



The Food Safety Consortium Newsletter

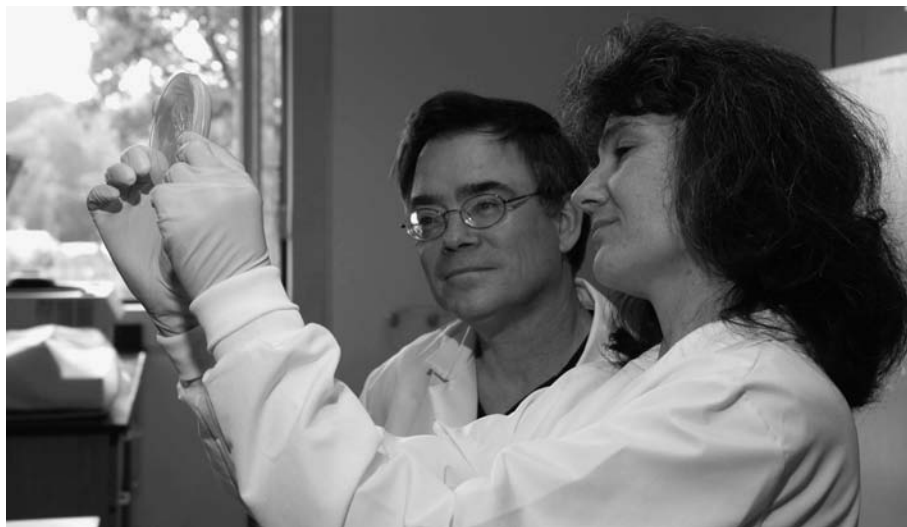
University of Arkansas, Iowa State University and Kansas State University • Vol. 16, No. 3 • Summer 2006

UA Center for Food Safety Ready to Fight the Enemy

The newly activated Center for Food Safety at the University of Arkansas is just getting off the ground, and the director knows his plan: “Focus on the biology of foodborne pathogens,” Steven C. Ricke said. “If we know our enemy, we can fight it.”

Ricke is the first person to hold the newly endowed Donald “Buddy” Wray Chair in Food Safety and is also the first director of the Center for Food Safety, a unit within the UA Division of Agriculture Institute of Food Science and Engineering. He joined the UA in January from the faculty of Texas A&M University. At the Fayetteville campus he holds appointments as a professor in the food science and poultry science departments.

At Texas A&M, *Salmonella enteritidis*, a bacterium that causes more than half of the foodborne illness cases in the United States, was the major focus of Ricke’s research. His research team recently reported findings that led to the



Steven Ricke examines bacteria with UA student Vesela Celova.

development of dietary formulations for laying hens to prevent *Salmonella enteritidis* infection during molting, which is a periodic shedding of feathers.

The research philosophy that Ricke

brings to the UA center is geared toward being able to predict pathogens’ behavior and staying a step ahead of their ability to do harm. “If you have a reputation for

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BSE-Induced Beef Trade Ban Still Haunts U.S. Market

The U.S. beef industry probably lost from \$3.2 billion to \$4.7 billion during 2004 after Japan and South Korea banned imports of the product following discovery of a BSE case in the U.S. South Korea has since lifted its ban and was scheduled to begin receiving imports in June.

Japan lifted its ban briefly in late 2005 before reinstating it when a small quantity of banned material was found in a shipment. In June, Japan and the U.S. reached agreement to resume U.S.

beef exports pending completion of Japanese audit of American beef safety. Projections indicate that even when all imports are restored, it will take a few more years for the beef industry to return to pre-2004 market levels.

“It looks right now like it will linger on,” said Sean Fox, a Kansas State University agricultural economics associate professor who researched the situation for the Food Safety Consortium. “Even if we hadn’t had this latest episode with Japan where they’ve reinstated the ban,

we were probably looking at regaining one-third, maximum, of that market compared to what we had there in 2003. To get back to where we were in 2003, we’re probably looking at two to four years.”

Japan had been the largest importer of U.S. beef and South Korea was the third largest importer until December 2003, when both countries suspended beef imports after a dairy cow in Washington state tested positive for BSE.

