

BOARD

Richard L. Bond
Tyson Foods, Inc.

J. Patrick Boyle
American Meat Institute

William Buckner
Excel Corporation

Philip Clemens
Hatfield Quality Meats

Ivo Cozzini
Cozzini, Inc.

Henry A. Davis
Greater Omaha Packing Co., Inc.

Timothy T. Day
Bar-S Foods Co.

Neil Genshaft
Fresh Mark, Inc.

John Griffin
Griffin Industries, Inc.

James H. Hodges
American Meat Institute

Joel W. Johnson
Hormel Foods Corporation

Bob Kopriva
Sara Lee Foods

Carl W. Kuehne
American Foods Group

Kenneth E. Leonard
L&H Packing Company

Joseph W. Luter, III
Smithfield Foods, Inc.

Bo Manly
Premium Standard Farms

David Miniati
Ed Miniati, Inc.

Ed Nelson
Indiana Packers Corporation

Daniel Ochylski
Pinnacle Food Group

Stewart K. Owens
Bob Evans Farms, Inc.

Rick Searer
Oscar Mayer Foods

John Simons
Swift and Company

Fritz Usinger
Fred Usinger, Inc.

NEWS

A quarterly update on research, education and information

October 2003

Volume 5

Issue: 4

Pre-Harvest Food-Safety R&D 'Progressing,' Huffman Tells FSIS Symposium

After several years of investment in research studies by the AMI Foundation and other industry groups, the commercial impact of various pre-harvest interventions strategies remains uncertain, but the progress to date has been significant, Randy Huffman, AMI vice president for scientific affairs, told a scientific seminar sponsored by the Food Safety and Inspection Service in September.

"Significant pre-harvest research studies over the last several years have dramatically increased our knowledge of the challenges and complexities we face in developing valid on-farm interventions,"

Huffman told attendees at the Pre-Harvest Food Safety Seminar in Washington, D.C., in September. "However, we also recognize that there is much more work that still needs to be done."

Huffman's comments were echoed by the government officials in attendance as well.



Randall D. Huffman, Ph.D.
Vice President of
Scientific Affairs

Continued on page 4

ILSI Review of *L. monocytogenes* Provides Guide to Risk-Based Reduction Strategies

Global experts on *Listeria monocytogenes* from industry, trade associations and government presented a "road map" to guide efforts to further reduce foodborne listeriosis using a risk-based approach during the International Association for Food Protection's 90th Annual Convention in August in New Orleans.

The International Life Sciences Institute, the organization that convened the expert panel over the last year, presented the results during the *Symposium on the Use of Food Safety Objectives and Other Risk-Based Approaches to Reducing Foodborne Listeriosis*.

The expert panel met three times over the past year, in plenary session and in breakout groups, to review the state of the science and address the

question posed by the steering committee. Five breakout groups were established: 1.) Setting Public Health Goals for *Listeria monocytogenes*; 2.) Exposure Assessment Issues; 3.) Hazard Characterization Issues; 4.) Prevention/Control Strategies; and 5.) Education Strategies.

Continued on page 5

Inside this issue...

Science Soundbites	2
Ongoing Research	3
Additional Funding for AMIF Projects	5
AMIF <i>Listeria</i> and Control Workshop	6
Nutrition News	7
AMIF Debuts Re-Designed Web Site	9
Downward Trend of <i>E. coli</i> 0157:H7	10
AMIF Hosts Worker Safety Conf.	12

*Science Soundbites***Researchers Develop Faster, More Accurate Test for BSE**

A faster, more reliable test for identifying bovine spongiform encephalopathy (BSE) in live cows may soon be available, said researchers at the University of California-San Francisco. Current tests can only detect the disease postmortem.

The test, described at the national meeting of the American Chemical Society, is called the conformation-dependent immunoassay (CDI) and has already undergone animal studies.

The test can detect prion proteins with 100 percent accuracy at much lower levels than conventional tests and takes only about five hours to produce results, according to the UCSF researchers. Like conventional tests, the new test is designed for detecting prions in brain tissue at autopsy. Unlike other tests, however, the new test also shows promise for detecting the proteins in other tissues while the animal is still alive. If so, it could be used to identify precisely which animals are infected before they show symptoms and could help end the current practice of slaughtering entire herds, the scientists said.

FDA OKs Lactoferrin as Antimicrobial Spray to Fight E. coli O157:H7 on Beef

FDA has approved activated lactoferrin as a food-safety tool to fight *E. coli* O157:H7, allowing its manufacturer to begin marketing the substance as an antimicrobial spray to meat packers and processors. FDA announced the decision in August.

Lactoferrin, a protein naturally found in milk, can be applied to fresh, raw beef. The product's manufacturer, aLF Ventures, Salt Lake City, Utah, consulted with FDA about plans to market activated lactoferrin for application to beef carcasses to inhibit the colonization of *E. coli* O157:H7.

In its FDA notice, aLF Ventures noted that the amount of residual activated lactoferrin present on the beef after treatment is comparable to the amount of naturally occurring lactoferrin normally present.

aLF Ventures also submitted data to USDA regarding the effectiveness of lactoferrin against *E. coli* O157:H7. USDA is responsible for addressing labeling issues with lactoferrin-treated beef.

