

AMIF Foundation News

A Quarterly Update on Research, Education and Information

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Major Foodborne Illnesses on 'Continued and Sustained Decline,' Says CDC

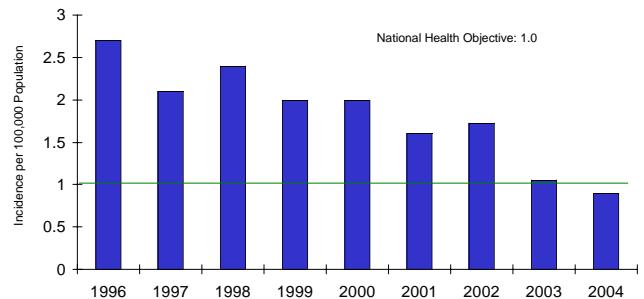
Rates of *E. coli* O157:H7 Infections Reach the Healthy People 2010 Goal

Foodborne illnesses in the U.S. are on a "continued and sustained decline" from the baseline years 1996-1998, with a 42 percent drop in illnesses from *E. coli* O157:H7, a 40 percent drop in listeriosis, 31 percent drop in campylobacteriosis and an eight percent drop in salmonellosis, announced Dr. Robert Tauxe of the Centers for Disease Control and Prevention (CDC) during a joint press conference with USDA and FDA.

Tauxe called the reduction "important progress" and noted that for the first time, *E. coli* O157:H7 associated illness reductions have dropped below the Healthy People 2010 projected goal of one illness per 100,000 population.

Officials credited "changes in meat industry practices" with part of the success of the declines, particularly efforts aimed at *E. coli* O157:H7 reduction in ground beef (see below). Dr. Merle Pierson, acting under secretary for food safety, USDA said, "Industry has been very responsive in taking aggressive steps" that lead to reductions.

Incidence of Diagnosed *E. coli* O157:H7 Infections in the U.S. 1996-2004



*Preliminary FoodNet Data on the Incidence of Foodborne Illnesses --- Selected Sites, United States, 2004

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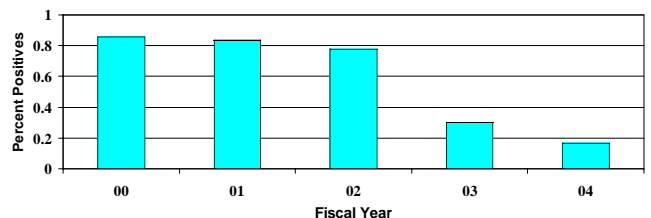
FSIS: *E. coli* O157:H7 Prevalence In Ground Beef Sampling Down By 43 Percent

E. coli O157:H7 prevalence in ground beef sampling is down 43.3 percent from last year, according to the U.S.

Department of Agriculture's Food Safety and Inspection Service (FSIS).

Of the 8,010 samples collected and analyzed in 2004, 0.17 percent tested positive for *E. coli* O157:H7, down from 0.30 in 2003, 0.78 in 2002, 0.84 in 2001 and 0.86 in 2000. Between 2000 and 2004, the percentage of positive samples in FSIS regulatory sampling has declined by more than 80 percent.

Prevalence of *E. coli* O157:H7 in Ground Beef¹



¹ Results of raw ground beef products analyzed for *E. coli* O157:H7 in federal plants.

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Science Soundbites: A review of recent research

Georgia's Center for Food Safety Develops Culture To Limit Pathogens on Poultry

University of Georgia's Center for Food Safety has developed an oral culture that substantially reduces the level of *Salmonella* carriage in chickens. The culture was produced using competitive exclusion (CE) bacteria.

The objective of the study was to develop a defined CE bacterial culture that can substantially reduce *Salmonella* and/or *Campylobacter* carriage by poultry. The researchers screened millions of bacterial colonies from 9 chickens for antimicrobial activity to *Salmonella* (5 serotypes) and *Campylobacter* (6 strains) in vitro.

Adult chickens from family farms, commercial farms and research centers were sampled to identify *Salmonella*- and *Campylobacter*-free donors of CE bacteria. The CE bacteria were orally administered to day-of-hatch chicks and *Salmonella* was administered 2 days later by gavage. Feeding chicks an overnight culture of *L. salivarius* reduced *Salmonella* carriage in cecal contents. Feeding chicks a mixture of three CE isolates had an antagonistic effect against *Salmonella* colonization similar to the individual CE strains. Feeding a mixture of *Streptococcus cristatus* List40-13 and *L. salivarius* List40-41 reduced *Salmonella*-positive carriage in chickens by 35 percent and 57 percent in two trials and in their cecal content.