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UA Center for Food Safety...
continued

the best science or the most applicable science, then your impact takes care of itself to some extent," Ricke said.

Ricke seeks to shift some of the conventional approach to food safety research — or, as he put it another way, change some mindsets.

"We've always operated on the premise of containment and reduction of pathogens," he explained. "If we can get the numbers down, we're happy because we've accomplished what we set out to do. Frankly, we have to start thinking about prevention of those pathogens from ever getting established. We have to create

"We have to start thinking about prevention of those pathogens from ever getting established."

those kinds of barriers."

Food safety research is starting to have the tools necessary to engage in preventative research, which Ricke acknowledged is more difficult than pathogen containment and reduction.

But those who hold researchers accountable are beginning to ask about prevention.

"I think we have to start having the mentality that it can be done and say it can be done

as opposed to just saying we're getting close," Ricke said.

Prevention of pathogens is a responsibility at the front of the food production and processing chain. Ricke also sees responsibility at the consumer end of the chain. "We'll do all we can but

there are still opportunities for abuse at the end of that food cycle," he said. "It's our job to make people realize what they can do to make things better."

A diverse mentality about the approach to food safety also includes attracting diverse sources of funding for the Center for Food Safety. Part of the research there is within the USDA-supported Food Safety Consortium. Funding support also includes the university's Wray Chair endowment that was made possible by charitable gifts from Tyson Foods and the Walton Family Charitable Support Foundation.

"My goal is to enhance funding from different sources," Ricke said. "We want to recruit the best talent and the best students — the best students who have the talent to do the things that we want to get done." ■

BSE-Induced Beef Trade Ban...
continued

In December 2005, Japan agreed to resume the imports after the U.S. Department of Agriculture lifted a ban against importing whole boneless cuts of beef from Japan. Japan also imposed several specific restrictions governing any U.S. beef imported into its country.

The resumption was scuttled shortly. A month later, Japan halted imports when a shipment possibly contained material at risk for BSE.

Things worked better with South Korea. In January it announced resumption of beef imports from the U.S. by agreeing to allow calves under 30 months old into the country but excluding beef ribs.

Fox's KSU study found that prior to the embargo, Japan had accounted for 35 percent of the beef export market's value and South Korea had contributed to 21 percent of the value. The loss of the export markets led to increased

"To get back to where we were in 2003, we're probably looking at two to four years."

domestic supplies and reduced prices.

The study also noted that average U.S. wholesale boxed beef prices during 2004 were 12 to 17 cents per pound lower than they would have been if the Asian export markets hadn't been closed.

Domestic beef demand held up well in the U.S. after the first reports in December 2003 of the BSE case, Fox said, despite initial fears that there might be significant reduction of demand. "The main economic impact of BSE was a consequence of export reductions and costs of new regulations on the beef industry," he said.

Proposals that the government should allow companies to test cattle voluntarily for BSE as a way of regaining access to export markets have been

controversial. The KSU research indicated that it would have cost \$640 million to test all slaughtered cattle in the U.S. in 2004. It also noted that the cost would equal the revenue gain that the U.S. would realize if it got back 25 percent of the Japan and South Korea markets.



Sean Fox

"Recapturing the market is going to remove the incentive for voluntary testing," Fox said. "There are some firms that would do it if they had the authority to do it, but it doesn't look like USDA is going to allow that." Testing is probably not a "magic bullet," Fox continued, especially if tests don't turn out to be 100 percent accurate and a quantity of banned material slips into some exported beef. ■

ISU Finds Low Salmonella Levels on Farms

It would be a costly project if small hog farms tried to implement monitoring programs similar to those that large-scale operations use to monitor the prevalence of *Salmonella* among the livestock. The good news that Iowa State University researchers Isabel Harris and Matthew Erdmann found is that hogs on small farms already have little or no *Salmonella*.

“These farms have very low levels of *Salmonella*,” explained D.L. (Hank) Harris, an ISU Food Safety Consortium researcher and animal science professor. “They’re traditional farms that don’t use antibiotics.”

Harris’ research group surveyed 50 traditional family farms in the Midwest ranging in size from 20 to 150 sows. The pigs there are raised on open lots using management procedures with varying risks of contributing to *Salmonella* on the premises.

