let's see if I can figure out how this works. Let's define research. There are many definitions. Here's one that I found. Research is the act of going up alleys to see if they are blind.

It is true, research is what provides the information by which policymakers can make science-based decisions.

Well, there are several elements that must be present so that at the end of the day, the information that is generated by that research, by science, is useful to policy makers.

In fact, you might ask yourself, do we have the objectivity, the purpose, the flexibility, and the resources to travel those alleys, to do that research that is key for policy makers to make the right decisions?

So let's explore some of these elements. There are five elements that I identified, that I think must be present for that research to be useful. And the first one is objectivity.

You might ask yourself, who is, or who are the most objective providers of science-based solutions to policy makers? Should it be research scientists? Should it be expert panelists? Should it be interest groups? Well, ladies and gentlemen, science is not a democratic process.

In our quest for information, we are using science, and that is, by definition a very, objective process, giving equal time to folks that may be well intentioned, but have a bias and don't have all the facts, but speak as if they have the authority, may even have the titles behind their name, that provide them some semblance of authority, but don't have the objectivity of having looked at the science and understand it. Is that the right mix of people that should be advising policy makers on science issues?

The second one is relevancy of science. Are we doing research that is relevant, that is

necessary for those policy makers? Well, scientists often follow the money. As it states there, how do scientists decide what research they conduct? Well, I can tell you from personal experience, we do tend to follow the money. It's what provides the support that we need to conduct research.

So shouldn't there be a stronger link, I ask you, between policy makers and funding agencies to make sure that the right research is being done? Sometimes policy makers don't necessarily get into those decisions, not all of them.

The third element is the accessibility by policy makers to those results. How do they obtain that information? Is it through reading publications and symposia? I think not. When was the last time you picked up an issue of the Journal of Food Science or, well, maybe some of you in the audience have.

But I can tell you that even I, as a scientist, trained as a scientist, when I was a policy maker, it was very difficult for me to find the time, let alone the access to all the research publications that I felt I needed to have at my disposal.

Is it the media that informs policy makers? Well, policy makers, by and large, are not scientists. They rely on their resident experts. These are the technical people who work in their respective agencies. And these people are supposed to know what they need to tell these policy makers.

Well, is that enough, or should policy makers have a more direct access to the scientific community?

The fourth element of good research is the sustainability of it. Some problems require a sustained effort before we can harvest the fruit of knowledge that we need to solve those problems. So shouldn't there be a mechanism to ensure that long-term research is supported?

So in this slide you see the question, how do scientists sustain long-term projects? Is it through competitive funds? Not really. A lot of competitive funds that are provided to scientists outside of the government are one, two-year projects, something in that order. Sometimes you get four-year projects, but not often, certainly not in agriculture. And so you have to do short-term kinds of research, and that's not necessarily ideal.

Is it through these formula funds that my colleague referred to this morning. Formula funds that are given to the land grant universities, and have been given to them for decades, those formula funds do supply a modicum of sustainability to those land grant universities to maintain the engine going that can do the research to find solutions to problems.

And the last element, flexibility of the funds. There are some problems that hit us over the head like a ton of bricks, and we need the answers quickly. So flexibility to move funds quickly or more importantly to place even new resources quickly on a new problem is essential. Do we have that flexibility?

How many of us can remember of when there has been emergency appropriations for research? Not usually. Discretionary funding? How many agencies that provide funds for research have discretionary funds, or are directed or earmarked, as she said.

So traveling the alleys, as that first slide showed you, the alley to see if it's a blind alley or not through research, it's important to have those five elements, or those five tools at your disposal.

Well, on this slide, I want to show you three examples of when some of these tools have actually worked to generate policies that are based on science to protect public health.

One good example is enforcement of HACCP (Hazard Analysis and Critical Control Point) as a prevention tool of choice to prevent contamination of food. That's just indisputable. We have seen a decline in illnesses by a series of pathogenic bacteria over the past few years, and it's no accident. It's because HACCP, the science of HACCP has finally been implemented and enforced.

The development of peer-reviewed quantitative risk assessments, a very important tool. That has been really the hallmark of a lot of the policies that have actually produced good results for public health.

And facilitating the approval of food decontamination methods, another policy that certainly was based on sound science, looking at the science of how some of these methodologies could eliminate hazardous contaminates in foods.

But of course, as you might expect, I also have a slide -- there we go -- that shows you when, in my opinion, there have been some policies generated without the advantage of having all of these elements in the science that was used.

In my opinion, the hesitancy of health agencies in actively endorsing a technology like food irradiation for highest risk foods that are consumed by the most susceptible populations is a missed opportunity, very big missed opportunity.

It would sicken me when I was Undersecretary for Food Safety to learn of outbreaks of e-coli illness, and know that when we looked at the facts, it was caused by under-cooked foods, ground beef, for example, and knowing that we had at our disposal, the tool that would have prevented such an outbreak, just absolutely sickened me. And I got very upset many times. But yet that's just the way that it is.

