



Joint Institute for Food Safety and Applied Nutrition News

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Advisory Council Meeting & Research Grant Symposium

Each year JIFSAN holds an Advisory Council meeting to provide its members with an annual update and discuss initiatives for the next year. The members, Fortune 500 companies, international agencies, academia, and national consumer interest groups, meet to hear updates on JIFSAN's progress during the previous year and brief presentations on research, education, and outreach programs. JIFSAN also works with Council members to initiate programs that deal with issues in food safety, nutrition, animal health sciences, and risk analysis.

JIFSAN's Research Grant Symposium, held the day before the Advisory Council Meeting, gave council members an update on some of the projects funded through the Internal Competitive Research Program. The program, now in its sixth year, pairs University of Maryland faculty with U.S. Food and Drug Administration (FDA) staff to work on projects consistent with FDA's research needs and that contribute to science related to regulatory issues and activities. During the Advisory Council Meeting, Dr. David Lineback, Director, announced that JIFSAN will discontinue the Internal Competitive Research Program after the current projects are completed.



JIFSAN Director, Dr. David Lineback

Continued on next page

JIFSAN programs are divided into two areas—research initiatives and education and outreach activities. Although both are important, JIFSAN will focus primarily on education and outreach while exploring other opportunities for funding the collaborative research program. Research programs allowed the institute access to the knowledge and expertise of faculty and facilities. “The research area was our way into the departments, the laboratories, and the faculty,” he said.

An important research investment that will continue to receive funding is the development of the Center for Risk Communications Research (CRCR) at the University of Maryland. CRCR provides scholarly resources and expertise on media and communication about food safety, environmental harm, and health risks. “We think this is very important and want to do what we can to nurture its development because it gives a good focal point for the communications effort,” said Lineback.

In addition to CRCR, the Student Internship Program will continue to provide University of Maryland students with work experience at FDA. Two former interns were hired for permanent positions within the government agency. The internship program has also provided students with a gateway to other opportunities at the agency. During the 2004 FDA Science Forum, 14 students participated as co-authors on poster presentations.

Despite the success of focusing on education and outreach, such as the GAPS Program, JIFSAN is striving to improve its training offerings. The institute hired an external review team to meet with former participants in various countries to assess the program’s effectiveness. Some modifications are being made to the program based on recommendations of the review team.

JIFSAN’s 2005 Food Safety Risk Analysis Professional Development Summer Integrated Program (SIP) will include additional instructors and materials in response to student recommendations. All courses are offered over a three-week period and provide students with the option of registering for individual courses or course clusters. Opportunities for students who prefer to participate in distance learning risk analysis courses continue to grow and an additional course in the series will be piloted this fall.

Collaborative international education and outreach efforts will continue as well. JIFSAN, the Department of Environment, Food and Rural Affairs (DEFRA), UK and the Central Science Laboratory (CSL) hosted their sixth annual joint symposium on food safety and nutrition. The symposium, which was held in June, focused on bioactive food components. JIFSAN will also continue to collaborate with the Department of Natural Resources and Environment (DNRE), State of Victoria, Australia in detecting and measuring microbial pathogens on fresh-cut produce.

Lineback’s report at the Advisory Council meeting was optimistic that JIFSAN could adjust to a changing funding environment by diversifying its sources of support.



Measuring GAPs: Evaluating the Good Agricultural Practices Program

As more Americans strive for better eating habits and healthier lifestyles, the consumption of produce food items has increased since the 1950s. Increases in produce consumption and imports emphasize the importance of microbiological food safety. As consumers carefully inspect lettuce and squeeze melons while shopping, they should not have to worry about harmful bacteria, viruses, or parasites. They should be able to shop with confidence that their fresh produce products are safe to eat.

In light of these increased imports, it was recognized that safe food for our consumers could not rely on an inspection regime—it had to be based on safe production practices.

Accordingly, over the last four years JIFSAN has utilized its Good Agricultural Practices (GAPs) Train-the-Trainer Program to help ensure importation of safe produce by teaching trainers in exporting countries the principles and practices of GAPs to reduce microbial hazards in fresh produce. These trainers then teach other producers these GAPs principles to spread the message and further reduce these hazards in their exports to other countries.