The researchers found that practices such as maintaining small herd sizes, limiting the use of vaccines and

refraining from using growth-promoting antibiotics did not translate into high prevalence of *Salmonella*. But those practices apparently don’t have as much impact on keeping *Salmonella* levels low as do other practices such as the use of meal feed and straw bedding, low stocking densities or rodent control.

The lesson here, Harris noted, is that avoidance of antibiotics by itself isn’t enough to keep *Salmonella* out. The other factors play more important roles.

“It’s a real plus for organic and traditional farming,” he said. “The difficulty comes in how they market their pigs. We know that they can get exposed to *Salmonella* on transport vehicles or when they’re held

before they’re slaughtered. So here you’ve got this organic farmer doing a good job raising pigs and being welfare-conscious. But when he takes them to



Hank Harris

market they could be contaminated with *Salmonella* depending on how that phase is done.”

One farming practice that helps avoid *Salmonella* is the “all-in, all-out” procedure. Herds of hogs are kept together in one cohort in one facility, moved out as one group and then replaced by another group after the facility is cleaned.

The segregation of the groups helps prevent infection from new animals. Only 42 percent of the small farms surveyed by the ISU researchers used the all-in, all-out procedure.

Harris explained that small farms generally don’t use the procedure, which is more common among the large corporate producers. He estimated that a farm would need to produce about 6,000 pigs a year to make efficient use of all-in, all-out.

“It’s difficult to do unless you’re farrowing every week,” he said. “Most of the small farmers are probably farrowing by batch and they may farrow only once every two or three months.” ■

Avoidance of antibiotics by itself isn't enough to keep Salmonella out.

Federal and State Partnership Announces Model Food Emergency Plan

The National Association of State Departments of Agriculture (NASDA), in cooperation with FSIS, the Food and Drug Administration and the Department of Homeland Security, has announced the availability of a model food emergency response plan template.

The template addressed the goal of enhancing the protection of the U.S. agricultural industry and food security through increased prevention, detection, response and recovery planning.

A food emergency could occur at

any point from farm-to-fork, including pre-harvest production, processing and distribution. A food-related emergency involves the unintentional or deliberate contamination, threatened or actual, of food that impacts or might impact human health. A food emergency response plan applies to food emergencies that might involve a number of localities or states.

The template is designed to assist states with developing a food emergency response plan. It identifies how state efforts will be integrated with the

National Response Plan by utilizing National Incident Management System principles during a large-scale food emergency response, as well as how they will integrate with local emergency response plans.

The template will also assist states with the development of either a stand-alone emergency response plan for responding to a food-related emergency or an addendum to an existing all-hazard state emergency response plan. ■

Report from the Coordinator



Gregory J. Weidemann

Food safety research constantly shows its benefits to the industries that produce and process our food and ultimately to the consumers. Some recent examples were highlighted at foodproductiondaily.com.

This particular line of research was performed by university researchers funded by the U.S. Department of Agriculture Food Safety and Inspection Service. The research is aimed at helping small processing plants meet hygiene requirements.

The studies found that:

- Beef jerky processors should maintain humidity and control moisture loss to accomplish an adequate reduction of pathogens such as *E. coli* O157:H7, *Salmonella* and *Listeria monocytogenes*. The FSIS report said, “This research should decrease (processors’) operating cost while helping them to ensure food safety and public health protection.”

- Beef jerky processors can reduce costs if they ensure that their wet or dry

bulbs used for drying processes are at a sufficiently high temperature. The food safety angle is that *E. coli* O157:H7 and *Salmonella* can be reduced if the bulb temperatures reach the high temperatures early in the process and stay there.

- Multiple methods of pathogen reduction in small processing plants are preferred over single treatments. Combinations of antimicrobial treatments are “significant factors for obtaining greater reductions in pathogen numbers on beef carcasses at slaughter.”

- Household steam cleaners can effectively reduce pathogens on meat carcass surfaces in small processing plants.

Another report tells us that research helped spin off a company that will likely have a significant impact on food safety. The Netherlands-based EBI Food Safety, which develops antibacterial agents, traces its roots to research by the National Institutes of Health. It has been in business since 2001 and is

now ready to begin the world’s first site for industrial-based production of bacteriophages.

