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FOOD SAFETY &  
TOXICOLOGY CENTER**

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**ZOOLOGY**

**T**he Robert Leader Endowed Lecture Series, held on June 14, 2006, welcomed Kevin D. Walker, MS, PhD as the 2006 guest lecturer.

**ROBERT  
LEADER  
ENDOWED  
LECTURE  
SERIES**

**D**r. Robert Leader served more than twenty-years as a faculty member of the College of Veterinary Medicine, at Michigan State University, which included positions as chairperson of the Department of Pathology, associate dean for the College of Veterinary Medicine, and as assistant to the director of the newly-formed National Food Safety & Toxicology Center (NFSTC). Dr. Leader had a significant impact on the development of the NFSTC and in bringing it to fruition. Arriving in Michigan shortly after the state experienced the PBB episode, he observed the destruction of hundreds of thousands of animals and empathized with this state's farming families over the devastation that the agricultural community experienced during that time.



Jack Harkema shares reflections of Dr. Leader

**R**iding the Wave: Health, Agriculture, and Globalization was the title of this year's lecture. In his talk, Dr. Walker emphasized that "there are decision points in time when it is important to make changes and move in another direction, to catch and ride another wave, in order to be able to move to the next level." Further commenting on catching the next wave, Walker cited the land grant university philosophy that is Michigan State University. Over the years, the university has benefited tremendously from strong and innovative leadership, including Dr. Leader's efforts in the establishment of the NFSTC. As well, Walker noted the *Boldness by Design* initiative, under the current administration of **President Lou Anna K. Simon** and **Provost Kim Wilcox**, which includes internationalization as a component, offering tremendous opportunities to catch the next wave through a global focus.



L-R: Dean Lonnie King, Jack Harkema, Isabel Leader, Kevin Walker, Ed Mather, Provost Kim Wilcox  
photos courtesy Erin Groom MSU/IMC

**MICHIGAN STATE  
UNIVERSITY**

**NFSTC UPDATE**

[www.foodsafe.msu.edu](http://www.foodsafe.msu.edu)



Summer 2006

**W**ith his background and thorough understanding that the food system lacked a level of technology, education, and public policy to deal with such an ordeal, Bob Leader took it upon himself to make a difference. It is his spirit and dedication that is honored, through the generous gifts of his many friends and colleagues who gather to pay tribute to him through the Robert Leader Endowed Lecture Series.



Kevin Walker  
2006 Leader Lecturer

**W**alker continued the discussion with a look at agricultural and health disparities across the globe, noting food safety as an area of concern. "Food safety is a developed country concept and concern. On the part of developing countries, it is seen largely as an export requirement." In approaching food safety from this perspective, the "result is often a dual production system with incentives to slip the lower valued product into the higher value chain," often leaving domestic consumption out of the food safety equation - a matter to consider as we look to catch the next wave. ▲



**L**inda S. Mansfield, VMD, PhD, Associate Professor of Large Animal Clinical Sciences, and Microbiology, was awarded a \$533,278, five-year NIH grant on June 1, 2006. The project, *Murine models to test parasite products as cures for Inflammatory Bowel Disease*, will work to identify new molecules and compounds from the whipworm parasite,

## WHIPWORM PARASITE MAY OFFER RELIEF TO BOWEL DISEASE

*Trichuris*, that could be used as an oral treatment for patients with Inflammatory Bowel Disease (IBD). IBD is a serious chronic intestinal inflammatory disorder often causing diarrhea, intestinal bleeding, and painful cramping, afflicting approximately 6 in every 100,000 adults in the United States. Two of the most common forms of IBD are ulcerative colitis and Crohn's disease,

which are becoming increasingly common in the industrialized countries.

**C**urrent treatments for IBD are aimed at reducing inflammation and postponing surgery; which becomes necessary in about 75% of cases. These treatments, however, are seldom effective over the long term. Dr. Joel Weinstock, and colleagues at the University of Iowa, have had success in using deliberate infection with whipworm eggs to treat patients whose IBD was not responding to standard treatments. Currently, the mechanism by which *Trichuris* infection cures IBD is unknown and treatments with whole parasitic worms is not well accepted by people. Mice will serve as models in testing the molecules from *Trichuris* that have shown anti-inflammatory activity for efficacy in



**whipworm egg**  
Photo: L. Mansfield

# RESEARCH UPDATE

down modulating chronic inflammation in the gastrointestinal tract.