Lactic Acid Plus Nisin Tougher on Listeria, Study Says

A small antimicrobial peptide produced by *Lactococcus lactis* proved more effective against *Listeria monocytogenes* when used in combination with lactic acid, according to a new study published in the September *Journal of Food Protection* (Vol: 66 No. 9 pg. 1631 – 1636). Researchers theorize that the action of metal cations are responsible for the synergy between nisin and lactic acid.

Most of the salts of lactic acid, including potassium lactate, at up to 5 percent, partially inhibited the growth of *L. monocytogenes* but had no synergy with nisin. Zinc and aluminum lactate, as well as zinc and aluminum chloride (0.1 percent), worked synergistically with 100 IU of nisin per ml to control the growth of *L. monocytogenes* Scott A. No synergy was observed when zinc or aluminum lactate was used with nisin against nisin-resistant *L. monocytogenes*. The nisin-resistant strain was more sensitive to Zn lactate than was wild-type *L. monocytogenes* Scott A; however, the cellular ATP levels of the nisin-resistant strain were not significantly affected.

Administration of Common Antibiotic Shows Definitive Impact in Reducing Shedding of E. coli O157:H7 in Live Cattle

Although no specific recommendations can be currently made regarding the use of antibiotics as a control measure for *E. coli* O157:H7 in cattle, an intriguing study has provided data indicating that at least one commonly used antibiotic can effect a significant reduction in the fecal shedding of the pathogen.

A review of the research in the area of live cattle interventions was presented by James E. Keen, Ph.D., Veterinary Medical Officer with USDA's Animal Health Research Unit in Clay Center, Neb., at a recent FSIS Pre-Harvest *E. coli* O157:H7 Symposium (see lead story, page 1).

In field intervention trials conducted by Keen's group in Clay Center, the effects of oral neomycin (one treatment dose of 22 mg per kg) were measured

Continued on page 11

Ongoing AMIF Research - *Listeria monocytogenes*

<u>Investigator</u>	<u>Institution</u>	<u>Project Title</u>
Michael Doyle	University of Georgia	Recovery, Development and Validation of Appropriate Surrogate Microorganisms in Meat and Poultry Emulsions for In-plant Critical Control Point Validation Studies
Michael Doyle	University of Georgia	The Role of Aerosols in Transmission of Microorganisms (including <i>Listeria</i>) to Ready-to-Eat Meat/Poultry Products
Ferencz Denes	University of Wisconsin - Madison	Plasma-Enhanced Disinfection of Surfaces, Air, And Water in Ready-To-Eat (RTE) Meat and Poultry Processing Environments
Robert Vinopal, Richard Jademac	University of Connecticut	Development of Ion Mobility Spectrometry (IMS) Applications for <i>Listeria</i> Detection and Monitoring In-Plant Food Processing Plants
ILSI Steering Committee	International Life Sciences Institute	Expert Scientific Review Panel on <i>Listeria monocytogenes</i> In Foods
Eric Johnson and Kathleen Glass	University of Wisconsin - Madison	Intervention Strategies: Control of <i>Listeria monocytogenes</i> in Processed Meat and Poultry by Combinations of Antimicrobials
Bradley Marks, Alden Booren and Elliot Ryser	Michigan State University	Verifying and Improving the Utilization of Microbial Pathogen Computer Models for Validating Thermal Processes in the Meat Industry

Ongoing AMIF Research - *E. coli* O157:H7

<u>Investigator</u>	<u>Institution</u>	<u>Project Title</u>
Andrew Benson	University of Nebraska	Distribution of Virulent and Avirulent Subclones of <i>E. coli</i> O157:H7 in the U.S.
Dale Hancock	Washington State University	Evaluation of Efficacy of a Bacteriophage System in Preventing or Modulating <i>E. coli</i> O157:H7 Infection of Cattle
Alison O'Brien	Uniformed Services University of the Health Sciences	<i>E. coli</i> O157:H7 Intimin Expressed by Transgenic Plant Cells as a Candidate Oral Vaccine for Cattle
Michael Doyle	University of Georgia	Methods to Control <i>E. coli</i> O157:H7 in Drinking Water for Cattle
Chobi DebRoy	Pennsylvania State University	Competitive Exclusion of <i>Escherichia coli</i> O157 using Non Pathogenic Colicin Producing <i>Escherichia coli</i> Strains
Charles Kaspar	University of Wisconsin	The Use of Egg Yolk Anti-O157:H7 Immunoglobulin to Clear <i>E. coli</i> O157:H7 from the Intestinal Tracts of Cattle
¹ Mindy Brashears, ¹ Michael Galyean, ² Guy Loneragan, ¹ Spring Younts Dahl*	¹ Texas Tech University, ² West Texas A&M University	Reduction of <i>E. coli</i> O157:H7 in Beef Feedlot Cattle using Varying Doses of a Direct-Fed Microbial

To view status reports for these projects, visit www.amif.org.

