

Winter 2010

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Center for Food Safety

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INSIDE:

**Study Evaluates Cost-Effective
Treatments to Minimize *Listeria*
Contamination of RTE Meats by
the Deli Slicer**

**Johnson Scholarship Established
by Arkansas Association for
Food Protection**

**AAFP Plans Next Conference for
September**

**'Culture of Food Safety' Is
Essential, Walmart Executive
Says**

**Food Workshops at the
University of Arkansas**

**Book From FSC Researchers
Published by UA Press**

**O'Bryan Leads UA Authors in E-
Learning Study**

**UA Food Workshops Train a
National Clientele**

Winter 2010

Vol. 1, No. 1

Greetings From the Center for Food Safety



**Dr. Steven C.
Ricke
Center Director**

This is the first newsletter of the University of Arkansas Center for Food Safety, but we're not a new organization. We've been at work on various projects for a few years. We're an interdisciplinary group of faculty, postdoctoral associates and graduate students. Some of the details are explained below in the center's mission statement. In this quarterly newsletter we'll highlight our own activities as well as relevant information from other organizations. If it concerns food safety at the UA, we're interested.

If you're interested in food safety, we hope you'll pass along this newsletter to others who may share that interest. And we want to hear your ideas about our center and our research. Our contact information is in the column to the left. We hope to hear from you.

Mission of the Center for Food Safety

Americans expect a food supply that is safe, nutritious and affordable. However, recent outbreaks of foodborne disease have made the safety of our food supply a paramount concern to consumers, policy makers, regulatory agencies and the food industry.

The mission of the Center for Food Safety (CFS) is to conduct research on the safety and quality of food products with a focus on biological, chemical and physical hazards. The CFS is dedicated to the development and utilization of advanced research technologies and to the communication of research findings to assist in building public confidence in the protection, safety, quality and nutritional value of food products.

(Continued on page 2)

Center for Food Safety

Winter 2010 Vol. 1, No. 1

Greetings From the Center for Food Safety (Continued from page 1)

The Center takes a farm-to-table approach to food safety. Activities are focused on HACCP-based evaluations of the factors in the pre- through post-harvest food chain that impact the safety and quality of foods during production, harvesting, processing, packaging, storage and distribution. Research efforts optimize existing and new technologies to produce safe food products with high quality and high nutritional value under commercially feasible conditions.

The program has components within several departments of the Division of Agriculture, the UA Medical Sciences program and Arkansas Children's Hospital. Extensive investigations into food safety with all areas of poultry, beef and pork meat production, from the farm to the consumer's table is conducted through the Food Safety Consortium, a cooperative effort of the University of Arkansas, Iowa State University and Kansas State University.

Study Evaluates Cost-Effective Treatments to Minimize *Listeria* Contamination of RTE Meats by the Deli Slicer

(Republished from the AMI Foundation News, October 2009)



Phil Crandall

Two approved red food dyes, FD&C No. 3 and No. 40 vividly stain the protein and fat in bologna and turkey luncheon meats and may be an effective way to improve the ability of deli managers to determine quickly areas of gross contamination, an AMIF-funded study by University of Arkansas researchers has found. Principal investigators for this study were Phil Crandall, Ph.D., John Marcy, Ph.D., Steve Ricke, Ph.D., Mike Johnson, Ph.D., Corliss O'Bryan, Ph.D. and Betty Martin, Ph.D.

Researchers noted that use of a 1:1,000 dilution of these inexpensive dyes enables deli managers to determine whether additional cleaning is required before sanitizing the slicer or beginning operations.

In addition to developing this visual verification system, researchers also investigated the effectiveness of current cleaning sanitation methods and "hot boxes" in removing *Listeria* and *Listeria* biofilms.

In a test of sanitizers against *Listeria* biofilms on aluminum or stainless steel components, the best results were obtained with J512, but there was still only about a reduction log 1.5 log CFU per coupon (or less than 0.5 log/cm²). Barrier II also reduced Lm on the stainless by about 1.0 log CFU/ coupon, but reduced Lm on the aluminum coupon by almost 2.0 log

Center for Food Safety

Winter 2010 Vol. 1, No. 1

CFU/coupon. PanClean reduced Lm about 1.0 log CFU/ coupon on the stainless but did not reduce Lm on the aluminum coupon. SaniWipes reduced Lm less than 1.0 log CFU/coupon for both stainless and aluminum. These results call into question whether SaniWipes is an adequate control measure in the working deli.