And it's amazing to me that health officials don't, because they continue to think that they have to be neutral in some of these more controversial issues, that they don't actively and aggressively shout it from the rooftops, “here's a technology that no, it's not going to solve all the problems in food safety; no, it shouldn't be applied to all foods; but boy, there are some foods that are absolutely tailor-made for using this technology.” And it would save lives.

Secondly, using resources to do continuous inspection, daily inspection of all foods, regardless of whether they are risky or not risky, regardless of whether they are heavily processed, therefore have a minimal risk of being contaminated, versus being raw foods that need to be really monitored very frequently, continually, it is a waste or resources, in my opinion.

And we're living in a time when, as Secretary Johanns said, you know, we have a budget, a need for the budgets to be tight; for us to look at the efficiency of what we do. And here's a policy that needs to be changed.

And third, not to be outdone by my colleagues here, and talk about BSE, when you look at the data that
Dr. Engler showed you, and you see that whole muscle cuts post no threat of being infectious with the BSE agent, and yet there are policies that say that whole cuts from animals over 30 months of age that come from countries, even countries with BSE, but countries that have a control, that remove SRM's, you know, why are those banned? It makes no sense, according to science.

So, getting the equipment. How do we ensure that we have all these tools in our science tool box to ensure that science is used as the basis for a good food safety policy, or good policy in general?

Well, objectivity, I'm suggesting here that if we can establish a formal mechanism for scientific peer reviews prior to developing policies, that that might help, because that way, instead of relying on a barrage of opinions, you're keeping to the science, with the scientists giving you the advice.

Number two, relevance. Developing a research agenda with policy makers in leading roles is very important. A lot of times the researches and the policy makers live in two separate worlds. And I've seen that first hand.

And to have the injection of the needs that policy makers have into the realm of the

researchers as they develop their agendas is very important.

Accessibility. Perhaps if we establish issue-based advisory groups of scientists who would have rapid access to policy makers, that would help. I know there's a lot of advisory groups, but they don't meet on as regular basis as maybe some policy makers need.

They need to be able to call on some, you know, SWAT-team style scientists that can tell them, yeah, let's get together, and this is the state of the knowledge on this problem, and therefore, we recommend measures X, Y and Z to you, Mr. and Mrs. Policy Maker.

Sustainability. Just to create a little controversy, I thought I would say that no only do we need to fund those formula funds, we need to increase them, in my humble opinion, because the formula funds that land grant universities receive for agricultural research is the life blood, the base of funding that establishes these programs on a long term basis, and allowed then these universities to compete for competitive grants.

I think there should be more resources there for competitive grants, but not at the expense of this life blood based of funding that these land grants are getting right now.

And lastly, flexibility. I used to talk to my colleague, Dr. Joe Jen, about this issue when we were both, I was still at USDA and, you know, he is one who would love to have discretionary funds to fund research as need be. And I'm not sure how we do that. But it needs to be done.

Well, to close, I just want to say that even if we have the right tools, it is still up to the policy makers to use them. So I encourage them, and if there are some in the room, to follow this rule of thumb that above all take a stand on science, no matter what, no matter what. Because the minute you deviate from the science, it catches up to you. And it erodes away at whatever decisions you may have made.

So with that, I thank you, Dr. Doering.

MR. DOERING: Linda Detwiler got her doctorate in veterinary medicine from the Ohio State University. She has been senior staff veterinarian on the emergency program staff of APHIS at USDA. She's been the veterinarian in charge in New Jersey with USDA APHIS there. She is now adjunct professor for Virginia/Maryland Regional College of Veterinary Medicine at the University of Maryland.

But what she also does, that I think you will find of great interest, is a great deal of advising and consulting, particularly on easily transmissible diseases for clients like McDonalds and the New Jersey Department of Agriculture, the American Farm Bureau Federation, and others. Let's welcome her.

MS. DETWILER: Thank you very much. I'm very humbled to be here in front of such a distinguished audience, and such a large audience. The only time I can remember being more nervous is, I had to give a lecture on Scrapie in Edinburgh, Scotland, and Princess Anne was in the audience.

And I thought I was under control pretty much until I looked at the pointer, and it was going de-de-de-de. I had to remember how to curtsey, and all that stuff, and it was weighing heavy on my mind.

So my topic today is a little bit different, but it will dovetail nicely with Dr. Engler's here: to talk about science and the consumer, but looking at it from the perspective of retail corporations.

What I'm going to cover is just understanding the consumer and their perception of risk. The retail corporations do a lot of this, and try and understand that, so that they can make policy accordingly. And then understanding the relationship between the retailer and the consumer.

Then I will talk about what is sound science, because we've heard science, science, science today. And I'm going to try and at least give you my perspective on that. And then the

approach to policy and how the retail corporations will get that, and how I work with them on that.

Now, just to give you my perspective from this issue, I worked with APHIS for about 19 years, mostly with TSE's (transmissible spongiform encephalopathy), some avian influenza, a little bit. And then the last year and a half I have experience with primarily restaurant and pharmaceutical industries. These are companies that have brand names on the market, and I wanted to really emphasize that. That's really important. They have brand names on the market.

