



Annual Report 2007-2008

**The Joint Institute for Food Safety and
Applied Nutrition (JIFSAN)**

**University of Maryland
College Park, Maryland 20742**

Jianghong Meng, Interim Director

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Executive Summary

In 1996, the Joint Institute for Food Safety & Applied Nutrition (JIFSAN) at the University of Maryland, College Park was established by the University and the US Food & Drug Administration (FDA) to support cooperative research, education, and outreach programs that enhance the safety of our food supply, and to advance new concepts in public health, applied nutrition, and animal health. This report summarizes the activities and accomplishments of the first year of the third five-year Cooperative Agreement (September 30, 2007 through July 30, 2012). The funding for the eleventh year was \$2,000,000, with an additional \$630,000 in carry forward funds.

Over the past year, JIFSAN continue experiencing exciting developments as well as changes. The Advisory Council met on April 11-12, 2008. The meeting involved brief presentations with updates on selected research and education/outreach programs, from JIFSAN, CFSAN and CVM. Discussions were held concerning the future directions. A follow up meeting on the role and structure of the Council was planned for November 2008.

JIFSAN's research efforts are extensive and varied. JIFSAN is supporting several research projects including ecology and control of *Salmonella* Newport contamination and survival on tomatoes, predictors of returning to pre-recall levels of spinach consumption survey, and evaluation of the ALERT (food defense) campaign. JIFSAN plans to fund three additional research projects using carry-forward funds. Support of the Center for Risk Communication Research (CRCR), led by the UM Department of Communication, is continuing with operation funding furnished by JIFSAN for the fourth year.

The JIFSAN Student Internship Program continues to increase in importance and participation. UM undergraduate students are offered an opportunity to work with FDA scientists in their laboratories on specific projects identified by the FDA scientist involved. During 2007-2008, 26 UM students participated in research in FDA laboratories.

The Food Safety Risk Analysis Professional Development Program continued to develop and offer both face-to-face and distance learning online courses. The three-week Summer Integrated Program (SIP) was offered in July 2008 in Washington, D.C. SIP was well received, attracting 46 participants from nine countries. It will be offered again in June 2009. Four online risk analysis courses were also offered to a total of 67 students from 11 countries.

FoodRisk.org has updated the way data are entered to allow for more and better resources in our database and to maintain the integrity of previously entered data. FoodRisk.org will be hosting a tool designed to simplify the process of comparing different types of risks in foods, and evaluate the impact of the various elements that affect these risks.

Additionally, FoodRisk.org is now the single host of the 1991 Federal Register Proposed Rules for Food Labeling.

JIFSAN has strong international training programs supported by cooperative partnerships, including the Good Agricultural Practices (GAPs), the Good Aquacultural Practices (GAQPs), Commercially Sterile Packaged Foods (CSPF) programs. JIFSAN offered two GAPs and one GAQPs training and are planning for a GAQPs training in Indonesia in November 2008 and a CSPF training in Morocco in January 2009.

JIFSAN sponsored or co-sponsored two workshops/symposia this past year: the 9th Joint CSL/JIFSAN Symposium on Developing Responses to Emerging Food Safety Issues, June 18-20, 2008 (York, UK) and Research Needs Prioritization for Conducting a Quantitative Risk Assessment of E. coli O157:H7 in Leafy Greens, July 8-9, 2008 (College Park, MD). JIFSAN has committed to support the 5th Asian Conference on Food and Nutrition Safety that will be held on November 3-7, 2008, in Cebu, Philippines and Tools for Prioritizing Food Safety Risk, November 18-19, 2008, Greenbelt, MD.