Huffman: Pre-Harvest Food-Safety R&D 'Progressing'

Continued from page 1

"We are entering a 'new frontier' in food safety — that of providing [livestock] producers with effective tools to make a difference in controlling foodborne illness," said Merle Pierson, USDA deputy undersecretary for food safety. "But we know that much more remains to be done in order to reach that goal."

Pierson's remarks opened FSIS's one-day symposium on pre-harvest *E. coli* O157:H7 food safety, which featured several top researchers, key industry stakeholders and a number of USDA scientists with expertise in developing various live animal intervention strategies.

In his presentation, Huffman noted that pre-harvest research to control *E. coli* O157:H7 has eliminated more strategies than it has proven. "But this represents the logical progression of scientific understanding," he suggested. "Even though science has not yet provided industry with valid technologies to implement, the meat industry is confident that a strong government-industry commitment to pre-harvest food safety research will eventually bear fruit."

Huffman made a point to note that researchers had been encouraged by recent preliminary data on a follow-up study aimed at determining the optimum dose of direct-fed microbials in cattle feed. Those results, which were reviewed during the FSIS conference, further confirmed that the strain of *Lactobacillus* being studied appears to have a consistent, repeatable impact in reducing the number of cattle shedding *E. coli* O157:H7.

"Results such as these should provide the impetus for continuing to support future research projects," he said, adding that until recently there has been a year-to-year increase in *E. coli* O157:H7-positive samples of ground beef monitored by FSIS. A switch to larger sample sizes and the use of new and more sensitive analytical methods are the likely cause of that upward trend. Huffman noted that 2003 data to date show a significant decline in such *E. coli* O157:H7 positives, which he attributed in part to the cooperative efforts of FSIS and industry following the December 2002 FSIS notice on HACCP plan reassessment.

"Can that downward trend be sustained?" he asked. "We think it can, although only more time and further data will verify that."

To ensure that the decline in *E. coli* O157:H7 prevalence continues, Huffman outlined AMIF's three-pronged approach of communication, education and research:

- **Communication:** AMI members identified involvement in the *E. coli* O157:H7 Summit in January 2003 and participation in Beef Industry Food Safety Council activities as key priorities. More importantly, Best Practices documents for Slaughter, Fabrication, Tenderizing and Ground Beef Processing, developed jointly by AMI and other industry trade associations, are nearing completion.
- **Education:** AMI has taken the lead in actively training and educating the industry's work force with a series of workshops, including the highly successful Best Practices for Beef Processing Workshop held in April in Kansas City, Mo. Two more training workshops are slated within the next several months.
- **Research:** The AMI Foundation has been given strong financial support from members to fund solutions-oriented research in conjunction with the National Cattleman's Beef Association, USDA and several universities. To date, more than 300 proposals have been evaluated, with 10 priority projects already funded, three-quarters of which are focused on pre-harvest interventions, such as livestock management practices, feed modifications and on-farm ecology and epidemiology studies.

"While cattle will never be completely free of *E. coli* O157:H7, we are optimistic that pre-harvest research will ultimately reduce its prevalence," Huffman concluded. "There is no silver bullet on the farm — or in the plant, for that matter. But we must embrace a cooperative spirit and use science-based decisions and technologies to guide us onward."

ILSI Review of *L. monocytogenes* Reduction Strategies

Continued from page 1

The panel, a “who’s who” of *Listeria* experts, identified three landmarks to use in developing a road map to provide continuous reductions in foodborne listeriosis:

- Identifying a baseline for the number of cases of listeriosis to use for comparison purposes;
- Defining populations at risk for listeriosis – exquisitely sensitive, intermediately sensitive, normal healthy individuals, and unique high-risk subpopulations – all of whom require different control strategies;
- Defining high-risk foods, which have the potential for contamination with *L. monocytogenes* in higher numbers, to include

foods that are ready to eat, require refrigeration or are stored for an extended period of time.

Control strategies likely to reduce foodborne illness include reducing the number of servings of high-risk foods; educating consumers from at-risk populations; reformulating foods to include antimicrobials to prevent or retard the growth of *Listeria*; using postpackaging treatments to destroy *Listeria*; and establishing acceptable storage times for foods that support the growth of *Listeria*.

The AMI Foundation was among the consortium of groups that provided financial support for the project, reaffirming the Foundation’s goal of effectively reducing *L. monocytogenes*.

Additional Funding Provided for AMIF Projects

The AMI Foundation Board of Directors approved additional funding extensions for the following research projects at its July meeting in Kohler, Wis.:

- Michael P. Doyle, Ph.D., of the University of Georgia, was granted \$59,850 for a nine-month period to continue research in validating how thermal destruction of a non-pathogenic microorganism (*Pediococci* spp. NRRL B-2354) relates to that of pathogens, such as *Listeria monocytogenes* and *Salmonella*, in meat products. The project is titled “Recovery, Development and Validation of Appropriate Surrogate Microorganisms in Meat and Poultry Emulsions for In-plant Critical Control Point Validation Studies.”