Researchers found that holding deli slicer components in dry oven conditions at 66, 77 or 82 degrees Celsius, for extended times up to 15 hours was not effective for eliminating *Listeria* on the slicer component surfaces. However, heating the components in moist oven conditions caused the desired five log reduction of *Listeria* within three hours at 82 degrees Celsius.

Although high humidity/high temperature conditions were effective, this treatment would not be feasible to use on the assembled deli slicer because of potential damage

Johnson Scholarship Established by Arkansas Association for Food Protection



AAFP President Mike Sostrin (left) presents a plaque to UA emeritus professor Michael Johnson commemorating his work in food safety.

The University of Arkansas is now accepting contributions to the Michael G. Johnson Endowed Fund in Food Science. The scholarship was announced by the Arkansas Association for Food Protection when it honored Johnson, an emeritus professor of food science who retired in 2009 after 25 years with the UA.

At the AAFP Educational Conference in October, Johnson was honored by testimonials from colleagues and former graduate students. In his remarks to the audience, Johnson said

mentors should direct their time to people who are working their way up. This “spirit of investing” prepares the next generation of researchers to pass their skills along to future students, he said. He advised researchers to be proactive in food protection issues and to “take what works for you and pass it on.”

Center for Food Safety

Winter 2010 Vol. 1, No. 1

The UA has set up a procedure for donors to contribute to the fund online by following these steps:

1. Go to the UA Office of Development online donor site at <https://payments.bankofamerica.com/otp/StartAction.do?UARK> and enter your phone number.
2. Complete the online donation form. At the drop-down menu for "Designate Gift 1," select the line for "Other--type in description below."
3. At the line for "Other Specific Department or Program," type in "Michael Johnson Endowed Fund in Food Science."
4. At the line for "Is this an honor/memorial gift?" select "Honor."
5. At the line for "Honor/Memorial Designee," type in "Michael Johnson."
6. Leave blank the line for "Designee Address (for notification purposes)." The UA Office of Development will notify Dr. Johnson of donations to the fund.
7. Proceed with the credit card donation procedures.

To discuss major contributions, contact Kellie Knight, director of development for the UA Dale Bumpers College of Agricultural, Food and Life Sciences, at knight@uark.edu or 479-575-2270.

AAFP Plans Next Conference for September

The Arkansas Association for Food Protection wrapped up its first educational conference last fall and is now planning for the 2010 meeting. Details are currently being put in place for the conference, which will be Sept. 28-29 at Tyson Foods general offices in Springdale.

The first AAFP conference attracted nearly 100 participants from academic, industry and government. The event featured a full day of presentations by several speakers from around the nation on theme of "Retail Food Safety – A Catalyst for Change." A half day was devoted to presentations by UA researchers for the Food Safety Consortium who discussed their current projects, plus presentations from the FSC research coordinators at Iowa State University and Kansas State University who summarized the work on their campuses.

The conference also featured a poster session that included an awards competition among University of Arkansas graduate students. For a list of poster competition winners and PowerPoint presentations of several conference speakers, see <http://arkafp.org/preview.aspx>.

Center for Food Safety

Winter 2010 Vol. 1, No. 1



Frank Yiannas visits the Center for Food Safety.

‘Culture of Food Safety’ Is Essential, Walmart Executive Says

It’s up to the leadership in the food industry to create a culture of food safety as well as to keep up with the science, says Frank Yiannas, Walmart’s vice president of food safety.

A food safety culture means maintaining “a continuous improvement model,” Yiannas said Oct. 26 during a talk at the University of Arkansas Division of Agriculture Center for Food Safety. “HACCP is a step in the right direction, but it’s not the final destination.”

The improvement model for a food safety culture sets high expectations for a company, Yiannas said. Employees are not simply “trained” in food safety – which tells them what to do – but they receive food safety “education” in which they learn why they are doing certain practices.

Reinforcement of appropriate food safety behavior in the industry is accomplished by emphasizing ways “to catch people doing things right” and telling them so instead of only waiting to catch doing something wrong. Yiannas explained that this model of food safety leadership is distinct from mere food safety management.

The stakes are greater today than in recent years. “Food safety awareness is higher than it’s ever been” Yiannas said. Meanwhile, public trust has declined in government, business and the perceived safety of the food supply.