For more information, contact Michael P. Doyle, Ph.D. at 770-228-7284 or mdoyle@uga.edu

Study Determines Raw Product As Origin of Specific In-Plant *Listeria* Strains

University of Georgia researchers at the Center for Food Safety have determined that raw product is an important source of *Listeria monocytogenes* at a poultry plant that processes ready-to-eat (RTE) poultry products and the plant can have multiple resident strains of *L.m.*

The study objective was to determine the origin of specific strains of *L.m.* isolated from a further-processing poultry plant and to determine if some strains establish themselves in the plant.

Environmental swabs were collected from the plant at 6-week intervals for one year, with each swabbed site examined before and after a production shift. One hundred sixty-one *Lm* isolates were collected from 75 positive samples. A total of 14 unique genotypes were detected through the course of the study.

Multiple subtypes were often simultaneously isolated from a single site, usually the floor drain. According to the researchers, these subtypes may exhibit characteristics that allow them to survive cleaning/sanitation processes better than non-persistent subtypes.

For more information, contact Michael P. Doyle, Ph.D. at 770-228-7284 or mdoyle@uga.edu.

Sodium Nitrite Used Medically for Heart Attack and Organ Damage

A current animal study suggests that sodium nitrite could be used to protect and preserve tissue and organ function after heart attack, high risk abdominal surgery and organ transplantation. Scientists from the

National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health (NIH) found that low concentrations of sodium nitrite had a strong protective effect – preventing cell death in the hearts and livers of mice.

In the heart study, nitrite reduced the size of the area of dead tissue by 67 percent compared to control animals given nitrate, another nitrogen compound. In both the liver and heart components, the effects of both lower and higher concentrations of nitrite versus control treatments of saline or nitrate were compared. Only low concentrations of nitrite provided protection against injury.

The study, "Cytoprotective Effects of Nitrite During In Vivo Ischemia-Reperfusion of the Heart and Liver," led by David Lefer, Ph.D. and Mark Gladwin, M.D., follows another study conducted by the NIH team that found that infusions of sodium nitrite into human circulation leads to the production of nitric oxide (NO), a strong blood vessel dilating molecule that increases blood flow.

Gladwin is currently studying the use of sodium nitrite as a way to help adults with sickle cell disease. It is hoped that this treatment will reverse the effect of decreased blood flow due to the patients' "sickled" blood cells.

This study was conducted in collaboration with investigators supported by the National Institute of Diabetes and Digestive and Kidney Diseases at Louisiana State University Health Sciences Center.

This article will be published in the May issue of *The Journal of Clinical Investigation*.

Ongoing *E. coli* O157:H7 Research Projects

<u>Investigator</u>	<u>Institution</u>	<u>Project Title</u>	<u>Timeline</u>
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	Three years
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	Two years
Mohammed Koohmaraie ^a	USDA-ARS - Meat Animal Research Center	Beef Carcass Surface Irradiation	Two years
John Scanga, J.N. Sofos, K.E. Belk, G.C. Smith	Colorado State University	Use of Warm (55 C) 2.5% or 5.0% Lactic Acid for: (A) Reducing Microbial Counts on Beef Subprimal Cuts and Beef Trimmings Following Fabrication, and (B) Reducing Incidence of <i>E. coli</i> O157:H7 in Combo-Bins of Beef Trimmings and Inside (in the interior) Beef Cuts Subjected to Blade/Needle or Moisture-Enhancement Tenderization	One year
Kumar Venkitanarayanan	University of Connecticut	Inactivation of <i>Escherichia coli</i> O157:H7 in Drinking Water of Cattle by Sodium Caprylate	One year
Rowland Cobbold ¹ , Tom Besser ¹ , Dale Hancock ¹ , Janice Berg ² , b	¹ Washington State University, ² Lakeside Research	Role of Super-shedders in Determining Feedlot Pen Prevalence of <i>E. coli</i> O157:H7	One year
Randall Phebus, James Marsden, Carlos Arturo Tanus	Kansas State University	Elimination of <i>Escherichia coli</i> O157:H7 and <i>Salmonella</i> spp. on Beef Trimmings Prior to Grinding Using a Controlled Phase Carbon Dioxide System: Process Validation and Quality	One year

a This project is funded in part by America's Beef Producers

b This project is co-funded by the National Cattlemen's Beef Association.