Thus far, the heat resistance of the *Pediococcus* surrogate in lean ground beef at 62° C is greater but correlated to that of *L. monocytogenes* 101M and *S. senftenberg* 775W. This is a desired outcome because manageable quantities of inoculum can be prepared for use in plants, where CCP validation trials will require inoculation of large amounts of meat emulsion to be processed under actual use conditions in commercial cookers, smokers, and ovens.

For example, 1,000 pounds of meat emulsion could be inoculated with 454 mls of a 1-million

cfu/ml population of *Pediococci* and heat-treated. A 1:10 dilution of the cooked product can be plated onto mPRAB overlaid onto TSYE for a detection limit of 10 cells per gram. Failure to recover cells would indicate that about 2 log¹⁰ of *Pediococcus* surrogate have been destroyed and thus about 6 log¹⁰ of *L. monocytogenes* have also been destroyed at 62° C. A 2 log¹⁰ reduction of *Pediococcus* surrogate correlates to approximately a 6-log¹⁰ reduction of *L. monocytogenes* (at 62° C). Failure to recover the organism from enrichments would add further margins of safety, depending upon the quantity enriched.

The project requires further validations with lean and high-fat ground beef at a variety of temperatures (52° C, 58° C, and 62° C) along with in-plant trials.

- Another study, also at the University of Georgia, titled “Methods to Control *E. coli* O157 in Drinking Water for Cattle,” was granted \$69,500 in additional funding for one year. The three-phase study was initiated in August 2002. Phase I, currently complete, determined that drinking water contaminated with rumen content containing *E. coli* O157:H7 can remain contaminated for more than 35 weeks.

Continued on page 8

AMIF Holding *Listeria* Intervention and Control Workshop in December in Boston

The AMI Foundation (AMIF) will hold its popular "Implementing *Listeria* Intervention and Control" workshop Dec. 3 and 4 at the Hyatt Harborside in Boston.

The two-day course is designed to help participants examine the issues surrounding *Listeria monocytogenes* control and testing and to provide experience in developing and implementing a *Listeria* control program for ready-to-eat meat and poultry processors.

The importance of this issue is underscored by recent actions taken by the U.S. Department of Agriculture, which issued an Interim Final Rule for control of *Listeria monocytogenes* on ready-to-eat meat products effective Oct. 6, 2003. The rule establishes three risk-based alternatives for categorizing RTE products and it further emphasizes the importance of *Listeria* control programs in the RTE processing environment.

The AMIF *Listeria* workshop will address sanitation GMPs, sanitary design, microbial intervention technology, microbiological sampling, data analysis, investigation and corrective actions and regulatory compliance. The workshop also will include a technology fair where attendees can meet directly with suppliers.

Workshop participants will have the opportunity to explore on-the-job scenarios in small groups with workshop speakers and AMI regulatory and scientific affairs staff to answer questions and help solve problems. Breakout sessions will allow participants to deal with different *Listeria*-related scenarios in small groups specific to their operations.

Registration is limited to 60 participants for each workshop to ensure a quality learning experience. Workshop materials will be provided in a CD-ROM format.

To register for the workshop, visit <http://www.meatami.com> or contact Katie Brannan by phone at 703-841-3621 or via email kbrannan@meatami.com.

Advisory Committee Tackles Performance Standards, Safety Use-By Dates, 'Pasteurization' Definition

Microbiological baseline studies, safety-based use-by date labeling and the redefinition of pasteurization topped discussions at subcommittee meetings held in conjunction with FSIS's National Advisory Committee on Microbiological Criteria for Foods public meetings in August.

Subcommittees that met included the Performance Standard Subcommittee, the Subcommittee on Redefining Pasteurization and the Subcommittee on Establishing Safety-Based Consume-By Date Labels.

Performance Standards Subcommittee

In reviewing a \$1.7 million FSIS baseline study design for raw ground beef components (RGBC), the subcommittee came to several key conclusions to identify the contribution of various RGBC categories to the prevalence of pathogens such as *Salmonella* and *E. coli* O157:H7, and to measure indicators of process control. The full committee accepted the conclusions in plenary sessions. The subcommittee determined that sample collectors should gather information on geographic locations, age of animal (over/under 30 months), antimicrobial interventions used, processing line speed, source of animal and estimated volume of product produced in a 24-hour period.

The subcommittee concluded that RGBC categories should be re-prioritized as follows: 1.) Domestic trim and subprimals 2.) Meat derived from advanced meat recovery; 3.) Low-temperature rendered products; 4.) Imported frozen and fresh beef; and 5.) Weasand, cheek and head meat.

Although FSIS plans to conduct baseline studies on these categories sequentially, the subcommittee suggested that the agency consider linking category samples, where possible, to the same lot of live-stock. Also, pilot surveys may be necessary on categories 2 through 5 to determine relative risk of the categories and adjust prioritization as necessary. The Committee agreed with FSIS on the organisms selected for the baseline study: *E. coli* O157:H7 and O157:NM strains; *Salmonella*; generic *E. coli*; total coliforms; *Enterobacteriaceae*; and APC.

Continued on page 9

Nutrition News

USDA Calls for Public Comments on Technical Support Data for Food Guide Pyramid Revision

USDA last month called for public comments on proposed revisions to the daily food intake patterns that serve as the technical basis for the Food Guide Pyramid.