When I was with USDA, we did not always think of them as traditional constituents of USDA, because we didn't really regulate them. It was more a peripheral.

But I would propose to you that what decisions are made in USDA have broad implications for these end stage users; the ones that are right over the counter to the consumer. They are either implications in regards to risk, if there is zoonotic diseases, but even the animal diseases, like APHIS, with foot and mouth prevention, avian influenza prevention, they can affect the source of supply.

And when I started at the very end of my career with the government, I started to work more with these, and say you should be concerned what APHIS does, because if tomorrow we have foot and mouth, you may not have fetal bovine serum as a source for your vaccine. And for them to revalidate is very, very difficult and expensive.

So looking at the consumer at risk, now I shamelessly borrowed these from Dr. Conrad Brunk, who is with the University of Victoria. He's a specialist in risk communication. He and I serve on a TSE and food safety foundation based out of Switzerland. And he gladly loaned me these.

The way the risk is conceived by those who think about it in terms of scientific approaches, is very different from the way it is conceived by nonexperts or the lay public. I think as experts, we want to find scientific solutions to define acceptable risks, such as risk assessment computer models. We want something very tangible to point to, to say, you know, this is how we should make the decisions, because this is what the model says. And sometimes we forget that the models are only as good as the assumptions that go into them.

And if science-based tools find the risks so low as to be obviously acceptable, a lot of times a nonexpert may appear to the scientist as being irrational or not appreciating the science.

Experts seek solutions, and they think, again, we look at this and what we tend to want to do as people that are really based in science, with the consuming public, and the lay public, is to improve the science, the education, with the assumption that the more the public understands the science, the more rational their reaction will be, or engage in strategic communication.

If we formulate the message just right, okay, then we will get a better acceptance from the public. However, according to Dr. Brunk, this falls short in a couple of areas. The public's reaction is more than a scientific assessment. It's a complex set of value judgments which are often rooted in social, religious, and political culture, and they are usually resistant to strategic communication.

So the question of safety is really, fundamentally, a question of the acceptability of risks. And it's not determined, usually, by methods of science.

Again, as experts, we look at a lot of perception and safety and decisions in making policy, like a risk, we can do it in a risk cost analysis. If there's a greater benefit, shouldn't the risk be taken? And I think even the public does that to some extent. We'll talk a little bit about choices in a little bit.

And then risk comparison. If you take risk A, which is greater, why are you afraid to take risk B? And I often hear that, especially in relationship to the TSE and BSE risk. You know, you are more likely to get hit by lightning then to come down with variant CJD disease.

And then risk probability, again, to the expert, goes to the likelihood of the risk happening is more important than risk magnitude. So that's how experts look at safety and risk.

Now, again, it's really important to understand the nonexpert perception of safety. There's greater attention given to the magnitude than the probability. So how bad are the consequences going to be? It's the dread factor. And what's going to happen versus the likelihood of it happening.

And then who bears a risk versus who bears the benefit? Again, think about yourselves. I think we all get angry if we think we're taking risks, and somebody is making money off it, or somebody has done something illegal and we're bearing all the risks and they're getting the benefit.

And then, who makes the choice? And I think this is so, so important: Do we get to make a choice, or is it not our choice as a risk, but thrust upon us.

And I would leave you with this thought. We deal a lot with agriculture issues and science in this regard; but put yourself in a situation, in an area that you are not familiar with. And you're part of that lay public, because we all are.

As an example, I have a colleague that I work with on BSE issues, and we had often talked about, the public reaction, and the fear there. And then I went to his house one day, and he was explaining that he was going to build at another site, but there were high tension wires. And he paid more in order to put his house in a different location and not by the high tension wires.

And again, you know, I'm not the expert on high tension wires, but I believe there is really not science to say there is absolute risk there, but yet, he was willing to pay more so that his kids wouldn't be by the high tension wires.

And again, this is kind of, to dovetail with Dr. Engler, as a BSE risk profile, and why there is such a fear. And I think we really need to understand this with the public when we communicate with them, when we look at policies. This is extremely important for the retail corporations.

Because when you look at this as a risk profile, we don't know for sure how you get the disease. You can't test for it. You can't vaccinate for it. You can't cook it away. It could kill your children in late adolescence. It's a slow and agonizing death. And the consumer is totally dependent upon the industry and government to do the right thing.

And how often around the world have you heard the phrase, eat beef, it's safe. The United Kingdom, the public there, the consumers heard that. Eat beef, it's safe. There's no scientific evidence it goes to humans, until 1996 when the science caught up and all of the sudden they had to announce cases, and the public felt betrayed.

Germany and Japan: eat beef, it's safe. We're never going to have BSE. And then they get BSE. I think we have to really look at what we say and combine both sides of the story.

Now, in regards to retail, and I want to make a disclaimer on here. This is not necessarily an indication of my client base, okay. This kind of sums it up. It's from a book by Al Golin. It's called, Truth or Consequences. It takes years to build trust, and minutes to lose it. Years to build trust, and minutes to lose it. And that's when you have a brand on the market, how essential and how important that is.