Organization

Mission and Vision

Founded in 1996 by the University of Maryland and the US Food & Drug Administration, the Joint Institute for Food Safety & Applied Nutrition (JIFSAN) is a multidisciplinary research, education and outreach program. JIFSAN's mission is **to advance sound strategies that improve public health, food safety, applied nutrition and animal health using risk analysis principles through cooperative research, education and outreach programs.** JIFSAN has developed a vision towards achieving its goal as **an internationally recognized source of scientific information and trainings on food safety, applied nutrition and animal health that will enable the development of sound public health policy, the improvement of human nutrition, and the reduction of the burden of food-borne illness.** Achievement of the mission and vision necessitate the active development of program-focused partnerships, with government agencies, industry, academia and public interest groups, including the acquisition of external funding.

New Location

JIFSAN office has moved to the Patapsco Building at M Square, Maryland's largest research park. This location ideally situates JIFSAN adjacent to the FDA CFSAN Harvey Wiley Building, within walking distance from the College Park Metro-Washington's subway and bus transit system) and is less than two miles from the University of Maryland's main campus. M Square focuses on key technology clusters, including homeland and national security, environment and earth sciences, weather prediction and global climate change, and food safety and security. JIFSAN's move to M Square provides many opportunities to promote leveraging. It increases JIFSAN's ability to develop external partnerships to support our expanding international outreach programs and our Food Safety Risk Analysis Program. It also marks a pivotal point in JIFSAN's programs as it moves forward and builds on its achievements; and it will further enhance JIFSAN's ability to build collaborative partnerships with the UM faculty and FDA Scientists.

Staff

Director	Dr. Jianghong Meng (Acting)
Associate Director	Dr. Paul Mazzocchi
Assistant to the Director	Ms. Vernora (Nora) Petty
Financial Officer	Ms. Mary Grimley
Programs & Communications Coordinator	Ms. Judy Quigley
IT Programmer Analyst	Mr. Kyle McKillop
Accounting Associate	Ms. Beth McAllister
Internship Program Director	Dr. Kaci Thompson
International Training Coordinator	Mr. Kenneth Hunter

Senior Fellows

Food Safety	Dr. David Lineback
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Nutrition & Food Safety
Program Development

Dr. Sanford Miller
Dr. John Jones

New Appointments

Dr. Sanford A. Miller was appointed as Senior Fellow of Nutrition and Food Safety with JIFSAN on April 28, 2008. Dr. Miller's vast experience includes administrative and research positions in both government and academia. Dr. Miller is a former Director of FDA/CFSAN (1978-1987). He was named a National Associate of the National Academies in 2002. He has chaired the FDA's Food Advisory Committee, and was the first recipient of the FDA's Distinguished Alumni Award. He is also Dean Emeritus of The Graduate School of Biomedical Sciences at The University of Texas Health Science Center at San Antonio. Previously, he was a Professor of Nutritional Biochemistry at the Massachusetts Institute of Technology. JIFSAN looks forward to working closely with Dr. Miller in this new capacity and to the experience and leadership he will provide to build thriving growing and effective programs in food safety and applied nutrition.

Dr. John Jones was appointed as Senior Fellow of Program Development with JIFSAN on July 1, 2008. Dr. Jones is a consultant on international food safety and trade issues. He holds a doctorate in Analytical Chemistry from the University of Maryland. He worked for FDA for 34 years in the areas of food safety and international trade. He has very broad international experience, having worked in over 30 countries on food safety policy and technical issues. He served on U.S. delegations to the Codex Committee on Pesticide Residues and the World Trade Organization's Committee on Sanitary and Phytosanitary Measures. As a temporary adviser, he has also assisted WHO, the Food and Agriculture Organization (FAO) and United Nations Development Program on various food safety matters.

The JIFSAN Advisory Council

Central to the operation of JIFSAN is the Advisory Council composed of 22 members from private sector business, government agencies, academia, and representatives of consumers' interests. This group provides guidance to JIFSAN in developing research, education, and outreach programs to address problems in food safety, nutrition, animal health sciences, and risk analysis.