Bacteriophages are viruses that target bacteria. The bacteriophages to be produced by EBI will be marketed to control *Listeria monocytogenes* in meat and cheese products.

As we’ve noted before, the payback for the activity in the labs at food safety research institutions everywhere isn’t immediate. But it does happen when findings are released that have an impact on industrial procedures. The release of such findings has additional impact when they result in marketing of new products that assist the daily business practitioners of food safety. ■

FSC Sets Symposium for Annual Meeting

The Food Safety Consortium will host a symposium for its annual meeting Oct. 1-3 at the Radisson Hotel in Fayetteville, Ark. Research scientists, principal investigators, postdoctoral personnel and graduate students from the FSC member institutions (University of Arkansas, Iowa State University and Kansas State University) will join speakers from industry and government to present a forward-looking program.

Registration for the event is open to the public. Information and a registration form is available online at <http://www.fsconsortium.net>. The program details had not been completed as *The Food Safety Consortium Newsletter* went to press, but that informa-

tion will be posted on updated on the Web site as it becomes available.

The agenda includes overview presentations on pre-harvest and post-harvest food safety issues, food security and retail food safety challenges. Additional topics will include:

- Understanding and control of pre-harvest contamination with *Campylobacter*, *E. coli* O157:H7, *Salmonella* and fungi;
- Ecology and management of post-harvest contamination in processing and packaging;
- Rapid methods for contamination detection as well as consumer and retail food safety trends;
- Emerging issues. ■

Thermometer Use Meets ‘Stages of Change’

It was time to stage an intervention to push the group into doing the right thing. They needed to change their behavior so the intervenors used some simple tactics to get them to change. The more information the intervenors provided, the more likely the subjects were to change their ways.

By the time it was over, more of them were using thermometers to determine if they had cooked their meat to safe levels.

“As a nation we need to be working on saying to people, ‘You can do this,’” explained Val Hillers, a retired Washington State University food science department dietitian. She discussed the results of a focus group survey during the 2005 Institute of Food Technologists convention in New Orleans.

The project addressed a familiar problem in food safety: relying on the color of cooked meat to determine if it was done. Previous research has demonstrated that color is not a reliable indicator of whether meat has been cooked enough to kill any pathogenic bacteria in it. For several years, the U.S. Department of Agriculture has advised that to be assured of safety, cooks should check with a meat thermometer to be sure the temperature of the meat’s innermost point has met the minimum level for that particular type of meat.

The problem is to get people to start using thermometers. Surveys show that less than 10 percent of home food preparers do so. Washington State and the University of Idaho worked on a joint project to find out what barriers keep people from starting to use thermometers and what would motivate them to get into the habit.

The researchers also used some psychology. They analyzed where individuals were in their thought process concerning meat thermometers and proceeded to influence them. They broke down the thought process by classifying a person’s “stages of change.”

Hillers listed the classifications as these: precontemplation (someone who has no plans to use a thermometer); contemplation (someone who does not currently use a thermometer but does plan to do so in the next six months); preparation (someone who does not currently use a thermometer but plans to do so in the next 30 days); action (someone who has been using a thermometer for less than six months), and maintenance (someone who has been using a thermometer for more than six months).

“Based on all the research done by a variety of people we already knew that most people were in precontemplation — no way I’m interested,” Hillers said. “It’s pretty difficult to mount an intervention with such a small adoption already happening. Yet we thought this might be a behavior that might be fairly quickly adopted once people became interested. Our materials are all designed to get people thinking about the process.”

The educational materials included developed by the researchers included informational brochures about meat thermometers, recipe cards that emphasized use of the thermometer in cooking small cuts of meat and a 15-minute video.

So it was time to intervene with the consumers. About 800 people in Washington and Idaho responded to a mailed inquiry about their cooking habits. The researchers then sent the educational materials to the respondents.

After receiving the materials, about 400 of the respondents sent back surveys to the researchers. About half of them had watched the video, 80 percent had read the brochure and 76 percent had read the recipe cards.

“Most of the people — 60 to 70 percent — who had done something with the materials thought they were useful,” Hillers said.