And this is done by the corporations on a day-to-day basis, as well as in a crisis situation. A good example is at Johnson and Johnson. They built up a reputation over time, and when the Tylenol crisis situation happened, I mean, there was an initial reaction from the public, but then they, at great cost, pulled all the material off of the shelves and went to tamper proof packages, again at great expense. And they were able to regain the public trust.

This is a quote from Professor David Hughes, and he's in the United Kingdom, and

specializes in the relationship between the consumer and who they buy from, and the retailer.

And in regards to food safety, consumers expect the retailers to have the issues sorted out, and if they find out this is not true, they are outraged. And this is why it is so important for these entities that face the consumer every day to really watch what they do, and when they make policy, and to really go the extra mile.

He also expressed concerns on entities that the consumers will approach on their concerns, the entities that they know. For example, they will go to these companies with the brand name, and they will also go to the government.

And I think we also need to realize this, when we are looking at how the consumer reacts. For example, I was at a meeting about a month ago, and there was a panel discussion on consumer reaction to BSE, and the trade associations were saying that they didn't think there was much consumer concern because one of them only got one call, and another got a few calls.

But when you really look at some of the companies I work for, they had numerous calls from consumers with some very detailed questions. Do you take downers in your supply? Do you use advanced heat recovery? Some as technical as why is blood allowed to be fed to calves?

And also, I checked with FSIS, so again, the consumer will go to the government, because that's where they look also for answers, and FSIS, between what they handled themselves, and what they outsourced, got about 3,500 calls within about the first week or so of the case that was announced in December of 2003.

So I think we need to keep in mind, too, what the consumers ask and where they go. I think a lot of it is if they are given answers, you know, that we've looked at this, then they feel relieved.

We all want policy based on sound science, and the problem is, what is sound science. And sound science is, I'm going to tell you, a moving target.

Most research findings are not definitive, especially on emerging issues. Science evolves, and it also depends on who is interpreting the science. Dr. Murano gave me a good segway into giving you an example of this.

She talked about muscle meat. Well, a lot of people don't know this, but I'm an old timer with BSE with the Department. And we allowed muscle meat in from 1986, when the British first announced it, to 1997. We did allow muscle meat under certain conditions.

But then in '96, when the British announced there was a human connection, there was very little research that had been done on muscle. In fact, they were just getting started on the cattle infectivity studies. So we just really recently got the data to feel more confident about the safety of muscle meat. And I would also caution that the research is not yet completed.

So you can see, it's evolved. The policy was made with what we knew at that time.

So just also to look at interpretation, and how it can be different, these are two quotes that I took from comments. They are U.S. entities that have commented on the Canadian feed rule, the proposed changes of removing SRM's from all animal feed, and dead stock.

And this first entity, Y, believes the removal of SRM from animal feed is not scientifically or economically justified. Entity Z, that scientific and epidemiologic findings provide more than ample justifications for further actions regarding the feed ban in Canada. So they both, you know, feel that they have the answer, based on science, or not.

So what is the science on this? Again, lets look at this issue. Well, there's a low level of disease in Canada, but we don't know the extent of that. We don't know, especially on feeding on a farm, how good the compliance was. We make some assumptions here. And we won't know for a number of years.

Research has found that the SRM's are known, are tissues known with infectivity, are closely associated. They can still be fed to species that we know by research are susceptible. There's epidemiological documentation as to cross-contamination and cross-feeding, and that rolls in the spread of SCE. And also, the World Health Organization recommends removal of SRM's from animal food, animal feed and human food chain.

So you can see that the big question here with these reasons for two different interpretations is whether there is or isn't science, is really a level of what you are willing to accept for risk.

And myself, I'm more conservative, especially dealing with the TSE's, over time. Because of long incubation, you can't react quickly. What's been done, is done. And you have years, it's too late. You have to look at these diseases. If you knew they were going to be here tomorrow, what would you have wanted to do yesterday?

So let's look at how this all kind of fits, and how the retail side has worked on this issue and even other
issues, and making policy in regards to their own specifications for products.

I have to say, they are more conservative because of that trust factor with the consumer. But they usually have policies, it has been my experience with them, policies to prevent, rather than react; that their policies tend to take precautions against worst case scenarios, instead of counting on the best case.

So when you have those two scenarios, like I mentioned, they still tend to go on the worst case, so that their consumers won't come back to them and say, you knew there was a possibility but you didn't, or you did do something.

And then when we do this process, we don't look for justifications for the status quo. We take apart the products and processes and continue to make them safer. We look for ways to make them safer.

And many times the policy is in advance of, or more than government regulation. And in all fairness, the government has a set way they usually have to go through things. The companies can do changes, specification changes usually pretty quickly. So I think that really helps.

And for example, some of the things that they've done, like some of the food companies require the dorsal area, the surrounding around the spinal cord, to be removed in addition to the spinal cord. So that's some of the things that they have done, you know, in advance of, or more than government regulation.

And this is, again, from the book Truth or Consequences, Trust or Consequences, it's fix it before it breaks. According to Al Golin, in this book, this philosophy for companies with the most trust in their consumers, they have maintained this mentality, this fix it before it breaks versus if it ain't broke, don't fix it.