The Advisory Council met on May 14-15, 2008. The meeting involved updates from JIFSAN by Dr. Jianghong Meng, from CFSAN by Dr. Stephen Sundlof and from CVM by Dr. Bernadette Dunham. Drs. Michael Mignogna and Martin Lo provided an update on the development of Commercially Sterile Packaged Foods (CSPF) Training Program. Dr. John Jones reported on Food Safety component of the USAID "Afghanistan Accelerating Sustainable Agriculture Program".

Further discussions led by Jianghong Meng and George Evancho of Campbell Soup focused on future directions and strategic plan of JIFSAN. A subcommittee was formed to continue the discussions on the structure and role of Advisory Council. Six individuals representing JIFSAN, FDA and the Council volunteered to serve on the subcommittee

including: Elizabeth Calvey, George Evancho, Richard Lane, Paul Mazzocchi, William Sveum, and Thomas Trautman. The subcommittee will present a report at the next Advisory Council meeting in November 2008.

Program Areas

Research

JIFSAN's research efforts are extensive and varied; investigating issues related to food safety, applied nutrition and other public health issues at the local-regional level as well as the international level. The JIFSAN research program was established to assist in the generation of new knowledge to support research efforts in furthering the scientific basis for public health policy formulation, evaluation, modeling and risk assessment. The applied research includes not only traditional laboratory and field research, but also educational, behavioral or social research, focused on defining the behavioral determinants that promote sound food safety practices.

Internal Research Program

With the renewal of the third-five year cooperative agreement several new research initiatives that address public health needs were identified and funded. UM and FDA researchers have been investigating **ecology and control of *Salmonella* Newport contamination and survival on tomatoes**. The study will determine the growth and survival characteristics of *Salmonella* on tomatoes and in the tomato growing environment including pH tolerance, desiccation and other stress responses, osmotic tolerances, and the potential for internalization and subsequent survival of *Salmonella* inside tomato fruits. Preliminary work has identified antagonistic strains that will be examined in greater detail to ascertain MIC values for each antagonist and various other studies to rate the potency and potential mechanisms for these microbes. Optimal antagonists will then be entered into field trials and once a successful candidate is selected, growers can be provided with the strain as part of ongoing trials into the effectiveness of such a strain as a kill-step in the persistence of *Salmonella* on Eastern shore tomatoes.

Additionally, the WG decided to use carryover funds to support at least two larger research projects. An RFP identifying specific research questions that reflect the priority research needs of FDA that match with scientific expertise available at the University was developed and announced. Several proposals were reviewed and the following projects were under consideration for funding:

- Evaluating Public Health Impacts and Cost-Effectiveness of Implementing GAPs in the Tomato Farm Environment
PI: Amy Sapkota, Univ. of Maryland; FDA Collaborators: Andrew Estrin, and Cristina F. McLaughlin

- Developing Phyllosphere Metrics in GAPs to Reduce the Risks of Salmonellosis in Fresh-Market Tomatoes and Other Vegetable Crops
PI: Chris Walsh, Univ. of Maryland; FDA Collaborator: Eric Brown
- Plant Responses to the Colonization by *Escherichia coli* O157:H7 and *Salmonella*
PI: Jean-Michel Ane , Univ. of Wisconsin; FDA Collaborator: Eric Brown

Another goal of JIFSAN is to explore ways to expand its research program by developing partnerships with other organizations and the industry. JIFSAN is supporting a graduate student using carryover funds from the first year of the third grant period to work on identifying human behaviors within the retail food (deli) environment that may lead to cross-contamination of *Listeria monocytogenes*. The information will help inform the development of FDA's cross-contamination model which may bring in possible additional funding from the industry and USDA.

JIFSAN Postdoctoral Research Associate Program

This program strengthens the science base for public health policy by providing short-term research opportunities for scientist within a regulatory environment. Between 2002 and 2008, 10 postdoctoral research associates were recruited; working in both FDA and UM laboratories, in areas where significant knowledge gaps or the lack of appropriate scientific data, methods, or models existed.