## NFSTC UPDATE

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**A**nother major goal of this grant is to encourage veterinarians to enter into the field of research to contribute findings and cures impacting both human and animal medicine. ▲



**whipworms**  
Photo: S. Enness

**R**apidly changing regulations and market trends are creating a significant need for research to ensure the safety of manufactured food products. The burden-of-proof for ensuring product safety is continuing to increase for food processors, who must, in many cases, prove the safety of a product/process via either *inoculated challenge studies* or

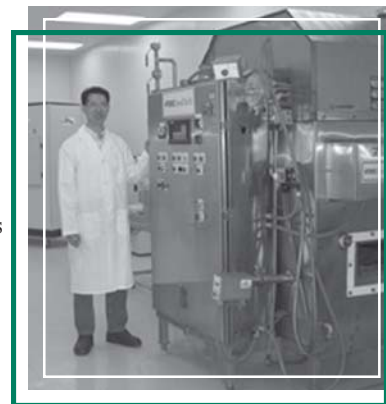
## BIOSAFETY LEVEL-2 PILOT-SCALE PROCESSING FACILITY IN OPERATION

**I**n order to meet these research and technology transfer needs, Michigan State University has recently completed a unique, Biosafety Level-2, Pilot-Scale Food Processing Facility for inoculated challenge studies, research validation trials, testing with industry partners, and teaching/training. This facility, in Farrall Hall on the MSU campus, enables direct application of the latest research results to real-world challenges in the critical area of food safety engineering.

**I**n a challenge study, the microorganism of concern is inoculated into the food product, which is subjected to an actual processing operation simulating the commercial process. Such studies are impossible in actual processing facilities, where pathogens cannot be brought on site. This new facility (~1,470 sq ft) was designed to accommodate these types of studies for a wide range of applications, and is comprised of a dressing room, a prep lab, a storage room for cleaning and sanitation supplies, a staging area for equipment, and the

main processing floor. The main room includes four flexible work stations, with a range of electrical, water, steam, gas, and drain capacities to handle a variety of pilot-scale processing equipment, such as mixers, cooking equipment, conveyors, etc.

**T**his multi-user facility enables MSU researchers to test laboratory-scale research findings in commercial-type equipment and validate computer simulations of food processes and microbial responses. This capacity puts MSU at the forefront of food safety



research, both advancing knowledge *and* directly impacting the safety of manufactured food products.

Current industry-partnered projects include: (1) inoculated challenge studies with *Salmonella* in meat and poultry products processed in a pilot-scale, moist-air impingement oven, to validate computer simulations of cooking and microbial lethality, (2) testing the efficacy of a low-energy x-ray irradiator for pasteurization of raw almonds (targeting *Salmonella*) and

treatment of raw ground beef (targeting total aerobic bacteria and *E. coli* O157:H7), and (3) testing an antimicrobial spray system for continuous treatment of conveyor belts in meat and poultry operations. Core faculty members who have existing projects utilizing this facility include Drs. **Bradley Marks** (food engineering), **Sanghyup Jeong** (food engineering), **Elliot Ryser** (food microbiology), **Al Booren** (meat science/processing), and **Evangelyn Alocilja** (biosensors).

Although a few similar facilities exist across the country, the MSU facility has the unique mission of accommodating a wide variety of food processing applications/equipment, rather than focusing on one type of product or process. Additionally, the purpose of the facility is to enable both pre-competitive research and product-specific testing supported by industry partners. Such partnerships will be critical in directly serving the needs of stakeholders. The MSU researchers involved in this endeavor comprise a unique, multidisciplinary team committed to improving the safety of processed food products through innovative research, outreach, and training. Anyone with a potential interest in the facility, including establishing partnerships in this area should contact **Dr. Bradley Marks** at [marksbp@msu.edu](mailto:marksbp@msu.edu). ▲