Ongoing *Listeria monocytogenes* Research Projects

<u>Investigator</u>	<u>Institution</u>	<u>Project Title</u>	<u>Timeline</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	Two years
Michael Doyle	University of Georgia	The Role of Aerosols in Transmission of Microorganisms (including <i>Listeria</i>) to Ready-to-Eat Meat/Poultry Products	Two years
ILSI Steering Committee	International Life Sciences Institute	Expert Scientific Review Panel on <i>Listeria monocytogenes</i> In Foods	18 months
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	Two years
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	Two years
Kumar Venkitanarayanan, Cameron Faustman, David Dzurec	University of Connecticut	Inactivation of <i>Listeria monocytogenes</i> on Ready-to-Eat Meat Products (Deli Turkey Breast and Frankfurter) by Monocaprylin	Two years
Peter Muriana, J. Roy Escoubas	Oklahoma State University	Pre- and Post-package Pasteurization of RTE Meats for Reduction of <i>Listeria monocytogenes</i>	18 months
Barbara Petersen, Leila Barraj	Exponent, Inc.	FSIS Risk Assessment for <i>Listeria monocytogenes</i> in Deli Meats	One year
Charles Carpenter, Jeff Broadbent	Utah State University	Anti- <i>Listeria</i> Action of Levulinate	Two years
Kathleen Glass, James Claus	University of Wisconsin	Controlling <i>Listeria monocytogenes</i> on Ready-to-Eat Meat and Poultry Products using Food-Approved Antimicrobials	15 months

**(Continued and Sustained Decline)
from page 1**

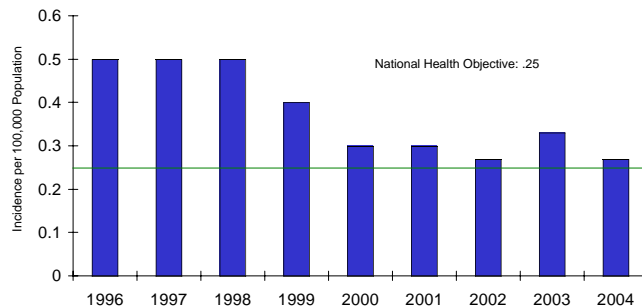
"We are gratified to see that foodborne illnesses continue to trend downward - the same way pathogens on meat and poultry products are trending downward," said AMIF President James H. Hodges in a statement released to the press. Hodges noted that the AMI Foundation conducts research and education programs aimed at reducing and ultimately eliminating bacteria on meat and poultry products that cause foodborne illness, spending millions of dollars in the past decade trying to find ways to make meat and poultry safer.

Officials noted that continued declines in foodborne illnesses are particularly good news for pregnant women, children, and the immuno-compromised, who are a greater risk and danger of contracting a foodborne illness.

According to Hodges, increasing consumer awareness about ways to handle food and prevent foodborne illness also contributed to the encouraging trends. He detailed some of the most important food safety steps consumers can take when handling meat and poultry:

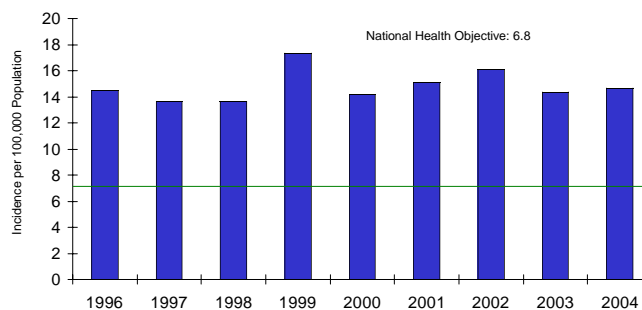
- **Cool it** - Keep cold foods cold and hot foods hot.
- **Clean it** - Wash hands, utensils, cutting boards and other items that have come into contact with raw meat and poultry.
- **Separate it** - Keep raw foods separate from cooked foods to avoid cross contamination. "Be sure to get a clean plate when removing cooked foods from the stove or barbecue. Don't use the same plate to hold cooked food that once held raw meat and poultry," Hodges said, and be sure to discard remaining marinade."
- **Cook it** - Meat and poultry products should be thoroughly cooked prior to consuming them. Hodges urged consumers to use instant-read thermometers to ensure doneness, particularly when cooking ground products like hamburgers, which must be cooked to 160 degrees F. "Never rely on internal color," according to Hodges, because it can be misleading. And Hodges added, "Consumers should know by now, to never eat or taste raw ground beef."