This program has generated significant amounts of new knowledge, to promote the safety of the U.S. food supply. FDA has the important opportunity of evaluating the potential of these individuals to become productive staff members when vacancies exist. Two postdoctoral research associates were funded during the 2007-2008 program year:

- Development of a Real-time PCR assay for the detection and identification of *Shigella* spp. from foods, Keith A. Lampel (FDA), Kwang-Young Song (JIFSAN Research Associate; resigned in February 2008)
- *In Vitro* Skin Absorption of Nanoparticles: Robert Bronaugh (FDA); Srinivasa R. Raghavan (Chemical Engineering Department, UM); Oluwatosin Ogunsola (JIFSAN Research Associate)

Support of Center for Risk Communication Research

JIFSAN continues providing funding in support of the Center for Risk Communication Research (CR²) led by the UM Department of Communication. The Center's mission is to advance understanding about how communication helps control risk; the public perceives risk communication; and the political, economic and social contexts for risk communication. The Center's goals include helping to establish public and scholarly agendas for risk communication research, collaborating with other institutions and individuals to secure funding for research projects, and providing support for research and fellowships.

The UM CR² is conducting three risk communication research projects regarding the effectiveness of the ALERT campaign; retail response to food recalls; and consumer behaviors concerning the 2006 spinach recall. Additionally, two GAPs research projects in an effort to determine the effectiveness of GAPs guidelines.

The following research projects led by CRCR were funded during 2007-2008 funding period:

- 1) Does Emotion Regarding a Food Crisis Predict Consumers' Hesitancy to Eat the Food Once the Crisis is Averted?

Since October of 2007, initial planning meetings were held to develop research objectives. The group reviewed the literature on the risk communication and food recalls, and conducted a literature review of relevant theoretical frameworks to be used for the project. Based on this literature review, a comprehensive list of four theories of focus was developed. The team developed the sampling plan; which will consist of a nation-wide sample (over-sampling in CA) of people who are currently spinach eaters or once were spinach eaters. The team also decided to employ 8 cognitive interviews to test the survey instrument; once approved. Sampling companies have been contacted and the budget was revised to accommodate fees. This project was already approved by the University of Maryland IRB. Significant delays have occurred at the FDA 60-day review level. We submitted the notice in November of 2007; in March of 2008 they finally reviewed the document and asked for revisions. In April of 2008 we anticipate the notices being posted.

- 2) Food Defense Research Initiative: Evaluation of the ALERT (Assure, Look, Employees, Reports, Threat) campaign

A comprehensive list of four theories of focus was developed. A rough draft of the survey instrument was developed and showed to funders as well as our CFSAN colleagues (e.g., Edmundo Garcia). The team developed the sampling plan; which will consist of companies from all the targets that ALERT covers (e.g., warehouse, suppliers, truckers). We decided to use a random sample of each of these types of organizations, stratifying by company size. We contacted sampling companies and found out that they do not have access to these kinds of samples. Thus, we found archives of such organizations from the library and will use them for sampling. We have completed the 60-day review document for FDA and have completed the OMB paperwork. This project was already approved by the University of Maryland IRB. Significant delays have occurred at the FDA 60-day review level. We submitted the notice in November of 2007; in March of 2008 they finally reviewed the document and asked for revisions. In April of 2008 we anticipate the notices being posted.

JIFSAN Student Internship Program

The JIFSAN Student Internship program is a unique undergraduate research program designed to provide UM undergraduate students with an opportunity to collaborate with FDA scientists on specific research projects related to the JIFSAN mission. In 2007-2008, 26 individual students participated in the program. Efforts continue to be made to extend these research opportunities for internships beyond laboratory experiences. UM Students are encouraged to co-author posters for presentation at FDA Science Forum and UM Bioscience Day. Several students have contributed to articles and research presentations with their FDA mentors.