Meeting with U.S. Senator Debbie Stabenow (center) includes L-R: Sue Nichols of MSU University Relations, Michelle Worosz, Craig Harris, and Andrew Knight all from the FSPC at MSU

number of foodborne illnesses in the United States is unacceptable. Still, the public has relatively high levels of trust in the food system and would be willing to pay more for groceries to reduce the number of foodborne illnesses. The FSPC also held a briefing with members of the Michigan Department of Agriculture (MDA) and local public health officials, on June 30, to discuss the results of a Michigan-based survey on consumer attitudes toward food safety and the food system. To view information about the survey and other activities/research in which the FSPC is engaged, visit [www.fspc.msu.edu](http://www.fspc.msu.edu).

**Jean Kennedy, PhD**, has joined the FSPC as a Research Associate. Before joining the FSPC, Jean worked in the Food Safety Authority of Ireland. Her previous research experience included food microbiology and food safety promotion.

The Michigan Food Law Work Group, convened by MDA, met on June 27, 2006 to start the process of recommending adoption of the 2005 FDA Food Code for Michigan. The FSPC was the only academic presence contributing to the discussion. The MDA staff led a chapter-by-chapter discussion of

## RESEARCH UPDATE

The **Food Safety Policy Center (FSPC)**, at Michigan State University, released initial data from its national survey which measured consumer attitudes and knowledge about food safety during a press conference in Washington, D.C. on April 24, 2006. The FSPC briefed both senate and congressional aides and was invited to meet with Michigan Senator, Debbie Stabenow. The press event resulted in the decimation of the results in a variety of industry and media outlets, including a cover story in the June/July issue of **Food Safety Magazine**. The American public expressed high levels of concern about food safety, particularly with pesticide and chemical residues and foodborne illnesses, indicating that current reported

### FOOD SAFETY POLICY CENTER UPDATE

changes between the 1999 Food Code and the 2005 version, noting these areas of change: (1) buyer specifications for whole-muscle intact beef steaks in order to avoid using a consumer advisory; (2) bare hand contact - the Food Code now requires approval from the regulatory agency along with specific components of a written plan in a firm that desires to use bare hand contact. Industry members noted that one concern about this is the potential for non-uniformity among health departments reviewing and approving/denying plans; (3) the hot holding temperature requirement has been lowered to 135 degrees Fahrenheit; (4) date marking specific items that are exempt from date marking are now included in the code - notably commercial salads. Also, a firm may choose any method or system of identifying dates (not just the date of day 7). The goal of the Group is to have a package ready for the legislature by the end of the year while meetings continue to review the Code. ▲



**L**ifelong Education applications are now being accepted for Fall Semester 2006 with courses beginning on August 28. These courses are developed for the food safety professional and scientist who wishes to continue his/her

## GRADUATE LEVEL ONLINE FOOD SAFETY COURSES

education while at the same time continuing his/her career. Courses are offered through the Online Professional Master of Science (ProMS) in Food Safety program. Participants do not have to be enrolled in the graduate program to enroll in these courses; however, each three-credit course may be applicable toward a graduate degree program. Courses include:

**Food Protection and Defense (VM/CJ 821)**, a team-taught course by experts in the fields of Homeland Security, Emergency Management, Public-Private Partnerships, Transportation, Production, Processing, Retail and Supply-Chain Security, Food Vulnerability Assessment, Third-Party Certification and Economic Recovery;

**Packaging for Food Safety (VM/PKG 814)** is a course organized as Executive Education providing students with skills and insights to apply to immediate and current packaging and food safety issues; and

**Food Irradiation (VM 816)** is a course exploring the principles and practices of food irradiation for pathogen reduction, food preservation, and the elimination of pests and insects, providing participants with a 360-degree perspective on the science, history, marketing, education, and business of irradiation of food for consumption.

**F**or additional information about the Lifelong Education courses, please visit [www.foodsafe.msu.edu](http://www.foodsafe.msu.edu) or contact **Kristie D. Gates**, National Food Safety & Toxicology Center, [gatesk@msu.edu](mailto:gatesk@msu.edu) or (517) 432-3100 x121. ▲

conducted entirely online.