Incidence of Listeriosis in the U.S. 1996-2004



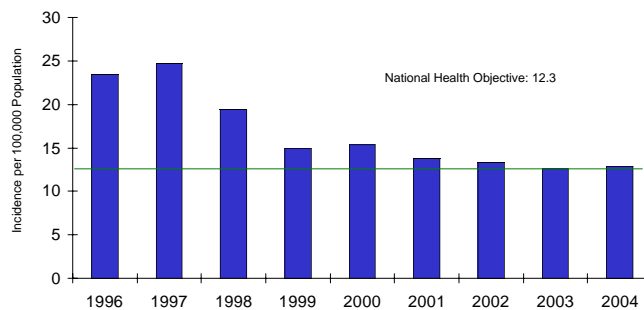
*Preliminary FoodNet Data on the Incidence of Foodborne Illnesses --- Selected Sites, United States, 2004

Incidence of Salmonellosis in the U.S. 1996-2004



*Preliminary FoodNet Data on the Incidence of Foodborne Illnesses --- Selected Sites, United States, 2004

Incidence of Campylobacteriosis in the U.S. 1996-2004



*Preliminary FoodNet Data on the Incidence of Foodborne Illnesses --- Selected Sites, United States, 2004

For more information on safe food handling and meat safety, go to www.meatsafety.org.

Opinion

Consumers Stand By U.S. Beef Industry In Well-Placed Vote of Confidence

Enemy of Beef Industry Comes From Within



By AMIF President James H. Hodges

Two years ago, on May 20, 2003, a single cow rocked Canada's beef and cattle industry. Seven months later, an imported cow in Washington State changed the course of the U.S. beef

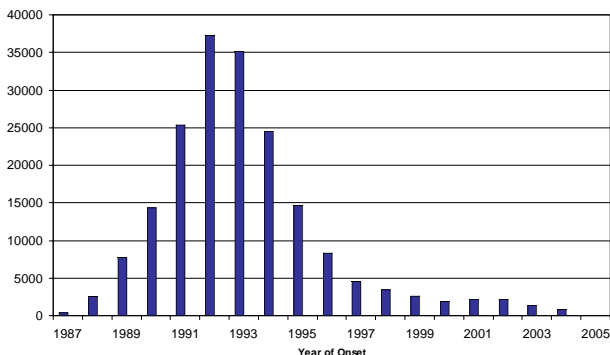
industry. These two days became the "Where were you when...?" events of the North American beef industry.

For those of us in the business, these were developments we'd long feared and dreaded - but in many respects, they were developments for which we'd planned and prepared. From my perspective, the fallout has been severe, but it has been far different than what occurred in other countries.

In the 1990s, when we talked about the possibility of BSE in the United States, we feared we'd lose the confidence of our customers. In an amazing show of good understanding and judgment, consumers have stood rock solid in their faith in beef. Data show that while consumer awareness of BSE is at an all time high, so too, is consumer confidence in beef at about 90 percent.

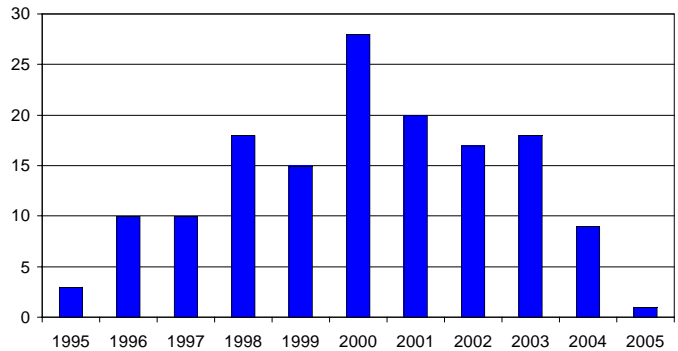
Perhaps consumers are confident because they've been able to read the facts between the lines of rhetoric:

Worldwide Confirmed Cases of BSE



Source: Office International des Epizooties

Worldwide Confirmed or Suspected Cases of vCJD



Source: The National Creutzfeldt-Jakob Disease Surveillance Unit, United Kingdom

Fact: The BSE agent has not been detected in beef.