The JIFSAN Internship Program is managed by Dr. Kaci Thompson, Director of Undergraduate Research and Internship Programs for the College of Chemical and Life Sciences. Student, faculty, and staff awareness of the Program is achieved through web postings, brochures, seminar series, campus list serves and the annual Internship Day. Dr. Thompson has also started giving presentations on JIFSAN internship to freshmen at UNIV100, an introduction course on University life.

Education/Training

Working with partner organizations, education/outreach efforts include international food safety training programs to address the contamination problem at the source; a comprehensive online food safety risk analysis database (FoodRisk.org) and sponsorship of workshops and symposia.

Food Safety Risk Analysis Professional Development Training Program:

This program provides trainings in the key components of risk analysis. Courses in the program are available in face-to-face as a summer integrated program [SIP] and as individual customized programs tailored for specific audiences and on-line distance learning formats.

Summer Integrated Program (SIP):

Four Core courses including Overview of Risk Analysis; Food Safety Risk Management; Food Safety Risk Assessment; and Food Safety Risk Communication and two Intermediate courses in Quantitative Risk Assessment Methods: Model Building and Quantitative Risk Assessment Methods: Probabilistic Methods are taught in the Summer Integrated Program. The 2008 SIP program was held in July 2008. Forty six individuals enrolled and attended the courses, for a total of 114 class seats including 49 international seats. The international participants were from Australia, Canada, Hong Kong, Italy, Japan, New Zealand, Norway, Thailand and Vietnam.

On-line Food Safety Risk Analysis Program:

Four JIFSAN Food Safety Risk Analysis courses are offered in distance learning mode: Overview of Risk Analysis; Food Safety Risk Management; Food Safety Risk Assessment; and Food Safety Risk Communication.

In 2006 and 2007, there were 103 class registrations for the online program, of which 69 (67%) were international. A total of 89 individuals from 10 countries participated in the program.

Train-the-Trainer International Training Programs:

The focus of this co-sponsored train-the-trainer program is to provide the international community with an adaptable framework of practices necessary for the production of safe, wholesome food products. The first international training program, GAPs, developed by JIFSAN serves as a model for the development and implementation of subsequent programs. The success of these programs has allowed JIFSAN to leverage these resources by developing collaborations with other agencies to identify and fund additional programs and offerings. As awareness for global education and outreach increases JIFSAN continues to build partnerships to address current issues.

Good Agricultural Practices (GAPs) Training Programs:

The program focuses on fresh fruits and vegetables. In 2008, GAPs trainings were offered in Costa Rica and Honduras. The GAPs training manual will be completely revised. The new manual will be utilized as a resource for participants in their future training efforts.

The JohnsonDiversey International Training Initiative:

JIFSAN and JohnsonDiversey Corporation established the JohnsonDiversey International Training Initiative in 2005, which has partially supported the GAPs, GAQPs and WTO-SPS efforts.

The Good Aquacultural Practices (GAQPs) International Training Program:

GAQPs training provides on-farm education for the safety and quality of raw aquacultural commodities. Since a successful pilot program in Vietnam in November 2006, the program has now been revised based on findings from its initial offering and a formal training manual has been developed. The training was offered in Thailand on May 5-9 and another will be in Indonesia on November 3-7.

The Commercially Sterilized Package Foods (CSPF) International Training Program

Collaborating with FDA and an industry coalition currently consisted of Campbell Soup, General Mills and Kraft Food; JIFSAN has developed a CSPF international training program. A draft training manual was produced, and a pilot training program in Morocco is planned in January 2009.

China Training Program

The U.S. has obligations under the World Trade Organization (WTO) food safety agreement that requires it to provide instruction in the use of sound science and risk analysis in rule making and implementation by government and industry to a variety of countries, including China. These principles guide those decisions in the U.S. and we provide China information to adopt comparable approaches and methods.