So in conclusion, and I look at the companies that I work with, they take actions based on science. And this is really to build and maintain the trust of the consumer. It equates to protection of the brand. They also tell me it helps prevent or protect them, or give them more foundation when they are sued. So that's another issue there.

And then they try an anticipate the future. An example is an Avian influenza, the zoonotic form, one of the companies I work for, is a global company. We went to Thailand and we looked at worker safety. We looked at the biosecurity and their source of supply there. And we've actually started to do this now in the United States in anticipation so that they would be able to do anything they could in advance of that.

I'll leave you with just two quotes here that really hit home to me, and these were by CEO's. On Christmas morning, the CEO of a fast food chain said, that we will do everything we can, and this was after the case was announced here in the United States, we will do everything we can to protect the consumer, our employees, and our brand. And that will be the most important things that we do.

And then the high executive of a pharmaceutical company that I do some work for said, we will not put in jeopardy the name of our company, for failure to pay more money and get the most unquestionably safe source of gelatin for our capsules. So again, that is just to show you their perspective. Thank you very much.

MR. DOERING: You should realize by now you have an incredible range of experience and expertise in front of you here, from science policy and the direction of science resources, to the center point of food production that's under siege, to food safety policy and improving policy with science, and to thinking about science and the consumer, what the consumer feels and how corporations and companies deal with this.

We have an opportunity for a good question period. I am counting on you to ask the questions. If you ask a question they cannot answer, I will answer it, because as you know, economists, even though they don't know the answer, are always willing to talk about it. But I count on you.

We have microphones. I would like some hands. I see one hand over there, and lets start there. And I would ask you to keep your questions brief and crisp, and I do not want your statement on any one of these policies.

MR. WOODSER: My name is Brian Woodser. I'm an industry consultant from (indiscernible). I'd like to ask
both Dr. Murano and Dr. Detwiler for a comment about this aspect of meat science. We used to say good science, and my question then was, good for whom? Politics were very much out of it. We now say sound science, as we've heard up here. But we're still not divorced.

I would like to ask both of you if you see merit in seeking sometimes, not always, but sometimes a debate on science through a medium like the American Meat Science Association? I happen to be a lay member of that since 1974, but I have never known them to make a public statement on an issue or to put out anything in consumer information. But I think, Dr. Murano, on your point about irradiation in certain cases of ground beef, they could come out with some very good statements, or at least a debate on science. Please comment on that.

MS. DETWILER: I'll go first. You know, I don't like the term good science or even sound science. Science should suffice. Everyone should know what that means.

My mother-in-law always says her pet peeve is when people use the phrase, very unique. Something is unique or it's not unique. So it's the same way with science. It's science, or it's not science. So I would think this would be a tremendously good opportunity if we ever had an opportunity to debate on what does it mean.

Maybe the definition of science is not the same for everyone. It should be, but maybe it isn't. And that's why so many different people think that they own the definition. And I think that would be an interesting endeavor.

MS. MURANO: I actually have a good example that I think that really is actually critical. The United Kingdom, with their BSE cattle had an extreme reaction from the public, probably because of more of what they failed to tell the public that they didn't know versus what they did.

They really learned a lot of lessons from that experience, and with the whole issue about whether BSE occurs in sheep and goats, they really laid it all out for the public, all the debates about

whether it does, it doesn't occur, what would happen, what are the risks, and continually made all that available.

And this year, when the European Union announced that BSE had been found naturally in a goat, okay, so they knew about the possibility all the way from '96, and they did not have a reaction over there about safety belts, whatnot, because the public knew that they were struggling with this issue. They put policies in for prevention of what they thought the risks might be, and they didn't have.

And I think another illustration right here in our own country, and again, learning the lesson there, is with chronic wasting disease. One of the things that we learned, and even the message CDC put out with chronic wasting disease, there's not enough, there's no scientific evidence that it contributes to a human health disease. However, we really don't have enough evidence to say that definitively under all circumstances that it may not be transmissible.

People were surprised that we were so open, and the government was so honest about that. But I think that's so important, that people can handle that, knowing that even the scientists are struggling.

MR. DOERING: Other questions? Yes, please, down front here.

MS. QUAOY: I'm Michelle Kennedy Quaoy, with the Foreign Agricultural Service. I have a question with regard to the media. Today, everybody is so busy that they're really just responding to what I call sound bites. And a lot of time we take that information and we make decisions. And I wondered how much you think that factors into moving away from science-based decisions?

MR. DOERING: I think on this, if you'd just be willing to go down the line, quickly, maybe starting with you, Dr. Detwiler, and let's get some multiple opinions here.

MS. DETWILER: My experience with the media, and I've done a lot within the government and not, is that you really need to take time with the media. And it really pays off. And if you take time and develop a rapport with reporters, that can even have them to understand the difficulties in science, especially the ones that are science reporters for the mainstream press. They will usually take the time, as long as you give it.