The information had some impact. In the first survey, before the respondents had seen the educational materials, 80 percent were in the precontemplation stage with no plans to use a thermometer. After reviewing the materials, only 46 percent still had no plans to use one.

The first phase of the survey identified just 1 percent in the action stage — actually using a thermometer for up to six months. The follow-up showed that number had increased to 18 percent since seeing the materials.

“What’s motivating these people to change?” Hillers asked. “It’s understanding that thermometers assured them that the meat has reached the highest temperature to kill foodborne pathogens. They also said they wanted recipes that include end-point temperatures for cooking meat, which we have provided for them.”

In addition to motivators for some consumers, there are barriers for others. Hillers said many people had never thought about using thermometers, didn’t know anyone who did and thought it would be difficult. In the follow-up phase, the researchers found barriers began to shift. “They had of course begun to think about using a thermometer because we had been nagging them about it,” she said.

There are still challenges. For one, there was the half of the targeted consumers who returned the first questionnaire but didn’t return the follow-up one. From the precontemplation stage to the action stage, there are dropouts all along the way. The process of influencing the change takes a long time, Hillers said.

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Thermometers assured them that the meat has reached the highest temperature to kill foodborne pathogens.

Single Minimum Internal Temperature Established For Cooked Poultry

The Food Safety and Inspection Service advised consumers in April that cooking raw poultry to a minimum internal temperature of 165 degrees F will eliminate pathogens and viruses.

The requirement of 165 degrees F was recommended by the National Advisory Committee on Microbiological Criteria for Foods (NACMCF).

“The committee was asked to determine a single minimum temperature for poultry at which consumers can be confident that pathogens and viruses will be destroyed,” said Under Secretary for Food Safety Richard Raymond. “The recommendation is based on the best scientific data available and will serve as a foundation for our programs designed to reduce foodborne illness and protect public health.”

Scientific research indicates that foodborne pathogens and viruses, such as *Salmonella*, *Campylobacter* and the avian influenza virus, are destroyed when poultry is cooked to an internal temperature of 165 degrees F. FSIS recommends the use of a food thermometer to monitor internal temperature. In addition, consumers should follow important tips for handling raw poultry. These tips can be summarized in three words — clean, separate and chill. Clean means to wash hands and surfaces often; separate means to keep raw meat and poultry apart from cooked foods; chill means to refrigerate or freeze foods promptly.

FSIS will use the NACMCF recommendation to further guide consumers in the preparation of poultry products to ensure microbiological safety. While the

NACMCF has established 165 degrees F as the minimum temperature at which bacteria and viruses will be destroyed, consumers, for reasons of personal preference, may choose to cook poultry to higher temperatures.

Consumers with food safety questions can call the toll-free USDA Meat and Poultry Hotline at 888-674-6854. The hotline is available in English and Spanish and can be reached from 10 a.m. to 4 p.m. (Eastern Time) Monday through Friday. Recorded food safety messages are available 24 hours a day. “Ask Karen” is the FSIS virtual representative available 24 hours a day to answer questions at http://www.fsis.usda.gov/Food_Safety_Education/Ask_Karen/index.asp#Question. ■

USDA Funds Research on *E. coli* in Produce

Agriculture Secretary Mike Johanns announced in May that USDA has awarded \$1.2 million to a collaborative research effort to identify sources and risk factors of *E. coli* O157:H7 contamination in fresh produce. The funds will also be used to inform growers about strategies to prevent pre-harvest contamination.

“Consumption of fresh fruits and vegetables is increasing in the United States, highlighting the importance of scientific research that enhances safe growing practices,” said Johanns. “This research will help to ensure that our farmers can continue to deliver safe and wholesome products from the farm to the dinner table.”

There have been 16 outbreaks of

E. coli O157:H7 illness associated with fresh lettuce or spinach since 1995.

Several of these were associated with preharvest contamination. Researchers will focus on three key questions:

- Are vertebrate populations sources of *E. coli* O157:H7 contamination of watersheds?
- Do climate, landscape attributes and irrigation management practices correlate with an increased risk of contamination?
- Is in-field contamination of lettuce with *E. coli* O157:H7 associated with management production practices and environmental risk factors?