Fact: Parts of the animal that can contain the BSE agent are removed under federal inspection.

Fact: The U.S. and Canada took more proactive steps - long before BSE was ever detected in either nation -- to prevent BSE and contain it if it did occur.

Fact: The U.S. BSE surveillance system, which will detect BSE with a 99 percent confidence rate if it is present in cattle at a level of one in ten million has yet to find a positive animal of domestic origin.

Fact: The Harvard Center for Risk Analysis has studied the U.S. BSE prevention and detection system and said that the risk of BSE is so low it can scarcely be quantified.

It seems that American consumers are exhibiting the common sense that we wish all policymakers, judges and organizations claiming to represent the beef industry possessed. But sadly, many are operating on phony facts and distorted information aimed at limiting trade.

BSE and its human counterpart are on their way "out." We cannot claim victory, but we must study the disease trends and recognize that the strategies we've implemented are working and continually evaluated.

International experience tells us that what we are doing today to prevent and detect BSE is on target. Indeed, while the United Kingdom has fought to contain a disease that infected their feed and cattle on a broad scale,

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AMI President J. Patrick Boyle to Keynote 51st International Congress of Meat Science and Technology

The American Meat Science Association will host the 51st International Congress of Meat Science and Technology (ICoMST) August 7-12, 2005 in Baltimore, Md. The world's top meat scientists will convene for ICoMST, which will showcase the latest scientific advancements that have enabled the meat industry to produce some of the safest, high quality food products. American Meat Institute (AMI) President and CEO J. Patrick Boyle will give the keynote address at the opening session.

Dr. Robert Cassens of the University of Wisconsin will discuss the spectrum of issues impacting meat science currently and in the future in the session, Meat Science – A Glance Back and a Look Forward. In a meat and health discussion, George Bray of the Pennington Biomedical Research Center will give details of 'The Obesity Epidemic'. Acting Commissioner of the U.S. Food and Drug Administration Dr. Lester Crawford, will talk about the role that meat plays in human health. Frank Dunshea from Primary Industries Research of Victoria, Australia will provide information on animal diet modification and how it can improve the characteristics of meat.

Advancements in product quality and strategies to enhance meat safety will be key topical issues during the congress. Some of the highlights include Dr. Chris Calkins, University of Nebraska, providing an insight into muscle profiling, and Dr. Dwain Johnson, University of Florida, discussing Enhancement Strategies to Increase Value of Individual Muscles. New developments in meat color research and meat packaging technologies will be presented by Dr. Melvin Hunt, Kansas State University and Dr. Scott Eilert, Cargill Meat Solutions. Question and answer segments will follow each session.

AMSA will host its traditional reciprocation fair which provides for a short presentation from a subject matter expert and an opportunity for audience discuss the topic.

The topics include:

- Allergen control in the food processing environment
- Antimicrobial resistance
- Best practices for SRM removal

- Emerging technologies for the manufacture of RTE meat products
- Instrumental evaluation of meat quality
- International opportunities for study and collaboration
- Pork flavor and tenderness; influence of pH and marbling

The AMI Foundation will host a day-long tour to Washington, D.C. for a round table discussion with key U.S. agricultural leaders and policymakers. Secretary of Agriculture Mike Johanns and several key USDA Under Secretaries have been invited, along with Congressman Goodlatte, (R-Va.), chairman of the U.S. House of Representatives Committee on Agriculture.

For more information, consult the Congress Web site at www.icomst.org or contact the Congress Secretariat at information@meatscience.org.

Foundation Co-sponsors Safe Pork

SafePork, or the International Symposium on the Epidemiology and Control of Foodborne Pathogens in Pork, is holding its sixth annual meeting in Rohnert Park, California from Sept. 6-9, 2005. This meeting which has been held every other year since its inception in 1996, brings together researchers in the areas of pre- and post-harvest pork safety to present their findings. The AMI Foundation is a sponsor of the event.