And I have had very good reaction with those. Sometimes, when the story is hot, and there's a lot of different reporters, it's another thing. They're looking for a quick story. But I would really emphasize, take the time, spend the time to educate them. They want to get the story right, as much as they can. So that's my advice.

MS. MURANO: I'll agree with that, and I'll also add to what Dr. Detwiler said, that it's important for the scientific community to stand up and be counted on these things. A lot of time reporters who have to have a deadline to meet, they've got to talk to someone, and a lot of times the people who are most available are not the people, maybe, with the complete facts. And that's the problem.

So the scientific community has to stand up and be counted whenever there's an issue dealing with human health or whatever other scientific issues, and be available, have a relationship with reporters ahead of time, so that they know to be the source of the information.

MR. ENGLER: I would agree with that. Credible sources need to make themselves available, whether that's university or government scientists. And we have to make ourselves available. Otherwise, the press doesn't have a chance to get the story right.

MS. OLSEN: Actually, as through the last people before, I have to echo exactly what they say. And it's interesting because the point was made that science isn't yes or no. Science is always evolving. And sometimes it's important for the reporters to understand really what the scientific process

is about, as well.

And that's something that's sort of hard to see, because you want to have that sound bite, yet there is so much -- I mean, a scientist basically sets up a hypothesis, and then constantly is changing given the information that he or she has and evolves. And that process also has to be known to the public on how it's done.

MR. DOERING: Yes, please, right here. Let's hear you briefly, then I'll try to move towards the back.

QUESTION: This is for Dr. Murano. I think we heard a rather disquieting report on the relationship between scientific risk assessors and policy making risk managers. Since the WTO looks to the international standard setting bodies as reference point, would you make the same statement about the Internet?

MR. DOERING; Could you back up on the last part. The microphone cut --

QUESTION: How would you characterize the relationship between the risk assessors and the risk management, managers on international standard setting bodies such as CODEX and ITPC?

MS. MURANO: First let me say that what I was referring to is, there's not enough communication between policy makers and the scientific community to help the policy makers always make the right decisions based on the science, and the complete science. Typically, it's whatever science they have available to them.

And it's important that we don't assume that that is a given, that the policy makers have access to all of it as quickly as they need it, and as completely as they need it, and in the form that they need it to understand it. It's a struggle that you have to continually address.

In the international arena, I think it's a similar situation. It's important for us to participate in the scientific arena, and in organizations like the OIE, like CODEX to make sure that science does prevail. Because a lot of times, those bodies, those entities, they will set standards or guidelines on various things, hopefully based on all the science.

But I'm just saying, we should not assume that that automatically happens. We have to be very vigilant, and always engage the policy makers as much as we can.

MR. DOERING: Yes, please.

MR. CORBO: Yes. I'm Tony Corbo from the consumer group, Public Citizen. Dr. Murano, your talk hit a number of hot buttons, but I want to touch on one. The issue of continuous inspection and reallocating resources.

As you know, the issue of a single food safety agency is back in the news; the GAO just released a report. Has your position changed from your position as Under-Secretary on the issue of creating a single food safety agency?

And if it has not, how would you go about redoing our inspection system, across the entire continum, including some of the other agencies like FDA and EPA?

MR. DOERING: Dr. Murano, maybe give a little background to that, so that the audience knows.

MS. MURANO: I'll try. The issue of single food safety agency basically is that we have several agencies in the federal government that have regulatory oversight over various foods, and you know, we have FDA, we have FSIS,
within USDA, we have EPA, Commerce, et cetera. So the issue has been for a long time, should all of those entities be merged together into one single agency that has oversight over all foods. Is that pretty fair, Tony? Okay.

Well, my position has not changed from that of, I still need, as a scientist, to be shown

proof, objective proof as to why that would make food safer. It's that simple. Because that is the predominant question. Common sense may dictate that, sure, if you put all those agencies together into one, they should be able to do a better job and make food safer. If that were the case, then I think that is a good idea.

But what I have seen in countries where they have done that, they have merged their agencies into single agencies, that has not proven to be the case.

Now, the second question is, is it more efficient? Do you save money? You know, maybe it's not a question of the food will be safer. Will it be more economical to conduct these oversight activities, these inspection activities? And I don't have the answer to that either.

So if anything, I would have seen that there is an initial cost in merging agencies. I think we have no better example than when we've looked at the Department of Homeland Security, when that was created.

What I look for is the evidence that predominantly will make food safer. And I have not seen that in countries where they have done it.

Now, there is no question in my mind that because there are differences in the statutes, that the various agencies in the federal government right now abide by in monitoring the safety of our food supply, that there needs to be some tweaking of those, if you will, because when you have foods that are of a high safety level, because they are processed through, say, a canning process, or some process that eliminates virtually all the bacteria that may be in that product, and makes that product shelf-stable, even, how often should those operations be monitored? Should it be a continual or daily inspection like you have with some other products that are not deemed to be as safe, or that are riskier?

And that's, to me, the question that lawmakers should be looking at, is how we can change the laws to make that process more efficient. And then those resources, instead of going back to the Treasury, I might add, they need to be put into the activities that the government undertakes in the higher risk foods, and beef those up, if you will. Because I think that it's a shifting of resources. It's not an elimination of resources. It's a shifting to focus more on the foods that are of the highest risk.