Research Grant Symposium Presentations



Dr. Daniel E. Falvey

Presentations are available at http://www.jifsan.umd.edu/rps_2004.htm

An Integrated Approach for Identifying Phototoxic Cosmetic Ingredients
Dr. Daniel E. Falvey, Dr. Wayne G. Wamer and Dr. Patty Fu

Molecular Mechanisms of Fluoroquinolone and Erythromycin Resistance in *Campylobacter jejuni/coli*

Dr. Jianghong Meng, Dr. Patrick F. Dermott and Dr. David G. White

Safety Inspection of Fresh-Cut Fruits and Vegetables Using Spectral Sensing and Machine Vision Techniques

Dr. Yang Tao, Dr. Robert Buchanan, Dr. Yoonseok Song, and Dr. Yaguang Luo



Dr. Jianghong Meng

***Campylobacter jejuni*-host Interaction on the Intestinal Mucosal Surface**

Dr. Wenxia Song and Dr. Shaohua Zao

The Impact of Risk Messages about Bioterrorism on the U.S. Food Supply on Audience Attitudes and Behaviors

Dr. Linda Aldoory, Dr. Marjorie Davidson, Dr. Brenda Derby, and Dr. Alan Levy



Dr. Yang Tao

Moving Whole-Cell Biosensing from a Qualitative to Quantitative Tool: Development of a Dynamic Cell Immobilization Mechanism

Dr. Y. Martin Lo and Dr. Mahendra H. Kothary

Comparison of the Effects of Curcumin Supplements in Young and Aged Rats

Dr. Bernadene Magnuson, Dr. Sabine Franke-Carroll, Dr. Fred Hines, and Dr. Hamida Alam



Dr. Wenxia Song

Facilitating Needed Drug Approvals for Aquaculture: *in vitro* Metabolic Profiles to Characterize and Predict Drug Residues in Finfish

Dr. Andrew Kane, Dr. Badar Shaikh and Dr. Renate Reimschuessel

Modeling the Antimicrobial Effect of Lactate on the Growth and Survival of *Listeria monocytogenes* on Ready-to-Eat Seafood

Dr. Kisun Yoon and Dr. Richard C. Whiting



Dr. Linda Aldoory

Influence of Pre-Harvest Antibiotic Pesticide Treatment on the Microflora of Apple and Pear Blossoms, Leaves, Fruit, and Cider and its Implications for Food Safety

Dr. Christopher Walsh, Dr. Arthur Miller, and Dr. S. Brian Eblen

Study of Nisin and Sublancin in a Strategy for Protection of the United States Food Supply from Pathogenic Bacterial Spores Introduced through Bioterrorism

Dr. Norman Hansen, and Dr. Laila H. Ali

Student Internship Program

Analyze This: An Internship in Epidemiology

Unlike most JIFSAN interns, Christina Copty's work attire did not include the standard white lab coat. Nor did her equipment include microscopes and test tubes. In the U.S. Food and Drug Administration's (FDA) Center for Food Safety and Applied Nutrition's (CFSAN) Office of Scientific Analysis and Support, Copty used a computer, data, and her analytical skills to help the epidemiology team develop a database that monitors foodborne illness outbreaks.

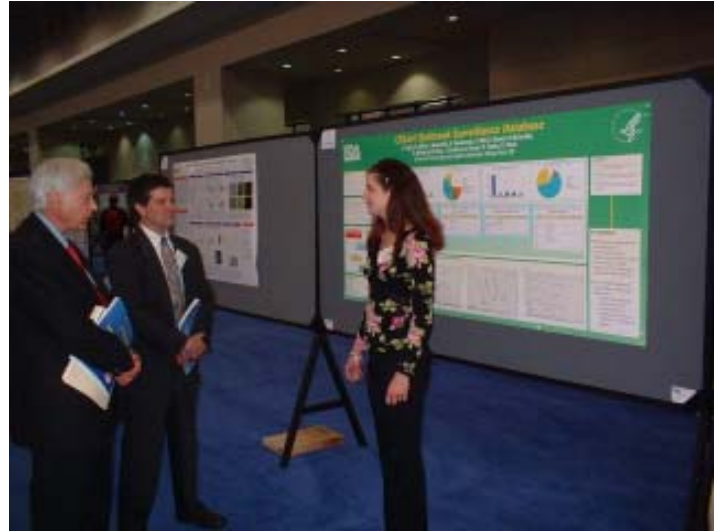
The database operates as a surveillance system that monitors outbreaks and incidents of foodborne illness, occurring in 2004 or after, that involve foods regulated by FDA. The epidemiology team uses this information from the database to spot problems and analyze trends.