The topics of the sessions will be pathogens of food-borne importance that may be transmitted via pork and antimicrobial resistance. Papers are to be presented regarding Epidemiology, Economics, Diagnostics, Risk Assessments, Interventions and National Programs.

To register, visit www.safepork2005.org.

(Consumers Stand By U.S. Beef Industry) from page 5

even they are seeing sharp declines in the incidence of BSE. In 1992, at the peak of the UK beef epidemic, 32,000 BSE cases were detected in cattle. Millions of cattle were destroyed without testing, but many were likely positive as well. By 2002, thanks to disease control strategies, UK BSE incidence declined to 1,144 cases, according to the OIE. By 2003, that number was slashed in half, and by 2004, it was slashed in half again to 338 cases.

Globally, in the two dozen countries that have detected BSE, the number of positive tests is declining as well, thanks to their BSE prevention and control strategies.

Likewise, public health measures are working effectively in nations impacted by BSE. In the early 1990s, before experts in the U.K. recognized that eating infect-

ed cattle parts - like the brain - posed a risk, brains were widely consumed. As cases of variant Creutzfeldt-Jakob Disease (vCJD) were detected, scientists forecast a possible worldwide epidemic.

Today, with time-tested public health measures firmly in place and with the new knowledge that people of a certain genetic profile are most susceptible to the disease, forecasts of hundreds of thousands of human cases have been reduced down to less than a hundred and the disease is clearly forecast to die out altogether.

As unsettling and devastating as BSE has been in animals and as vCJD has been in humans, the fact is this disease is a case where scientific investigation and science-based policies have triumphed in ensuring animal and human health.

(FSIS: *E. coli* Prevalence Down In Ground Beef Sampling) from page 1

"The continuing drop of both occurrences of illness from *E. coli* O157:H7, and the prevalence of *E. coli* O157:H7, are the pay-off for an all-out effort by the meat industry to make food safety our number one priority over the last several years," said AMI Foundation President James Hodges.

In 2002, FSIS ordered all beef plants to re-examine their food safety plans, based on evidence that *E. coli* O157:H7 is a hazard reasonably likely to occur. Plants were required to implement measures that would sufficiently eliminate or reduce the risk of *E. coli* O157:H7 in their products. The HACCP (Hazard Analysis and Critical Control Point) plans were then critically analyzed and enhancements were required and necessary by FSIS personnel.

According to FSIS, the majority of beef plants have made major changes to their operations based on the regulation, including the installation and validation of new technologies specifically designed to combat *E. coli* O157:H7. Many plants have also increased their testing for *E. coli* O157:H7 in order to verify their food safety systems.

In 2001, the AMI Foundation declared that its two priorities would be to reduce and ultimately eliminate *E. coli* O157:H7 on fresh beef products and *Listeria monocytogenes* on ready-to-eat products. "It's rewarding to see that the pro-active measures we're taking in the meat industry are having direct pay-off for the American public and consumers of American meat across the globe," said Hodges.

In April 2005, the Centers for Disease Control and Prevention, in its annual report on foodborne illness in America, reported a 42 percent reduction in illnesses from *E. coli* O157:H7 in 2004 compared to the base line years of 1996-1998. The number of FSIS recall actions related to *E. coli* O157:H7 also continued to drop. There were six recalls related to *E. coli* O157:H7 in 2004 compared to 12 in 2003 and 21 in 2002.

Study Shows Feasibility of Bovine Oral Vaccines Against *E. coli* O157:H7

In an effort to block the transmission of *E. coli* O157:H7 to humans, a three-year study by Dr. Alison O'Brien with Uniformed Services University of the Health Sciences investigated the development of an inexpensive, effective and easily administered vaccine to prevent cattle from being infected with *E. coli* O157:H7. The study was jointly funded by grants from the National Institute of Health, the U.S. Department of Agriculture, the American Meat Institute Foundation, and the Defense Advanced Research Projects Agency.

E. coli O157:H7 is a virulent strain of bacteria found in cattle that can be transmitted to humans through food or water that has come into contact with an infected bovine. A number of investigators have concluded that a decrease in the amount of cattle that shed the serotype could cause a significant reduction in the prevalence of the bacteria in cattle and in the overall farm environment. This reduction would translate directly into fewer humans coming in contact with the potentially deadly agent.