MR. DOERING: Dr. Engler, would you like to add to that a little bit? You notice she said beef it up.

MR. ENGLER: Actually, I'm conflicted on this issue because it seems to me that the agencies do a good job now. And I'm concerned that we'll box it up, maybe, just like we did with Homeland Security. So maybe leave well enough alone.

MR. DOERING: The microphone is coming. If you'd identify yourself.

MR. McMINAMY: Yes. Mark McMinamy, Stanford Washington Research Group. And I have a question for
Dr. Detwiler. I think you said in your presentation that you expressed a concern that SRM's, specified risk materials are being fed now to species that are known to be susceptible to TSE's. Could you just amplify on that a little bit, which species were you thinking of?

MR. DOERING: And maybe give us a little bit more background, too.

MS. DETWILER: Sorry, that was an example, and it's hard to make it clear. Currently, there's two aspects of including the high risk material in animal feed. One is that felines are known to be susceptible. That's documented research. And the hypothesis that the cats that got sick in Europe, as well as some of the larger zoo animals, were exposed to high risk material from infected animals, infected cattle that were incubating the disease. So that's one aspect.

The other aspect about SRM's in feed is that there could be leakage back into rumins if there is infected material going into animal feed, there could be leakage through cross-contamination of

the feed system, as well as mistakes made on farms.

And I think I'll leave you with one last point, again, this is a speculation, and based on laboratory rodents, but we have to be careful. It's kind of like, where did BSE come to, that if we continue to put over time TSE infectivity, or the potential for TSE infectivity into different species, will we actually create a disease.

I mean, and that's the hypothesis of what happened with BSE, that perhaps scrapie, over time and changes in condition and rendering, actually had the disease jump species to cattle. And I think those are all cautions and precautions that we need to take.

MR. McMINAMY: Can I comment on that?

MR. DOERING: Yes, please.

MR. McMINAMY: Would you not, though, agree that we should complete our prevalence study to decide whether or not any additional measures are necessary?

MS. DETWILER: If you want my opinion, you're going to get it. Everybody that knows me, knows me. I think that the one-year period of time, while it might answer a couple of -- it will give us some level of knowing the situation -- I won't be satisfied until we have multiple years over time.

For example, we know there was infectivity in the Canadian system, probably maybe late, well early, because there had to be an initial UK case. That was recycled in the early nineties to cause domestic cases to go into the food supply, the animal feed supply in '96-97 and now we know '98. The animal was born in '98. So we know there was infectivity as late as '98 in the system.

What could have happened, those animals that were exposed to that infectivity, they actually, some of those could have been infected and gone back into the system as early as 2000-2001, when you look at incubation times.

Our surveillance at that time was at a lower level, both in the United States and Canada. Those animals might be recycled through. We won't see the effect of that disease until 2006-2007.

So again, I'm more cautious. I freely admit, I'm very conservative on policy. And I was with the USDA, as well as now. So I, if you would do surveillance over time, and to me again, if you wait until you know for sure, you are too late.

MR. DOERING: Other questions here? All right. I'm going to give a somewhat unfair question to Dr. Olsen, and that is, as I am sure she knows, in terms of the budget decisions, there is this controversy over the formula funds, versus the competitive grant funds.

And could you maybe visit with us just a little bit about some of the rationale that was gone through in talking about what are the consequences of these alternatives? What are the trade offs that are involved here, from your standpoint?

MS. OLSEN: Actually, I enjoyed the presentation, because you do make a point that's very, very important in terms of the sustainability of the R&D. That is very, very critical. And you also make a strong point about actually funds basically drive the science.

We've done a lot of studies showing trends in support in the number of undergraduates that opt to go into graduate school. When physics support was very high, we had a number of physics majors. And then it drops. Really, the students are very good. They do follow the money.

And so you have those issues. But you also have the issue of, if we were going to start again, would we actually have it based on formula at a glance, when USDA would establish your Abraham Lincoln, in terms of the state universities, and this difference between the competitive.

In terms of the way the scientific enterprise works, peer review is really the standard, and in almost all the agencies, including USDA, peer review really drives the scientific frontier.

And so you have kind of this thing where you have the formula grants, and that's

important for the stability, but you also need to look at quality relevance performance, and that's usually discussed in terms of a peer review competitive basis.

In terms of this change that was done, while the money was transferred into the competitive, it was for these institutions to compete for.

But I also want to state that one of the other issues, and one that we are very concerned about, is the cap on the research. Would there be this real concern if when you receive a USDA grant, that you actually have the indirect costs that covered the costs of that research? In many ways those formula grants are actually covering those costs.

And so one of the points that we made is going to be competitive, but it's also going to cover the cost of that research.

And I want to add that I have visited a number of land grant institutions, which are premier in this country. And one of the concerns that they bring up to me is that when they are hiring in their agriculture programs, they are not hiring people with expertise in cows and sheep and poultry. They are hiring people that have expertise in NIH-directed research, because NIH, right now, is a major driver in terms of funding.