JIFSAN, in partnership with the U.S. SPS team, Office of the U.S. Trade Representative (USTR), USDA, FDA, U.S. Environmental Protection Agency (EPA), and others, has taken the lead in developing and managing the delivery of this program to Chinese food safety officials. The U.S. SPS team of experts provides technical training in this prototype and the USDA Foreign Agriculture Service leads the interagency coordination and initiation of industry participation. JIFSAN will partner with USDA/FAS and other agencies to continue offer food safety trainings to Chinese professionals.

Outreach

FoodRisk.org On-line Database:

FoodRisk.org is the only online resource specialized in food safety risk analysis, including risk assessment, risk management, and risk communication. FoodRisk.org provides exclusive access to a number of unique data sets, tools, and resources, and is used by food safety experts to support risk assessment model building and data analysis.

FoodRisk.org has recently updated the way data are entered to allow for more and better resources in our database and to maintain the integrity of previously entered data. FoodRisk.org will be hosting a tool designed to simplify the process of comparing different types of risks in foods, and evaluate the impact of the various elements that affect these risks. Additionally, FoodRisk.org is now the single host of the 1991 Federal Register Proposed Rules for Food Labeling.

Acrylamide Infonet: At the request of the United Nations' World Health Organization and Food and Agricultural Organization, JIFSAN is operating the Acrylamide Infonet (www.acrylamide-food.org), the WHO/FAO Acrylamide in Food Network, through FoodRisk.org. This Network was established as a result of the June 2002 FAO/WHO Consultation on the Health Implications of Acrylamide in Food. The focal point for the network contains a database of researchers/data providers; references for research published elsewhere; studies in development database; listing of acrylamide websites; acrylamide documentation (general information); events and activities; Infonet updates; and call for data. The site generates over 380,000 hits per year.

Workshops and Symposia:

In 2008, JIFSAN co-sponsored two workshops/symposia and helped organize a meeting for the FDA Science Synergy Work Group.

- The 2008 CSL/JIFSAN Joint Symposium on Food Safety and Nutrition: Developing Responses to Emerging Global Food Safety Issues, on June 18-20, at the Central Science Laboratory in Sand Hutton, York, UK. The Symposium is the ninth in a series of annual symposia on food safety and applied nutrition, jointly organized by CSL and JIFSAN. Symposia topics included an overview on the global nature of the food supply; case studies describing responses to recent international food safety issues; tools for developing the capability to respond rapidly (analytical; information and data exchange;

sampling; method validation; laboratory networks; risk communication; and horizon scanning techniques for emerging food contaminants). Speakers were affiliated with ILSI Southeast Asia Region; the EU Network of Excellence, MoniQA (Monitoring and Quality Assurance); UK Health Protection agency; UK Foods Standard Agency; CSL; University of Maryland; Emory University; University of California; CFSAN, CVM and ORA. The 2009 CSL/JIFSAN Joint Symposium on Food Safety and Nutrition will be held in June 2009 in College Park, MD. The tentative focus of the 10th annual symposium will be on traceability including speakers associated with the EU FPA TRACE project.

- “Research Needs Prioritization for Conducting a Quantitative Risk Assessment of E. coli O157:H7 in Leafy Greens Workshop” was held on July 8-9, 2008 in College Park, MD. The workshop, hosted by the Interagency Risk Assessment Consortium (IRAC) and co-sponsored by JIFSAN, was designed to test a novel approach for identifying and prioritizing data gaps for conducting a risk assessment of E. coli O157:H7 foodborne illness from the consumption of leafy green vegetables. The workshop brought together over 70 participants from academia, industry, and government who are working on tools for risk screening, ranking and prioritization. Representatives from NIH, CDC, FDA, and USDA attended.
- JIFSAN hosted a meeting on Tuesday, February 26, 2008 at the University of Maryland Nanocenter for the FDA Science Synergy Work Group and the FDA Nano Technology Focus Group. Dr. Jianghong Meng provided an overview of the JIFSAN programs. Dr. Gary Rubloff, Director UM NanoCenter provided an overview of the NanoCenter. The NanoCenter includes faculty from multiple colleges/departments on campus as well as faculty from other campuses within the University System of Maryland. Following the presentations the FDAers were given a tour of the facilities including the Nanofabrication Facility and the Microscopy Facility.