**T**opics related to food safety, as well as organizational, managerial, communication, and leadership skills are explored within the VM 810 course. Major course topics include pre-harvest food safety, food safety hazards, international and industrial food safety concerns, risk communication and public perception, public health concerns, leadership workshops, regulatory perspectives in food safety, legal issues and introduction to food law, bioterrorism, and financial management.

**S**tudents attending the course were: **Joanne Allen, Michael Bailey, Gerson Espindola, Jill Fisher, Matt Henderson, Tim Hight, Natasha Isaacs, Aaron Morton, Cristina Rau, Daniel Smith, Lynn Swiech, Jennifer Sysak, Robert Weick** and **Karen Wong-Petrie**. The lead instructor for the VM 810 course is **Pattie McNiell**, Academic Specialist.

**F**or additional information about the ProMS program, contact **Pattie McNiell** at 517-432-3100 or via email at [mcnielpa@cvm.msu.edu](mailto:mcnielpa@cvm.msu.edu) or visit the ProMS web pages at [www.foodsafe.msu.edu/education/proms/](http://www.foodsafe.msu.edu/education/proms/)

**T**he ProMS program administration, faculty, and staff would like to congratulate the following graduates who received their Master of Science in Food Safety degree through the College of Veterinary Medicine at Michigan State University during spring commencement exercises on May 5, 2006: **David Canfield, Linda L. Leake, and Jennifer Sysak**. ▲

# EDUCATION UPDATE

## PROMS PROGRAM WELCOMES FIFTH COHORT

**T**he Online Professional Master (ProMS) in Food Safety Program welcomed fourteen students to the fifth offering of the VM 810: Introduction to Food Safety and Professional Development, June 10–18, 2006, at the National Food Safety and Toxicology Center and MSU's Brook Lodge in Augusta, Michigan. Students enrolled in this

program represented many facets of the food industry, including food processing and packaging, the U.S. military and a regulatory agency. This is the only on-campus course for students in this Professional Master of Science program with the remainder of the courses



MSU graduate students, enrolled in the VM 810 on-campus component of the ProMS program, take a break from the course while at MSU's Brook Lodge.



**N**eal D. Fortin has been recognized for his legal scholarship with publication of the article, *Is a Picture Worth More Than 1,000 Words?* The article examines the scope of the Food and Drug Administration's (FDA's) authority to take photographs during inspections. This issue has been disputed and unresolved for decades.

## CAN FDA TAKE PHOTOS DURING INSPECTION?



“I hope my analysis of FDA’s inspectional authority and Fourth Amendment constraints will lessen conflict between businesses and the FDA,” said Mr. Fortin. “I also hope my discussion will be pedagogically helpful. The article covers important Fourth Amendment principles regarding the constitutional limits on the government intrusion during regulatory inspections. Pragmatic issues of this sort are exactly the type of legal issues that engage students’ attention.”

**N**eal Fortin is an associate professor at Michigan State University, the College of Agriculture and Natural Resources, and an adjunct professor of law at Michigan State University College of Law and is part of the core group of the Food Safety Policy Center (FSPC) at Michigan State University. A copy of the article is available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=910581](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=910581). ▲

**T**he Online Professional Master of Science (ProMS) in Food Safety Program has established the **Excellence in Graduate Food Safety Education Award** to recognize outstanding project work by graduates of the program.

## GRADUATE FOOD SAFETY EDUCATION AWARD ESTABLISHED

Faculty advisors within the ProMS program nominated students based upon review of the final project report (80%), as well as on overall performance in the ProMS program (20%). Additionally, eligible students must have graduated from the program by the time of award. All ProMS graduates within the previous academic year are automatically considered for nomination.

**F**inal projects completed within the VM 815 course focus on an in-depth experience where science will be integrated and applied to the resolution of a relevant food safety concern in collaboration with industry, government, or a non-governmental organization sponsor. An on-site experience to address the research, theoretical, or applied program and a written report of the identified problem is required and submitted prior to completion of the ProMS program.