Researchers hypothesized that an intimin-based vaccination strategy in calves might reduce colonization of cattle with *E. coli* O157:H7. Their strategy involved an effort to prevent *E. coli* O157:H7 from colonizing

neonatal calves through the vaccination of intimin, an outer membrane protein of *E. coli* O157:H7 that is required for successful colonization. This concept was tested by developing transgenic tobacco plant cells that expressed the cell-binding domain *E. coli* O157:H7 intimin and then immunizing mice parenterally with intimin expressed from the plant cells, or by feeding mice the transgenic plant cells, or both.

The mice not only generated an intimin-specific mucosal immune response when primed parenterally and boosted orally with transgenic plant cell expressed intimin, but also exhibit a statistically-significant reduction in the duration of *E. coli* O157:H7 fecal shedding. Next, six calves were fed the same material in a milk replacer. The fecal extracts from all six calves fed the intimin-expressing clone displayed anti-*E. coli* O157:H7 adherence blocking activity as measured in a newly devised fluorescence-activated cell sorter (FACS) assay.

This research demonstrates the feasibility of transgenic plant-based systems for expression and delivery of oral vaccines. AMIF will continue to work closely with Dr. O'Brien's research team as the AMIF-funded study is concluded.

AMIF Foundation Unveils New Animal Handling Resources

The AMI Foundation in February unveiled a series of new animal handling resources, including updated guidelines, a new, dedicated web site and helmet stickers that can be used to recognize professional animal handlers.

The new resources were unveiled at the AMI Foundation's Animal Care and Handling Conference for the Food Industry, held in February in Kansas City. Nearly 300 people attended the conference.

The *2005 Animal Handling and Audit Guidelines* merge two previous documents: *Recommended Animal Handling Guidelines for Meat Packers* (1991) and *Good Management Practices for Animal Handling and Stunning* (1997). The new version, divided into chapters, includes the official AMIF audit forms, which have been field tested to ensure their ease of use.



The document is available for free on AMIF's newest site, www.animalhandling.org. This important site aims to be a resource to the industry and to media and consumers interested in how animals are handled in meat packing plants. The site includes presentations from the 2005 Animal Care & Handling Conference and information about upcoming conferences.

Outbreak Prompts Symposium on Multi-drug Resistant *Salmonella* in Ground beef

Meeting Highlights Health Issues and Varied Opinions

An outbreak of salmonellosis in five northeastern states that was tracked to ground beef from a processing plant led to a symposium hosted by Tufts University School of Veterinary Medicine last month. "Ground Beef Contaminated with Multidrug-resistant *Salmonella*, Including *S. Typhimurium* DT104: An Emerging Public Health Concern" was held March 7 - 8, 2005, in Grafton, MA. The AMI Foundation attended the meeting.

A multi-drug resistant strain of *Salmonella*, *S. Typhimurium* DT104, was the topic of the meeting. The purpose of the symposium was to engage in dialogue about the need for new regulatory requirements on the ground beef industry. Held at the Tufts Veterinary School, this meeting was co-sponsored by several northeastern state health departments and the Centers for Disease Control and Prevention (CDC).

The moderator and one of the organizers of the meeting, Dr. George Saperstein, chair Department of Environmental and Population Health for Tufts said of the 2003-2004 outbreak, "...Regulatory agencies were hamstrung to protect public health due to lack of regulatory authority."

Dr. Sean Alterkruse of the Office of Public Health Science at the Food Safety and Inspection Service (FSIS) provided the regulatory perspective and presented data specific to the in-plant investigation that took place after the Northeast outbreak. Results from the in-plant investigation did not reveal any major discrepancies, and the percent positive rate for regulatory samples for *Salmonella* on beef carcasses was well below the national average. Furthermore, there was never a positive sample from product associated with the outbreak.

FSIS provided no indication that additional regulatory authority would be sought for dealing with *Salmonella* in ground beef.

Thomas O'Brien, MD, of Brigham and Women's Hospital, Harvard Medical School, gave the introductory presentation and a historical perspective on *Salmonella* identification, isolation, serotyping, and an historical overview of salmonellosis in humans. O'Brien

introduced the topic of antimicrobial resistance of *salmonellae* and their relationship to human health.