USDA’s Agricultural Research Service and the University of California College of Veterinary Medicine will

collaborate with the California Department of Health Services Food and Drug Laboratory to conduct the research. The results of the study will inform produce growers about specific strategies to prevent pre-harvest microbial contamination.

The grant was funded through USDA’s Cooperative State Research, Education and Extension Service’s (CSREES) National Research Initiative (NRI). The NRI is the largest peer reviewed, competitive grants program in CSREES. Its purpose is to support research, extension and education grants that address key problems of national, regional and multi-state importance in sustaining all components of agriculture. ■

Michael Johnson, Steve Ricke, Navam Hettiarachchy and research team members **Rama Nannapaneni, Bwalya Lungu, Sujata Sirsat, Vidya Chitturi, Robert Story** and **Keith Wiggins**, Arkansas, presented four research papers on “Starvation Survival of *Listeria monocytogenes*,” “Virulence of six-month starved *L. monocytogenes* in human cell line Caco 2,” “Ciprofloxacin-resistant *Campylobacter* isolates for 2005,” “*Salmonella* Typhimurium virulence gene expression during post-processing treatments of chicken breast meat” and “Antimicrobial activity of green tea, grape seed extract and malic acid combinations in whey protein films against *L. monocytogenes*, *E. coli* O157:H7 and *Salmonella*” at the 106th General Meeting of the American Society for Microbiology in May in Orlando.

Michael Johnson, Arkansas, reported the following article published:

- Osman, M., M.E. Janes, R. Story, R. Nannapaneni and M.G. Johnson. 2006. Differential killing activity of cetylpyridinium chloride with or without Bacto neutralizing buffer quench against firmly adhered *Salmonella* Gaminara and *Shigella sonnei* on cut lettuce stored at 4° C. *Journal of Food Protection*, 69 (6): 1286-1291.

Rama Nannapaneni and **Michael Johnson**, Arkansas, were contacted in May by *Consumer Reports* magazine to discuss information mentioned in a Food Safety Consortium news release. The query focused on data published in the August 2005 article published by Nannapaneni in *Applied Environmental Microbiology* on antibiotic resistant bacteria isolated from raw poultry.

Yanbin Li, Arkansas, won the 2006 John Imhoff Outstanding Research Award of the University of Arkansas College of Engineering.

Yanbin Li and **John Marcy**, Arkansas; **Daniel Fung**, Kansas State; **Luc Berghmand**, Texas A&M; and **Shu-I Tu**,

USDA Agricultural Research Service, were awarded a \$220,000 research grant from the National Alliance for Food Safety and Security for multi-institutes collaborative research on nanoparticle-based fluorescent biosensors for rapid detection of *Listeria monocytogenes* in foods.

Li reported the following article published:

- Li, Y., and X. Su. 2006. Microfluids based optical biosensor for rapid detection of *E. coli* O157:H7. *Journal of Rapid Methods and Automation in Microbiology*, 14: 96-109.

Theivendran Sivarooaban, Navam Hettiarachchy and **Michael Johnson**, Arkansas, won third place in the Arkansas chapter of Gamma Sigma Delta’s Student Research Presentation competition for “Hurdle technologies using grape seed extract and nisin to control *Listeria monocytogenes* in model laboratory medium and ready-to-eat turkey frankfurter systems.” **Daniel Webber** and **Hettiarachchy** won third place in the Master’s Student Division Research Presentation competition for “Extraction, optimization, characterization and antioxidant capacity of phenolics from cowpeas (*Vigna unguiculata*).”

Navam Hettiarachchy, Arkansas, reported the following articles published:

- Rababah, T., N.S. Hettiarachchy, R. Horax, R. Cho, M. J. Davis and J. Dickson. 2006. Thiobarbituric acid reactive substances and volatile compounds in chicken breast meat infused with plant extracts and subjected to electron beam irradiation. *Poultry Science*, 85:1107-1113.

- Theivendran, S., N.S. Hettiarachchy and M.G. Johnson. 2006. Inhibition of *Listeria monocytogenes* by nisin combined with grape seed extract or green tea extract in soy protein film coated on turkey frankfurters. *Journal of Food Science*, 71 (2) :M39-44.