New Initiatives

1. Asia-Pacific Economic Cooperation (APEC) Partnership Training Institute (PTI) for Food Safety: Concerns about food safety in the Asia Pacific region have risen sharply, requiring a high level, collective mandate to restore consumer confidence. The APEC Leaders approved in November 2008 a US proposal to establish a public-private sector APEC PTI for food safety as a network of training institutes in APEC region’s 21 countries to build capacity of both foreign regulators and manufacturers. Partnering with the US Grocery Manufacturers’ Association (GMA) and the US government, JIFSAN would serve as **a model** and **anchor** for the network of Asia-Pacific partner institutions.

The programs would be managed by a steering committee consisting of representatives from government, academia and industry. JIFSAN has been nominated to serve as the academic representative of the US delegate. Partner institutes would be recruited and common core programs rolled out systematically over a two-three year period as a series of quarterly pilot projects, possibly beginning with Thailand and China in the first quarter

and third quarters of 2009. In 2011, the program would be analyzed and launched as a fully functioning on-going food safety network.

2. Regional Training Centers in Central & South America: JIFSAN is in the process of developing and piloting a sustainable international training program with academic partners in Central and South American regions. This will include conducting one of JIFSAN's current train-the-trainer programs in partnership with universities within the region; providing assistance to the regional academic partner in the development of a plan to ensure that the training is propagated within the country; and assisting the regional academic partner in piloting the proposed plan. JIFSAN has identified partners in the Dominican Republic for the pilot program, and will provide GAPs training in the country. Additionally, a series of one-day awareness courses will be developed by JIFSAN that precede foreign and domestic plant inspections.

3. Developing Research Partnership: JIFSAN is developing partnerships with government, the industry and international organizations to address emerging issues related to food safety and applied nutrition. JIFSAN is using NIH P20 Grant model to identify research need in applied nutrition and to bring together researchers at UM, FDA and other institutions to undertake research questions. The proposed research areas in applied nutrition include: biomarkers for chronic disease risk reduction, behavioral research on overweight and obesity, and nutritional risk assessment in tolerable upper intake level.

JIFSAN is also collaborating with the French National Institute for Agricultural Research (INRA); University of California, San Diego, and the FDA on a joint research project on food safety risk assessments and uncertainty. This project will examine a variety of food safety risk assessments to determine how each addresses the different forms of uncertainty (such as data uncertainty and model uncertainty) in the risk models, how these uncertainties are presented in the descriptive technical reports and executive summaries, and whether there are consistent differences between different types of risk assessments (for example, risk ranking assessment and product pathway assessments). A JIFSAN student intern has been selected to provide assistance on this project. The identification of funding sources is currently under development.

In addition, JIFSAN supports a pilot research project on *Listeria monocytogenes* in retail food environment to address human behaviors that may lead to cross-contamination of *Listeria*, and will work with Food Marketing Institute for further studies in risk assessment of *L. monocytogenes* in deli meats. JIFSAN also collaborates with FDA scientists in research projects from FDA-Chief Scientist Research Grant Program.

4. International Food Safety Laboratory Training Institute: Discussions between JIFSAN and Waters Corporation regarding the establishment of a laboratory-based international training facility have gained momentum recently. The program will complement JIFSAN's extensive international training programs. Waters Corporation, a publicly traded laboratory analytical instrument and software manufacturer headquartered in Massachusetts is a market leader in providing food safety solutions. Waters will make

5. Third-Party Certifiers and Auditors Training: JIFSAN is exploring an opportunity of a training program for third-party certifiers and auditors who attest to the safety and quality of FDA-Regulated foods imported into the United States. IFSAN has proposed to: establish a comprehensive, advanced educational program for third-party food safety certifiers and auditors on the food safety, quality and labeling regulations and inspectional/enforcement approaches of FDA; and offer a unique combination of classroom studies, and on-site inspectional training in food facilities that provides third-party certifiers with the in-depth knowledge of FDA regulations and inspectional practices. The proposal is currently being reviewed by FDA.