Milestone outbreaks would happen only once a decade in earlier times; now such events might happen once a year. This has led to a race between the food safety community’s ability to prevent foodborne illness and its ability to detect foodborne pathogens. The beneficial aspect, Yiannas said, is that the pathogens that cause some outbreaks now are detectable but would not have been a decade ago.

Center for Food Safety

Winter 2010 Vol. 1, No. 1

Book From FSC Researchers Published by UA Press

Perspectives on Food-Safety Issues of Animal-Derived Foods

Edited by Steven C. Ricke and Frank T. Jones

The University of Arkansas Press has released a book of essays compiled from the presentations of several food safety researchers who delivered their work during a Food Safety Consortium annual meeting. *Perspectives on Food-Safety Issues of Animal-Derived Foods* is being marketed by the Press and is available through

<http://www.uapress.org/titles/fa09/ricke.html>

As recent stories in the news have shown, maintaining the integrity of the food supply is of critical importance to the consumer. Thousands of Americans die each year from foodborne illnesses, and millions more get sick. Tremendous strides have been made to reduce the incidence of foodborne diseases originating from animal-derived foods, but food safety and foodborne pathogens continue to remain problematic throughout the world. Food safety scientists from around the nation continue to conduct groundbreaking research not only to understand causative factors in foodborne pathogen prevalence but to develop novel intervention strategies for limiting contamination in all phases of food animal production.

The 24 essays in this book highlight research efforts of researchers from the tri-state Food Safety Consortium established in 1988 by Congress as a research alliance of food-safety scientists at the University of Arkansas, Iowa State University, and Kansas State University. Members of the consortium conduct research through an annual grant approved by Congress and administered by the U.S. Department of Agriculture. Its mission is to conduct extensive investigation into all areas of poultry, beef, and pork meat production, from the farm to the consumer's table. In addition to the consortium researchers, collaborative university researchers, government officials, and industry personnel provide timely reviews of their latest findings with regard to five significant subject areas: pre-harvest foodborne pathogen ecology and intervention strategies, postharvest foodborne pathogen ecology, rapid methods and detection strategies for foodborne pathogens, antibiotics and antimicrobials in food safety, and emerging issues in food safety. Progress in these research areas provides opportunities to further enhance protection of animal-derived foods from farm to fork.

Steven C. Ricke is the Donald "Buddy" Wray Chair in Food Safety and director of the Center for Food Safety in the Institute of Food Science and Engineering at the University of Arkansas. He is editor in chief for *Bioresource Technology* and a member of the editorial board of the *Journal of Food Protection*. Frank T. Jones is emeritus associate director for extension, Center of Excellence for Poultry, at the University of Arkansas.

Center for Food Safety

Winter 2010 Vol. 1, No. 1

O'Bryan Leads UA Authors in E-Learning Study

A team of authors led by Corliss O'Bryan, a post-doctoral research associate at the Center for Food Safety, has published an article in the *Journal of Food Science Education* (Vol. 9, Issue 1) on "Designing an Affordable Usability Test for E-Learning Modules." Other authors were Philip Crandall, John Marcy, Steve Seideman and Steven Ricke, all of the Center for Food Safety; Donald M. Johnson of the UA Department of Agricultural and Extension Education and Katrina Shores-Ellis of Simmons Foods, Inc.

The article explains how companies can use an inexpensive format for testing newly developed technical training modules prior to their release. The article is a companion to one that the authors published in a previous edition of the *Journal of Food Science Education* in which they explained how they developed training modules focused on applying HACCP principles, quality aspects and production information to individual poultry unit operations. Those learning modules were intended for use by newly hired employees and supervisors. Discount usability testing was used to measure how well the learning objectives were met.

Usability testing, according to O'Bryan's group in its later article, evaluates the interactions between the user and the product being tested, but is not a test on the product itself. But many companies avoid usability testing due to misconceptions about the expense. Even though more expensive tests performed on the outside might be appropriate at times, "for most of the in-house e-learning modules produced by content experts, discount usability testing should certainly be considered as a requirement of the design process," the article said.

According to the authors, usability testing expenses can be reduced by reducing the number of testing participants, avoiding elaborate testing facilities and establishing clear objectives with a concise testing outline.

"Discount usability testing is an important part of e-learning module design and must be completed to ensure that the end user has a high-quality, usable product," the authors concluded.