- Eswaranandam, S., N.S. Hettiarachchy and J.F. Meullenet. 2006. Effect of malic and lactic acid incorporated soy protein coatings on the sensory attributes of whole apple and fresh-cut cantaloupe. *Journal of Food Science*, 71 (3): S307-313.

Daniel Fung, Kansas State, was the keynote speaker in June in China at the International Forum on Food Quality and Safety. He spoke on “25 years of Rapid Food Microbiology Development and Prediction.”

Fung was also the keynote speaker at the American Association of Pharmaceutical Scientists National Biotechnology Conference in June in Boston. His address was “History and Development of Rapid Food Microbiology Testing: Market Predictions.”

Fung was among several scientists who received a Natick Army Food Research Center grant for two years.

Fung has completed 13 volumes as editor of the *Journal of Rapid Methods and Automation in Microbiology*, published by Blackwell Publishing. He is currently completing Volume 14, issues 1 and 2. ■

Thermometer Use... *continued*

But the result is worth it. “People, typically, once they become concerned about safety, tend to overcook meat,” she said. “And once you know that temperature and cook to that temperature, an overcooked piece of meat feels so unnecessary.” ■

Food Safety Digest

by Dave Edmark

Over the next decade, the U.S. will need a 12 to 13 percent increase in veterinarians who specialize in food animal supply practice. But the trend appears to be that there could be a 4 to 5 percent shortfall.

That's the conclusion from a study that the Food Supply Veterinary Medicine Coalition commissioned. A survey team at the Kansas State University College of Business conducted the study.

Brownfield's Ag News for America Web site reported that many veterinary students decide against careers focusing on food supply animals because of socioeconomic trends, because some colleges don't emphasize them enough and because the students lack exposure to the food industry.

Dr. Cary Christensen, director of strategic growth for Bayer Animal Health, told Brownfield that veterinarians on the food supply animal side may be found on farms with live animals, at food processing plants, tracing back food products or in federal government research jobs.

"This study is a mandate for change within the industry," Christensen said. "We have to rally the industry in a way that raises the profile of the profession and attracts new students."

■ ■ ■

The popular Fight BAC program's website at <http://www.fightbac.org> has been overhauled. The site is maintained by the Partnership for Food Safety Education, a coalition of government agencies, industry associations and professional societies to educate consumers about how to prevent pathogenic bacteria from contaminating their food.

"The Partnership's website and related materials are widely utilized by consumers, educators, dietitians and public health officials across the United States," said Tim Hammonds, Partnership chair. "Our research shows a direct link between high awareness of safe food handling recommendations and actual proper food handling practices. By improving our online offerings we hope to contribute to increased awareness of proper food handling, ultimately reducing risk of foodborne illness nationwide."

The Partnership noted that the website is now fully searchable, provides safe food handling recommendations at a glance and updated downloadable fact sheets and offers a more user-friendly format.

■ ■ ■

At the state level, Kansas has also unveiled a new food safety website. The state Department of Health and Environment in May launched a site to educate citizens about safe food handling, restaurant inspections and how

to report food safety concerns. The site is at <http://ksfoodsafety.org>.

"Whether you need information about how long to refrigerate leftovers or you are concerned about the cleanliness of a restaurant, ksfoodsafety.org offers understandable, up-to-date food safety information for both industry and the public," said Howard Rodenberg, DHE health director.

The food safety information is updated each week and also features information on foodborne illnesses, business licensing, the Kansas food code and how to report food safety concerns.

■ ■ ■

Researchers in the United Kingdom are competing for funds from the nation's Food Standards Agency to investigate several food safety projects. The government agency asked for proposals to study microbial risk management, the eggs and poultry sector, microbial surveillance, chemical contaminants from food production, a safety assessment of novel and genetically modified foods, food acceptability and choice, food choice inequalities, food authenticity, food intolerance and surveillance and monitoring in Scotland.

The research could be used to assist companies improve food safety practices or could result in new codes. The researchers selected for the projects are expected to be announced in September.

The Food Safety Consortium Newsletter

is a production of the three member schools of the consortium: University of Arkansas, Iowa State University and Kansas State University. Your comments are welcome.

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