USDA is reassessing the Food Guide Pyramid, which was originally developed in 1992 to help consumers implement the *Dietary Guidelines for Americans*. The proposed daily food intake patterns have been updated to meet new nutritional standards, including the National Academy of Sciences' Institute of Medicine Dietary Reference Intakes for vitamins, minerals and macronutrients released between 1997 and 2002. The update of the Pyramid is being coordinated with the 2005 Dietary Guidelines Advisory Committee as it reviews the *Dietary Guidelines for Americans* and recommends revisions to USDA and the Department of Health and Human Services.

The Food Guide Pyramid reassessment and updating process has three phases:

- Gathering information through technical research, professional and public input, and consumer research;
- Updating of the Pyramid's daily food intake patterns to meet current nutritional standards; and
- Developing new graphic and educational materials that communicate Pyramid messages in ways consumers can more easily understand and put into practice.

A *Federal Register* notice was published on Sept. 11 and calls for a 45-day comment period. Following the comment period, USDA will consider all input received in revising the daily food intake patterns for the Pyramid. Then, revisions to the Food Guide Pyramid graphic and consumer materials will be initiated, and a second *Federal Register* notice to solicit comments on the graphic design will be issued in 2004.

For more information on the Pyramid and the *Federal Register* notice, visit USDA's Web site at <http://www.cnpp.usda.gov>. Written comments on the daily food intake patterns can be submitted to: Food Guide Pyramid Reassessment Team, USDA Center for Nutrition Policy and Promotion, 3101 Park Center Drive, Room 1034, Alexandria, VA 22302.

HHS, USDA Select Panel of Experts to Revise Dietary Guidelines for 2005.

Thirteen medical and nutritional experts were designated last month to serve on the Dietary Guidelines Advisory Committee, a group responsible for reviewing the *Dietary Guidelines for Americans* report, which is published every five years. The group uses the latest scientific and medical knowledge to advise the general public on ways to improve overall health through proper nutrition.

The Committee designees met this fall to review and update the most recent scientific literature in preparation for the release of the 2005 version of *Dietary Guidelines for Americans*, the sixth edition. Selected for their scientific expertise related to dietary and health issues, the committee members will advise the Department of Health and Human Services and USDA on any revisions necessary to the guidelines before they are republished. In addition, the designees are responsible for ensuring that the science underlying the Guidelines is communicated to the public in a user-friendly, easily understandable format.

To prepare the Guidelines for release, the committee will examine the new Dietary Reference Intakes by the Institute of Medicine; the World Health Organization report on Diet, Nutrition and the Prevention of Chronic Diseases; and other recent scientific research.

Health and Human Services Secretary Tommy G. Thompson and USDA Secretary Ann M. Veneman announced the following committee selections:

- Lawrence J. Appel, M.D., M.P.H., Professor of Medicine, Johns Hopkins University School of Medicine, Baltimore.
- Yvonne Bronner, Sc.D., R.D., L.D., Professor and Director of MPH/DrPH Program, Morgan State University, Baltimore.
- Benjamin Caballero, M.D., Ph.D., Director and Professor of the Center for Human Nutrition and Division of Human Nutrition, Department of International Health, Johns Hopkins Bloomberg School of Public Health, Baltimore.

Continued on page 12

Additional Funding Provided for AMIF Projects

Continued from page 5

In Phase II, the UGA researchers will evaluate various treatments that can be applied to drinking water. In Phase III, researchers will focus on combinations of promising treatments identified from Phase II.

- A third University of Georgia project, titled “The Role of Aerosols in Transmission of Microorganisms (including *Listeria*) to Ready-to-Eat Meat and Poultry Products,” was granted \$76,500 for an additional year of study. The research aims to understand the relationship between airborne *Listeria* to direct ready-to-eat meat product contamination and to environmental contamination that could lead to product contamination.

Thus far, the research indicates that *L. monocytogenes* experiences rapid reduction in concentration upon becoming aerosolized. The study used a nebulizer capable of delivering 5 um particles. For example, high levels of *L. monocytogenes* failed to contaminate 57 square centimeters of exposed ham surface at 75 percent relative humidity over a three hour time period.

The next stage of the research will include bio-aerosol chamber studies to determine the following:

- The impact of percent relative humidity (RH) on *L. monocytogenes*, *Jonesia* (formerly *Listeria*) *denitrificans* (J.d.), and *B. stearothermophilus* (B. St.) death and injury;
- The effect of percent RH and *L. monocytogenes*, J.d. and B. St. level on detectable product contamination;
- Correlation of *L. monocytogenes* and J.d. death, injury and settling rate to validate use of J.d.;
- Further characterization of bio-aerosol size distribution in the test chamber;
- Comparison of air sampling methods to recover *L. monocytogenes*, J.d. and B. St.;
- Determination of efficacy of sanitizer fog treatments to destroy bio-aerosols.

- The committee also granted additional funding for a project by Charles W. Kaspar Ph.D., of the University of Wisconsin-Madison, titled “The Use of Egg Yolk Anti-O157:H7 Immunoglobulin to Clear *E. coli* O157:H7 from the Intestinal Tracts of Cattle.” An additional \$55,000 was granted for another year of study.