This internship was an outlet for Copty's interest in public health, statistical analysis, and writing. She primarily worked with the epidemiology team in designing the database, testing software, determining what information to track, and deciding where to store information within the database. Aside from designing and testing, Copty also was able to gain experience in data analysis and fuel her interest in writing by assisting with the development of user guidelines for the database.

As much as she enjoyed the job, it did not come without challenges. Copty said it was a struggle to pull everything together. She and Dr. Patrick McCarthy, her mentor and an epidemiologist at CFSAN, would spend 15 to 20 hours a week testing software to determine which program was best for data collection and analysis. "We weren't doing things that had been established. We were establishing new ways of doing things," McCarthy said.

Copty also enhanced her knowledge of sign language while working at CFSAN. With the help of an interpreter, she trained Jim Varas, a hearing impaired staff member, on how to add information to the department's historical database which mirrors the database that she helped design. "Jim really liked working with her and there was often competition for her time," said McCarthy.

Copty said that her interaction with the staff was the best part of her internship. "They were very welcoming. I felt



Christina Copty at the 2005 Science Forum

like I was part of their team and really respected," she said. Because McCarthy continued to gain confidence in her abilities, he increased Copty's responsibilities and further integrated her into the team.

Working with the epidemiology team increased Copty's knowledge of the field and presented new possibilities for her future. Before this internship, Copty had no knowledge in the field of epidemiology. Copty said this experience has led her to consider incorporating epidemiology in her future graduate studies.



Profile

Major	Biology
Graduated	May 2005
Job	Hired by Aspen Systems Corporation in Rockville, MD as a biomedical writer
Started Internship:	May 2004
What she liked about UMD:	"It's a big school so you can kind of find your niche ... where you want to be."

GAPs Review continued

Last year, a team of external consultants traveled to some of the countries that previously received GAPs training to evaluate the effectiveness of the program. Over the course of three months, the review team visited Puerto Rico, Trinidad, Mexico, and Brazil. They met with previous trainees to assess the program's content and delivery, dissemination, and effect on regional changes in agriculture and packing practices.

The Message

Review participants reported that the JIFSAN GAPs program introduced the idea of a preventative approach to microbial food safety that supplemented existing programs and practices. The program also amplified a growing awareness of the need to integrate GAPs into the routines of those involved with growth and production of agriculture products—growers, handlers, packers, shippers, exporters and retailers. Caribbean attendees stated chemical hazards and pesticide safety had been a primary concern, but the GAPs program increased their understanding and value of microbial hazard prevention in agricultural and packing house practices. In Mexico, which accounts for 27% of fresh fruit and 38% of fresh vegetable imports by the U.S., attendees further explained that this was their first detailed exposure to the necessary practices for a microbial hazard prevention in fresh produce. The program exposed them to the idea of personal hygiene, for example hand washing techniques, and other changes to prevent contamination. They also reported that the program's training resources were a beneficial addition to existing information on developing education materials from the U.S. Food and Drug Administration (FDA) and other agencies and authorities within their country.

Similar to what was found with the Caribbean participants, those in Puerto Rico initially had minimal concerns about microbial hazards; however, once recognized as a potential problem, they requested training. After receiving GAPs training, they used the materials to develop customized instructional compact discs for growers and packing-house managers on a variety of GAPs topics such as animal exclusion and water quality.

Circulating the Message

JIFSAN's Train-the-Trainer program relies on the trainees to teach others involved with agriculture in their country the ideals and practices of GAPs to multiply the effects of the program—the

“multiplier effect.” Extension agents and specialists, who teach new methods of agriculture to farmers, consumers, and others in the agriculture industry, are the primary means for circulation of the GAPs message in most regions. Puerto Rico attendees said that extension agents and specialists have included GAPs in their lesson plans. Also, the Puerto Rico Agricultural Extension Service has an agreement with the Department of Agriculture to train the 10 regional commodity associations in GAPs and Good Manufacturing Practices.

Attendees from the Caribbean region also reported the integration of GAPs into extension programs and farm certification programs. An example of this integration includes Dominica where GAPs information has been presented to 700 farmers. Three companies in the Caribbean region have incorporated GAPs in their farm certification programs and Trinidad now monitors their 341 certified farmers monthly for compliance with regional and national GAPs guidance.