Center for Food Safety

Winter 2010 Vol. 1, No. 1

UA Food Workshops Train a National Clientele

When Steve Seideman started looking for ways to get the word out about the short courses and workshops offered through the UA Food Science Department, he notified a federal Food and Drug Administration official in Dallas. The official placed notices of some workshops in the *Federal Register*. After that, attendees began arriving from Chicago, Alaska, Guam and points in between.

“We’re still fairly new to the block,” said Seideman, an extension food processing specialist. “And not too many states have these things.” Despite some success in promoting the workshops nationally, Seideman still wants more people to enroll in the workshops, particularly people from Arkansas. Only half of the participants currently come from in the state.

Enrollment in the workshops (see the complete list on the next two pages) varies according to the subject matter. Topics such as food and nutritional labeling and food protection generally attract 30 to 60 people. The laboratory-intensive courses such as microbiology have room for only about six people at a time, but unlike the other courses it’s offered every month.

Participants in the courses are most likely to be people with jobs in the food industry who need to be brought up to date on certain practices. They can do so in a couple of days at the workshops. Other people who work in industry can take advantage of a long-term offering, the master of science degree in food safety through the university’s distance education program. Seideman emphasized that the program’s advantage is that they can earn their degree without leaving their jobs and moving to Fayetteville.

FOOD WORKSHOPS AT THE UNIVERSITY OF ARKANSAS

The University of Arkansas holds numerous short courses, workshops and an Online Master of Science Degree in Food Safety. Listed below is a partial listing of the upcoming educational opportunities. Please see the website below for details and registration information.

<http://www.uark.edu/ua/foodpro/Workshops/index.html>

WORKSHOPS

- A) Microbiological Laboratory Logistics and Fundamentals - This workshop will be held on several dates; (March 16-18, April 20-22, May 18-20, June 15-17, July 20-22, August 17-19, September 14-16 October 19-21, 2010). http://www.uark.edu/ua/foodpro/Workshops/Micro_Lab.html
- B) Molecular Biology and Biotechnology; Workshop for Beginners - This workshop will be held on several dates; March 24-25, April 28-29, May 26-27, June 23-24, July 28-29, August 25-26, September 22-23, October 27-28, 2010). <http://www.uark.edu/ua/foodpro/Workshops/Molecular-lab.html>
- C) Food and Nutritional Labeling Workshop - This workshop will be held August 4-5, 2010 in Fayetteville AR. http://www.uark.edu/ua/foodpro/Workshops/Food_Labeling_Workshop.html
- D) Sensory Evaluation of Foods - This workshop will be held June 7-8, 2010. http://www.uark.edu/ua/foodpro/Workshops/Sensory_Evaluation_Workshop.html
- E) Food Protection Workshop - This workshop will be held June 9-10, 2010. It involves both Food Safety and Food Defense. http://www.uark.edu/ua/foodpro/Workshops/Food_Safety_Defense_Workshop.html
- F) RCA Culinary Arts for Food Technologists Courses - Taught at the University of Arkansas; May 10-14, June 14-18 & September 20-24, 2010. More information can be found at the following URL: <http://www.poultryscience.uark.edu/culinary/index.html>

WORKSHOPS

- G) GMP, SOPs and HACCP - Taught by Dr John Marcy and Dr. Rich Linton of Purdue University. The 2010 class will be in Indiana in the Fall. The next Fayetteville class will be May 2011.
- H) Advanced HACCP – In conjunction with Bob Galbraith of the HACCP Consulting Group. October 2010. Contact Dr. John Marcy for additional information.
- I) 104th annual Ozark Food Processors Association (OFPA) Convention is scheduled for April 6 and 7, 2010 at the Holiday Inn Convention Center in Springdale, Arkansas. Exhibits will be held only on April 7 from 12:30-6:30 pm. Last year's convention attracted approximately 500 participants and 80 exhibitors from 35 states. Please review our website at <http://ofpa.uark.edu> for more information on OFPA including membership, exhibits, and convention registration.

DISTANCE EDUCATION

Master of Science in Agricultural, Food & Life Sciences (AFLS) Non-Thesis Degree (Emphasis in Food Safety). The degree is a 30-hour, web-based, non-thesis Master of Science degree in Agricultural, Food and Life Sciences. The emphasis in food safety will provide a subject matter core of courses in food microbiology, sanitation, food processing, epidemiology, food law, HACCP applications, human diseases, and other quality control areas facing the food industry. For more information about the master's degree program, go to the following website:

http://www.globalcampus.uark.edu/Distance_Education/Graduate_Degree_Programs/MS_Food_Safety/About.html

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