The research is evaluating oral administration of avian anti-O157:H7 immunoglobulin to cattle in order to clear *E. coli* O157:H7 from the intestinal tract. Results from the first year indicate that the immunogen used to generate egg antibodies is an important factor in building passive immunity and reducing the number of *E. coli* O157:H7 shed in cattle.

Accordingly, in the second year, there will be a focus on the production of antibodies to defined targets, such as Tir (receptor for intimin) and outer membrane proteins. It was also determined that high-titer antibody preparations are necessary to impact the numbers of *E. coli* O157:H7 shed. To adjust for the varied immune response in individual chickens, the antibody will be concentrated by ammonium sulfate precipitation, pooled, and administered to cattle at 1 to 5 g per day.

The following are specific objectives for the second year:

- Immunize laying hens with Tir and outer-membrane extracts of *E. coli* O157:H7;
- Harvest and concentrate egg antibody;
- Monitor *E. coli* O157:H7 shedding in inoculated steers prior to and after administration of anti-Tir and outer membrane proteins antibodies delivered orally in feed and compare with shedding in control animals.

(See the ongoing research grid on Page 3, for more AMI Foundation-funded projects.)

Advisory Committee Tackles Performance Standards

Continued from page 6

Subcommittee on Redefining Pasteurization

FDA has been asked to determine whether alternative technologies can achieve "pasteurization" to the extent that products will remain free of pathogens throughout normal shelf life under normal and moderate abuse conditions.

The subcommittee reviewed information regarding pasteurization technologies such as high-pressure and pulsed-light, irradiation and steam. The subcommittee visited Chicago-area irradiation technology centers in September as part of its ongoing evaluation of those technologies and their relationships to the concepts of pasteurization. A major question remains as to whether "pasteurization" should be applied only to ready-to-eat (RTE) foods.

Subcommittee on Establishing Safety-Based Consume-By Date Labels

The subcommittee prepared a draft document on safety-based consume-by dates that addresses the following issues:

- Scope and background of the issue;

- Epidemiological data on the relationship of shelf life to vectors of contamination;
- Foods considered to be refrigerated RTE foods for which safety-based consume-by date labels (SBDL) might be appropriate;
- Role of consumer in maintaining the safety of refrigerated RTE foods;
- Scientific parameters necessary to establish SBDL for refrigerated RTE foods;
- Verification and validation of SBDL;
- Role of modeling in establishing SBDL; and
- Impact of SBDL on all psychrophilic (cold-loving) pathogens.

The draft report is preliminary and will be subject to many modifications and changes. Major hurdles include Centers for Disease Control epidemiological data that may not adequately define the relationship of shelf life to contamination vectors; the difficulty of linking SBDL to consumer practices, and the role of retail establishments in impacting shelf life, safety and application of SBDL.

The subcommittee will continue to work on this document throughout 2005.

AMI Foundation Debuts Newly Re-Designed Web Site

The AMI Foundation put a fresh new face on the wealth of scientific information and research data the Foundation offers with the launch of its newly re-formatted Web site.

The new site (www.amif.org) has been re-designed with a bold color scheme and a distinctive new "look" that provides users a more functional navigation scheme for accessing the Web site's resources. Key information categories, such as science-related news stories, regulatory developments and current research status reports are now more readily accessible than ever.

The site still offers user access to the popular AMI Process Lethality Spreadsheet, which allows processors to plug in their time and temperature data to validate microbial lethality during thermal processing.

And for scientific trivia lovers — as well as those who simply enjoy learning more about the impact of science-related developments on industry issues — don't miss the site's new "Did You Know?" feature, which offers facts and figures on meat science, food safety and Foundation research to add to your store-house of knowledge about meat packing and processing.

To explore the new AMI Foundation Web site, visit <http://www.amif.org>.



Fat Intake, Disease Risk Factors Focus of First Dietary Guidelines Advisory Committee Meeting

Last month's meeting of the Dietary Guidelines Advisory Committee was the first in a yearlong process to rewrite dietary guidelines that may touch on everything from the validity of the Atkins diet to the type and amount of different oils and fats Americans should consume.

The meeting was held at the Department of Health and Human Services Sept. 23 and 24 to discuss revisions to the 2000 version of the *Dietary Guidelines for Americans*. The committee, comprised of 13 medical and nutritional experts, discussed aspects of the Dietary Guidelines ranging from food allergens and food safety to whether the Guidelines should be written as weight loss Guidelines, considering how many Americans are overweight, or if they should follow the previous pattern and make recommendations to healthy Americans on how to maintain optimal weight.

The committee has been instructed to link eating foods and chronic diseases where possible, such as Heart Disease and consumption of saturated fats and Type II Diabetes with consumption of sugars. The committee likely will link consumption of fats

with cancer, citing increased scientific evidence of a direct link since publication of the 2000 edition of the *Dietary Guidelines*.