So this is a way of bringing it back to competitive, calling for full cost accounting, and hopefully driving that aspect of the importance of agriculture researchers for our universities, our economy, and our future.

MR. DOERING: Does anyone want to respond to that?
I knew we'd have a response.

MS. MURANO: I'll say that, although I don't disagree, I think, with what you've stated, the fact that the proposed budget calls for an immediate 50 percent cut, and then elimination of these formula funds by 2007, is such a drastic measure to take because we're talking about, essentially, people.

People will lose their jobs. There will be hundreds of people per university losing their jobs. These are technicians. These are some of the graduate students, and so forth. So it's the human capital, the infrastructure that you lose immediately.

Can you recover from it? Sure, eventually. But it's one of those issues that if there's a concern about the research that is done through those formula funds not being peer reviewed, then I think there is some ways that we can address that.

So it's an issue that I think, because it's such a drastic change, that it would have a fundamental erosion of what our capabilities are right now in land grant universities, that it would be difficult to recover from that. And just simply shifting those funds to fully competitive, you know, some folks will be fine, but others certainly will not. And it's the kind of drastic measure that I just wonder whether all the unintended consequences have been thought about completely.

MR. DOERING: Dr. Detwiler?

MS. DETWILER: I'm actually going to go back, because I wanted to make a point with my topic. I'm sorry for changing. But I don't want to let this go.

As I mentioned about corporations, just in regard to SRM's, there are some corporations that have actually, in their specifications, removed SRM's and are buying products that are SRM free. And like some of the pet food companies.

MR. DOERING: Other questions out there? Yes, please. MR. JONES: My name is Frank Jones. I'm a cattle producer from Lubbock, Texas, and am certainly very concerned about the BSE and the US cattle herd. This is for
Dr. Engler.

It seems that when we have a BSE case that it's very newsworthy. How many cases have we had? And in your opinion, how many cases of CJV that can be attributed in the United States to our cattle herds?

MR. ENGLER: Well, we certainly have had only one case in the United States, the cow that stole Christmas last year. And although I think there has been a variant CJD patient in the United States, when they came down with the disease, I think they've been traced back to wrong occupation in countries such as Great Britain.

So as far as I know, there is no American due to, you know, native, on our native soil, that's come down with variant CJD. Does that answer your question?

MR. JONES: Yes.

MR. ENGLER: Does anybody disagree? I may be wrong.

SPEAKER: I want to just add, it has something to do with the question about the media. I actually was in southeast Portland when that outbreak came, and the Washington cow actually went to a distributor in southeast Portland. So the Portland Oregonian was basically, this was the entire newspaper that entire Christmas and beyond.

But one of the issues is overseeing that European cow, over and over and over again, that we saw, you know, on the media every single day, and what impact that had in not explaining, number one, that was not the cow; number two, that was not, you know, seen, I thought, you know, was very, very detrimental to our society. I mean, just a picture is worth a thousand years. And when you're saying that there might be just one cow, you know, we don't --

MR. ENGLER: So far.

SPEAKER: -- so far, that we have that image that will be with us. Again, you need to weigh the impact.

MR. JONES: (Indiscernible.)

SPEAKER: That's right.

MR. DOERING: Yes, the questioner's response was that what this means, in fact, is that there really is very little danger within the US herds.

SPEAKER: And I think the important thing for us to tell the public, to tell the consumer, is that the reason BSE, is because the level, at least that we know right now, not to say there will be no more cases, and it's safe because we removed the high risk material, and of all the actions we've done in the past.

And I think that's so important to put that line behind it.

MR. DOERING: All right. Let me just make one comment, and then you will be able to go to lunch. And that is, I hope that from the panel this morning, if nothing else, you have gained an appreciation of the very, very high value of science's participation in the real world.

While I have indicated otherwise, in fact, if you look at the careers of these individuals, moving from the bench to the real world was not a fall from grace. It was absolutely essential. And the rest of you who are in the bench sciences, it is these sorts of individuals that protect you, and try to build the public perception.

In the one sense, we need people who are willing to move from bench science into the real world. The other thing we have that we have not talked about that can be so damaging to us, is the arrogance of science. I was involved in the nitrate dispute some years ago, and saw a very eminent scientist get up, try to explain why the nitrates used in bacon, particularly, were not a major health problem.

The public audience was very skeptical, very disagreeable, and the scientist in his rage

looked at the audience and said, if only you knew science, you would know I am right. And at that point, as you can guess, he convinced the audience that he was right.

And science has a problem that way. But I think we have to think how fortunate we are to have science in the White House, science in the heart of the livestock industry, science in food safety policy, and science in the food industry, and looking at consumer response to these questions. Let's give our panel a good applause.

C E R T I F I C A T E

DEPOSITION SERVICES, INC., hereby certifies that the attached pages represent an accurate transcript of the electronic sound recording of the proceedings before the USDA Plenary Panel: A 360-Degree View of Science and Agricultural Policy.

Teresa S. Hinds, Transcriber