The 2006 Excellence in Graduate Food Safety Education Award was presented at the 2006 Robert Leader Endowed Lecture Series Dinner L-R: Dr. Ed Mather (former director of ProMS program), Marianne Courey, and Dr. John Tilden

# EDUCATION UPDATE

## LOOK FOR THE NFSTC AT THESE EVENTS

**T**he NFSTC will be present at the following conferences over the next few months:

**ISVEE XI** - August 6 through 11 in Cairns, North Queensland, Australia

**IAFP 2006 Annual Meeting** - August 13 through 16 in Calgary, Alberta

**2006 Food Safety Education Conference** - September 27 through 29 in Denver, Colorado

**F**or this inaugural award, the following ProMS graduates were nominated: **Marianne Courey** (John Tilden, advisor), **Shirley Jankowski** (Neal Fortin, advisor), **Edith Watson** (Toby TenEyck, advisor), and **Anne Sherrod** (Neal Fortin, advisor). This year’s recipient was **Marianne Courey**, a December 2005 graduate of the program, for her project *Transportation risk assessment for food safety and security: An examination of risks and solutions associated with food transportation*, which developed an understanding of the risks associated with transporting food by truck and possible solutions to these risks. Included in the report was a prototype training CD for food transporters. Marianne’s work has played an important role in expanding collaboration between governmental agencies in Michigan and the Great Lakes Region. A multi-state food trucking assessment project is currently underway involving law enforcement and food regulatory agencies. ▲



The Aquatic Toxicology Laboratory within the NFSTC at Michigan State University continues its research into the evaluation of wildlife health as it relates to effects from exposure to Polychlorinated dibenzo-p-dioxins (PCDDs) and Polychlorinated dibenzo-p-furans (PCDFs) within the

## TITTABAWASSEE RIVER PROJECT ~ ECOLOGICAL STUDIES OF WILDLIFE

Tittabawassee River basin, located in and around Midland, Michigan. The study, funded by The Dow Chemical Company, is a multi-year, \$5 million dollar project that provides opportunities for undergraduate and graduate students to increase their understanding of science

outside of the classroom while providing significant information to state, federal, corporate, and community leaders on the conditions present with the Tittabawassee River basin.

The goal of the Tittabawassee River Project is to provide a scientifically defensible site-specific risk of harm evaluation for wildlife through adherence to the United States Environmental Protection Agency guidelines through the collection of site-specific data, minimizing the impact of conservative bias, utilizing a multiple line of evidence approach, conducting all research in an open and transparent manner, utilizing local assets, and providing data to all interested parties, simultaneously.



**John Giesy, PhD** is the Principal Investigator for the project, while **Matthew Zwiernik, PhD** is the Project Manager. Team members include three doctoral candidates, five full-time technicians, and up to 15 undergraduate and temporary

employees. Field and lab personnel also consist of visiting scholars and interns, which have included representatives from China and Holland.



This project relies heavily upon landowner interaction up and down the Tittabawassee River Basin, as constant communication is necessary with those landowners, informing them when studies will be conducted and access to the rivers will be necessary by the field teams throughout the nine study sites on the Tittabawassee, Saginaw, and Pine

Rivers.

During the months of April and May 2006, doctoral candidates **Rita Seston**, **Sarah Coefield**, and **Timothy Fredricks**, along with Project Manager, **Matthew Zwiernik** conducted the *Wildlife Health Within the Tittabawassee River Basin* seminar series, held at the Chippewa Nature Center, in Midland. The series was for residents with an interest in the project's ecological assessments of the region. Presentation topics included an overview of what is an ecological risk assessment; an overview of the Belted Kingfisher and Great Blue Heron as receptor species in the region; an overview of the Great Horned Owl as an indicator species within the region; and an overview of song birds (House Wren, Tree Swallow, and Eastern Bluebird) dietary exposure within the region. Other species of interest in the project include the Wood Duck, Hooded Merganser, American Robin, Mink, and Shrew. For additional information about the Tittabawassee River Project, contact **Matthew Zwiernik** at [zwiernik@msu.edu](mailto:zwiernik@msu.edu). ▲



# OUTREACH UPDATE



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