The committee plans also to evaluate the science behind the recommended carbohydrate to fat ratio in diets and the basis for recommended consumption limits for monounsaturated fat, polyunsaturated fat, trans fat, and saturated fat. The committee said that there will be an increased emphasis on the need to consume meat and poultry low in saturated and trans fat, but changes are unlikely to the current recommendation of two to three servings of low fat meat or poultry a day.

Sections on food allergens, dietary supplements and drug interactions also may be added.

The committee will meet in January, March, and May of 2005. Time for public comments is scheduled for the January meeting. The report will be delivered to HHS and USDA in early June to permit the agencies to conduct consumer testing of appropriate messaging for the guidance.

Downward Trend of *E. coli* O157:H7 Indicates Success of Multi-Hurdle Food Safety Strategy, AMIF Says

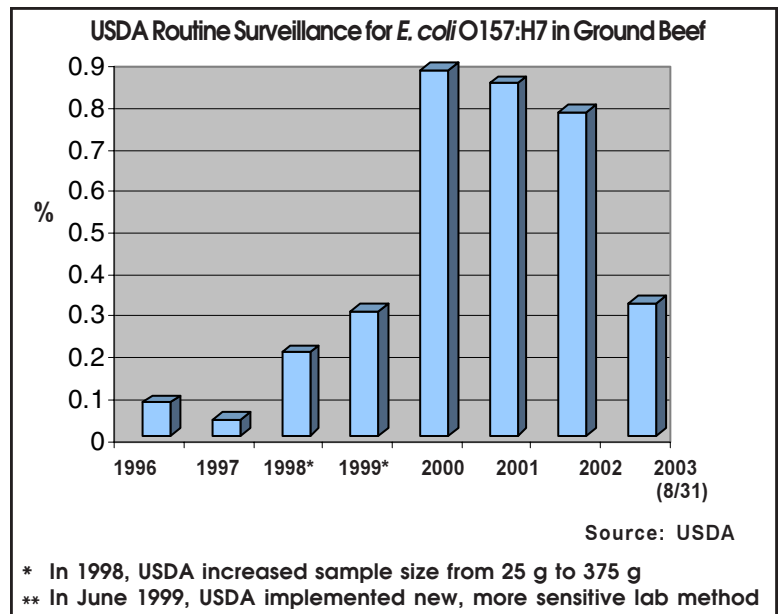
USDA data showing a drop in the number of *E. coli* O157:H7 positive samples in ground beef collected reflects the success of a multiple-hurdle approach to food safety by industry and government alike, the AMI Foundation reported in September.

Of the samples collected and analyzed through Aug. 31, 0.32 percent tested positive for *E. coli* O157:H7, down from 0.78 percent in 2002 and 0.84 percent in 2001, USDA announced last week. Since 2001, FSIS has collected more than 7,000 samples annually to test for the presence of *E. coli* O157:H7 in raw ground beef. USDA released the data late last week.

AMI Foundation President James Hodges said that AMI supports USDA's message that the industry's reliance on "multiple-hurdle" systems to control pathogens in fresh meat products has proven effective.

"The implementation of a variety of anti-microbial interventions in plants has undoubtedly had an impact," Hodges said. "The commitment of

meat packers and processors to funding new research and using current intervention strategies in the plant is now bearing fruit."



AMI Foundation Animal Care and Handling Conference Slated for February 18-19, 2004 at Hyatt Regency Kansas City

The AMI Foundation's 2004 Animal Care and Handling Conference for the Food Industry is slated for Feb. 18-19, 2004, at the Hyatt Regency Kansas City in Kansas City, Mo.

Now in its sixth year, the conference has grown to more than 300 attendees. This year's event includes a half-day session on "big picture" issues, as well as a two additional half-day sessions focusing on applied production, handling and stunning techniques. Three species-specific tracks will be included in this conference—beef, pork and egg.

The conference is targeted to CEOs, plant managers, operations personnel, training directors and anyone with a role in handling and processing livestock and poultry.

Experts in the field of animal production, care and handling from universities in the United States and Canada will headline this year's conference. Faculty scheduled to address the conference include Temple Grandin, Ph.D., of Colorado State University; David Meisinger, Ph.D., and Anna Johnson, Ph.D., of the National Pork Board. A host of other industry and academic experts also will make presentations.

The conference will offer an important update about a new customer-driven Animal Welfare Audit Program and how it will affect livestock and poultry producers and processors. In addition, the conference reception will feature exhibits to enable conference attendees to discuss equipment and other issues with vendors in a relaxed setting.

The conference will conclude with a Grand Finale Best Practices Session to give attendees the opportunity to share ideas they have implemented in their operations in areas that include transport, handling, stunning and training.

Animal Agriculture Alliance, the American Association of Swine Veterinarians, the Food Marketing Institute, National Council of Chain Restaurants, National Grocers Association, National Milk Producers Federation, National Pork Board, the National Pork Producers Council and United Egg Producers are cosponsoring the event.

Science Soundbites

Continued from page 3

on fecal shedding of *E. coli* O157 in 16 "naturally infected" control steers and 16 neomycin-treated steers. Keen's research group found that on the third day following the single administration of neomycin, *E. coli* O157:H7 levels as measured in manure samples "essentially dropped below the practical limits of detection."