In Mexico, the desired “multiplier effect” was most successful in large companies that designated professionals and consultants to train their field and packing crews. Also, Mexico's State Plant Health Committees, equivalent to the U.S. Cooperative Extension Service, is working towards including GAPs in their training programs.

Perhaps the most successful multiplier program was that of an extension specialist in Argentina who hired and trained three other extension specialists to train producers, students ages 9 through college level, and consumers. These extension specialists offered 14 courses for producers and gave 50 talks for students, ages 9 – 16, on GAPs and food hygiene.

Latin America and Puerto Rico attendees used university courses to spread the GAPs message. The University of Puerto Rico and University of Brasilia included GAPs materials in food processing and food science courses. Argentina included GAPs information in two Hotel Management courses.

Production and Packing Changes

Overall, most attendees reported improvements in worker hygiene, water quality management, and post-harvest handling within their region. Attendees from Caribbean countries said workers are taking steps to reduce wounding, washing produce in

treated water, and making sure that produce is properly packed in clean containers. Mexico attendees reported regional improvements in water quality include testing, using chlorine, and protecting water delivery systems from surface contamination. Worker hygiene improvements in Mexico included accessible hand washing facilities and bathrooms in row crops and orchards. Attendees said worker hygiene changes have become lifestyle changes and carried over into their home life as well.

Attendees from Mexico and Latin America discussed improvements in the cleanliness of farms. They noted positive progress in the proper collection and disposal of farm waste, the addition of trash bins, and the removal of habitats for rodents and pests.

The Future of GAPs

The review team found that the program is meeting its objectives of showing the need for microbial hazard prevention, multiplying the GAPs message regionally, and igniting change within agricultural and packing practices. They also discovered areas where the program could better serve attendees such as customizing the program for the various levels of students by creating advance modules as a follow up to existing training. Recommendations for the improvement of GAPs are being implemented for future programs.

6th Annual CSL/JIFSAN Joint Symposium: Bioactive Food Components

For centuries, people have looked for ways to prolong life. Some even look to reverse the aging process and preserve their youthful appearance. Yet, in more recent decades, consumers have focused more and more on nutrition as a means to live longer and look healthier.

As consumers stroll down grocery store aisles, they are greeted with product packages claiming to reduce heart disease, help lose weight, and other nutritional benefits that will assist in

healthier living. These “functional foods,” with bioactive components, are attracting consumers who want to live longer healthier lives.

This year’s Central Science Laboratory (CSL)/JIFSAN symposium, which was held in June at the University of Maryland, University College, Inn and Conference Center, addressed this trend in food safety and nutrition—bioactive components in foods. CSL is a JIFSAN cooperative partner and an Executive Agency of the UK Government Department for Environment Food and Rural Affairs. The two-day symposium featured presenters from the United States and Europe who discussed labeling and health claims, research, and the future of bioactive components.

As part of a cooperative agreement between the two institutions, JIFSAN and CSL annually host a symposium on food safety and nutrition that focuses on issues of current interest. Each year the location of the symposium alternates between York, England and College Park, MD.

Further information on the symposium is available at <http://www.jifsan.umd.edu>.

CSL/JIFSAN Symposium Program

June 28

Session 1

Welcome and Introduction to JIFSAN
The Science Behind Labeling Issues and Health Claims
Issues relating to functional foods
Discussion

June 29

Session 2

E.U. 5th Framework PASSCLAIM Project
Nutritional risk associated with food safety: A case study of Olestra
Potential allergenicity issues: Future Challenges/Analytical Issues
‘-Omics’ roles and analytical challenges

Session 3

Variability of Phytochemicals in Plants and Foods
Biomarkers and Surrogate Endpoints for Evaluating Health Benefits of Food Components: Promises and Perils
Phytoestrogens in Foods
Probiotics in Functional Foods
Discussion

June 30

Session 4

Challenges Facing Regulation of Pet Foods Containing Bioactive Components
Consumer Perspectives/Attitudes
Concluding session: “Where do we go from here?”
Discussion

Cooperative Partnerships: Center for Food and Nutrition Policy

JIFSAN forms partnerships with other institutions to strengthen its education and outreach objectives within the food safety community. The Center for Food and Nutrition Policy (CFNP) is one of these cooperative partners working with JIFSAN to meet common goals.