Fred Angulo, DVM, Ph.D. with CDC provided an in-depth viewpoint on the role of antimicrobial resistance in *salmonellae* in human health. Angulo stated: "there is clear evidence of an association between animal antimicrobial agent use and *salmonellae* resistance." He went on to describe the risk to human health posed by multi-drug resistant *Salmonella*. Angulo described the CDC programs and he reported the encouraging trends in the major foodborne pathogens as tracked in the FoodNet system. He described the FoodNet system as being able to "precisely track foodborne illness trends."

Salmonella Javiana was the only serotype that is experiencing an increased rate of association with human disease. All other serotypes of *Salmonella* causing illness were described as on a downward trend. *S. Javiana* is not one of the serotypes that are frequently isolated from meat and poultry products.

Tom Chiller, M.D., of CDC provided an overview of the data from the human arm of the National Antimicrobial Resistance Monitoring System (NARMS). Dr. Chiller reported a decline in rate of all *Salmonella* isolates resistant to at least one antimicrobial. *Salmonella Typhimurium* DT 104 is down significantly since 1996 and there has been an increase in pansusceptible isolates.

David White, Ph.D., U.S. Food and Drug Administration – Center for Veterinary Medicine (CVM), discussed the retail meat arm of the NARMS program. A 2001 pilot study led to NARMS retail meat sampling, now in its third year. The program analyzes about 3000 – 3500 retail samples of ground beef, ground turkey, pork chops and chicken breast and tests them against the NARMS antibiotic susceptibility panel. Dr. White presented data to show that while there are resistant species of *Salmonella* isolated from raw meat samples, the data indicate that the majority of these strains are not common sources of human infection. Interestingly, of 3000 ground beef samples, 24 have tested positive for *Salmonella Typhimurium*, but none of these isolates had developed antibiotic resistance.

AMIF - Calendar of Events

NEW! AMIF will be sponsoring a new workshop to address the control of allergens. Stay tuned to www.MeatAMI.com for details.

Worldwide Food Expo

When: Oct. 26 – 29, 2005
Where: McCormick Place, Chicago, Ill.
703-934-4700
What: Experience a global showcase where more than 100 participating countries come to see the latest machinery, products and technologies in action and remain abreast of critical topics and issues. Over 1,200 exhibitors participate in this show.
Contact: For more information, go to www.worldwidefood.com

International Meat Animal Welfare Conference

When: Feb 22, 2006
Where: Sheraton Overland Park
Overland Park, Kansas
What: The new, educational opportunity for animal scientists, veterinarians and academicians to hear about the latest research in animal handling and welfare; there will also be a poster session.
Contact: To register, contact Katie Brannan at 202-587-4223 or kbrannan@meatami.com

Animal Care and Handling Conference

When: Feb 23-24, 2006
Where: Sheraton Overland Park
Overland Park, Kansas
What: A mix of trend information and ideas for implementing change and improvement at the plant level. Conference attendees will break into concurrent sessions for in-depth instruction by species. Leading academic experts in the field will offer instruction.
Contact: To register, contact Katie Brannan at 202-587-4223 or kbrannan@meatami.com

Annual Meat Conference

When: March 12-14, 2006
Where: Gaylord Texan Resort and Convention Center, Dallas, TX
What: Receive practical information on topics such as diet strategies, meat marketing and marketing and labeling. Participate in moti-

ational and interactive general sessions by industry experts designed to improve your business. Choose from store tours and popular events such as the Product Tasting Reception and the Tech Fair Luncheon.

Contact: For information, contact Marie DeLucia at 202-587-4228 or mdelucia@meatami.com

Worker Safety, Health and Human Resources Conference

When: April 9-11, 2006
Where: Hyatt Regency Denver at Colorado Convention Center
What: Leading experts in worker safety will provide authoritative, practical instruction. Conference also features the AMI/National Safety Council Worker Safety Awards Program dinner.
Contact: For information, contact Marie DeLucia at 202-587-4228 or mdelucia@meatami.com

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Also featured on the site are AMIF's new helmet stickers, designed to recognize packing plant employees who have been trained in principles of animal handling. The two stickers feature either a steer or a pig and say "Trained and Qualified Animal Handler." They may be ordered for \$25 for 100 stickers, including shipping and handling.

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