By contrast, the control group of 16 naturally infected steers showed no significant decrease in the amount or incidence of *E. coli* O157:H7 shedding, according to Keen.

"Compared with other interventions we studied — including disinfection of feed bunkers and pens, substitution of hay for grain and even the use of approved probiotics — only neomycin administration had a significant and repeatable impact on the incidence and occurrence of fecal *E. coli* O157:H7 shedding," Keen concluded.

Animal Welfare Science Conference Set

A new science conference called the International Meat Animal Welfare Research Conference will be held immediately prior to the conference on Feb. 17. Cosponsored by the Federation of Animal Sciences Societies, the conference will feature in-depth scientific presentations on animal welfare in cattle and hog production and slaughter. The conference is aimed at scientists and veterinarians in academia and industry. Posters will be presented on a variety of topics.

Registration fees for the IMAWRC are \$125 for members of any sponsoring organizations and \$225 for non-members. To attend both the Animal Care and Handling Conference and the IMAWRC, rates are as follows: Members of sponsoring organizations - \$425; three or more members from same company - \$395; Non-member - \$550.

To register, visit www.MeatAMI.com. For questions regarding the conference, contact AMI's Director of Education and Professional Development Marie E. DeLucia, mdelucia@meatami.com.

Nutrition News

Continued from page 7

- Carlos Arturo Camargo, Jr., M.D., Dr.P.H., Assistant Professor of Medicine, Harvard Medical School; Assistant Professor of Epidemiology, Harvard School of Public Health, Boston.
- Fergus M. Clydesdale, Ph.D., Professor of Food Science and Dean of the College of Natural Resources and the Environment, University of Massachusetts, Amherst.
- Vay Liang W. Go, M.D., Professor of Medicine, University of California at Los Angeles (UCLA) School of Medicine.
- Janet C. King, Ph.D., R.D., Senior Scientist, Children's Hospital Oakland Research Institute, Oakland, Calif., Professor Emerita, Department of Nutritional Sciences and Toxicology, University of California at Berkeley, Calif.; Adjunct Professor, Department of Nutrition and the Department of Internal Medicine; University of California at Davis.
- Penny M. Kris-Etherton, Ph.D., R.D., Distinguished Professor of Nutrition, Pennsylvania State University, University Park.
- Joanne R. Lupton, Ph.D., Professor of Animal Science, of Food Science and Technology, of Nutritional Sciences, and of Veterinary Anatomy and Public Health, Texas A&M University, College Station.
- Theresa A. Nicklas, Dr.P.H., M.P.H., L.N., Professor of Pediatrics, Department of Pediatrics, Children's Nutrition Research Center, Baylor College of Medicine, Houston.
- Russell R. Pate, Ph.D., Associate Dean for Research, School of Public Health, and Professor, Department of Exercise Science, University of South Carolina, Columbia.
- F. Xavier Pi-Sunyer, M.D., M.P.H., Director, Obesity Research Center, Professor of Medicine, Columbia University College of Physicians and Surgeons; Chief, Division of Endocrinology, Diabetes, and Nutrition, St. Luke's-Roosevelt Hospital, New York City.
- Connie M. Weaver, Ph.D., Head and Distinguished Professor, Department of Foods and Nutrition, Purdue University, West Lafayette, Ind.

AMIF Hosts Worker Safety, Health and Human Resources Conference in April

The AMI Foundation (AMIF) will host the 2004 Worker Safety, Health and Human Resources Conference April 18 - 20, 2004, at the Phoenix Hyatt in Phoenix. The event is the premier meat industry occupational safety conference, now in its 16th consecutive year.

New this year will be several workshops focusing on leadership development including sessions on identifying and cultivating managers; facilitation skills; coaching; counseling and mentoring; communication and people development; and a roundtable discussion on leadership best practices.

Neil Wasser, partner at Constangy, Brooks & Smith, headlines the April 20, 2004, general session with an annual review and analysis of OSHA activities. The "2003 OSHA Review and 2004 Expectations" will provide an expert analysis of key agency activities and directions.

Monday and Tuesday courses and update sessions will run throughout both days giving attendees a chance to maximize their educational opportunities. There are 16 unique, one-hour workshops on topics such as ergonomics, food safety and security, electrical safety, wellness programs, workplace violence, plant security and medical management.

The conference concludes with the 2004 Safety Awards Banquet, where plants with exceptional worker safety records will be recognized and saluted.

AMIF Contacts

All AMIF staff can be reached at 1700 North Moore Street, Suite 1600, Arlington, VA, 22209, phone 703/841-2400, or at the email addresses listed below.

James H. Hodges, president, jhodges@meatami.com

Randall D. Huffman, Ph.D., vice president, scientific affairs, rhuffman@meatami.com

Janet M. Riley, senior vice president, public affairs and professional development, jriley@meatami.com

Dan Murphy, vice president, public affairs, dmurphy@meatami.com

Josee Meehan, senior manager, public affairs, jmeehan@meatami.com

Susan Backus, project manager, scientific affairs, sbackus@meatami.com