The Virginia-based organization is an independent research and education center affiliated with Virginia Polytechnic Institute and State University (Virginia Tech). CFNP, whose goal is to advance science-based food policy, utilizes Ceres® (the trademark name of its outreach and public service activities) and its research and teaching programs to examine food policy issues facing government policymakers, regulators, agribusinesses, and food manufacturers.

JIFSAN is partnering with CFNP because they share common outreach goals to increase understanding and address current food and nutrition issues. JIFSAN first teamed up with CFNP to co-sponsor the Ceres® 2001 Executive Leadership Seminar in Food Safety. Approximately 30 – 35 fellows worked individually with mentors on two-year projects to solve food safety problems. The program was made up of four individual sessions held over the course of two years in Canada, Chile, Trinidad and Tobago, and Costa Rica.

JIFSAN has co-sponsored other Ceres® events that addressed opportune food safety and nutrition issues. Last spring, JIFSAN co-sponsored a forum on transmissible spongiform encephalopathies (TSEs) 80 days after the discovery of TSEs in US meat, and a workshop on high-fructose corn syrup (HFCS) where experts discussed issues concerning consumption and its role in nutrition and obesity. Another shared common interest or goal is the efforts of both institutions in acrylamide. JIFSAN co-sponsored the Ceres® acrylamide roundtable discussion, one month before the JIFSAN 2002 acrylamide workshop, addressing scientific issues and courses of action for policy makers and industry.

More information on the Center for Food and Nutrition Policy is available at <http://www.ceresnet.org/>



Chinese Food Safety Officials Gain Understanding of US Food Safety

By Ken Hunter

Last fall, 15 food safety officials from the People's Republic of China participated in an 11-week leadership program facilitated by JIFSAN and organized by Kenneth Hunter, formerly of the University of Maryland Institute for Global Chinese Affairs (IGCA) and currently the JIFSAN Coordinator of International Training. The program, which was designed to teach these food safety officials how the U.S. government meets the World Trade Organization's (WTO) Agreement on the Application of Sanitary and Phytosanitary Measures (SPS) requirements, was a result of U.S.-Chinese trade discussions on the implementation of the WTO SPS. The SPS agreement requires countries to base their standards for food safety and animal and plant health on international standards where they exist unless they have scientific justification for a higher level of protection.

People's Republic of China delegation continued on next page



Food Safety Officials at the U.S. Capitol

People's Republic of China delegation continued

At the request of the U.S. SPS team—Office of the U.S. Trade Representative (USTR), U.S. Department of Agriculture (USDA), U.S. Food and Drug Administration (FDA), U.S. Environmental Protection Agency (EPA), and others, IGCA and JIFSAN worked with agencies and industry groups to manage the delivery of the program and the day-to-day support of the Chinese officials. The U.S. SPS team of experts provided technical training in this prototype and the USDA Foreign Agriculture Service led the interagency coordination and initiated industry participation.

Most of the seminars were held at the FDA Wiley Building in the Center for Food Safety and Applied Nutrition training facilities. The program consisted of classes on a variety of topics such as American government, agriculture, food regulations and disease, biotechnology, and other SPS issues. During their second week of training, attendees spent a day learning about the basics of risk analysis from one of JIFSAN's Risk Analysis Professional Development Training instructors, Charles Yoe.

Trainees also spent time traveling to other parts of the country. The group spent a week in the Midwest during the October harvest and two weeks in the West—Denver, Los Angeles, San Joaquin Valley, Portland, Yakima, and Seattle areas—to see U.S. food safety practices in different types of operations. This combination of seeing, talking, and hearing from experts and practitioners deepened the Chinese officials' understanding of what the U.S. is doing to meet its obligations under the WTO SPS Agreement and provide safe food products in its significant and growing exports to China and globally. Trainees were also provided information and ideas for China's use in its own implementation of the Agreement.

Throughout the program, representatives from U.S. government, academia and industry emphasized that U.S. food safety measures are founded on the principles of sound science, risk analysis, and health. They also focused on the U.S. rulemaking process and its transparency, consistency, and openness to input by the private sector and other countries.

Currently, there are plans for a second WTO SPS program with China. JIFSAN plans to extend similar leadership programs to other countries.



Food Safety Officials with the Kimberly family at Kimberly Farms, Inc., near Des Moines, Iowa.

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