Future Plans (2008-2009)

The twelfth year cooperative agreement was awarded to JIFSAN in September, 2008 for \$ 1,389,140 from FDA. The continued financial support will assist JIFSAN to strengthen existing programs and allow expansion of JIFSAN's education, outreach and applied research programs, and external partnerships. Several new initiatives described above have been launched or under discussions. Efforts will continue to be made for JIFSAN to obtain external funding for program support from other governmental agencies, and the industry.

Administrative

- Dr. Jianghong Meng will continue serving as Interim Director of JIFSAN until July 2009.
- Dr. Juliana Ruzante has been hired as Food Safety Risk Analysis Program Manager at JIFSAN and will start her job in September 2008.
- Mr. George Evancho will be a Senior Fellow at JIFSAN for Corporate Relations.
- Two meetings of the JIFSAN Advisory Council will be held on November 20, 2008, and March 10-11, 2009. These meetings will concentrate on the role and structure of the Advisory Council and strategic planning.

Research Initiatives

- JIFSAN will work with experts to identify research need in food safety and applied nutrition and bring together researchers at UM, FDA and other institutions

to undertake research questions. In addition, JIFSAN plans to fund several research projects using carry-over funds in addition to the two GAPs projects and Plant Responses to *Salmonella* and *E. coli* project which have been funded in September 2008. Several research projects funded by the renewed Cooperative Agreement will continue, including:

1. Ecology and Control of Salmonella Newport Contamination and Survival on Tomatoes
 2. Transport of Self-Assembled Nanostructures through Skin
 3. Does Emotion Regarding a Food Crisis Predict Consumers' Hesitancy to Eat the Food Once the Crisis is Averted?
 4. Food Defense Research Initiative: Evaluation of the ALERT (Assure, Look, Employees, Reports, Threat) campaign
- Funding will continue for postdoctoral research associates and graduate research assistants in support of several research initiatives.
 - Operation of the JIFSAN Internship Program will continue. Dr. Kaci Thomson will continue working closely with undergraduate coordinators of different colleges, particularly AGNR and CLFS, in recruiting most talented students to the program.

Education and Outreach Efforts

- JIFSAN will continue to explore opportunities for partnerships with federal agencies, the industry and international organizations to develop a sustainable international training program by establishing partnerships with foreign governments, academia, and industry provides an effect tool to prevent food safety problems from occurring. The programs would create a regional network of institutions that could provide extension-like training to improve food safety globally. New initiatives include APEC Training Institute Network, Regional Training Centers in Central & South America, Laboratory Training Institute, and Third Party Certifiers & Auditors Training. Additionally, JIFSAN will continue offering trainings in GAPs, GAqPs, CSPF, Food Safety Risk Analysis and WTO/SPS.
- The Risk Analysis Program at JIFSAN- is positioning itself to move to the next level of international recognition. In October, 2008 JIFSAN hired Dr. Juliana Ruzante as Food Safety Risk Analysis (RA) Program Manager. In this position Dr. Ruzante manages the JIFSAN RA Program activities that provide opportunities in education, outreach, and research for food safety professionals, students, and faculty with a wide range of interests. JIFSAN is also partnering with NRA on the development of a risk analysis tool/database that will improve understanding of how risk assessors (US/EU) address uncertainty throughout the food risk analysis process (risk assessment, risk management and risk communication). Findings will help improve all aspects of the risk analysis process. Additionally,

JIFSAN is working with the Risk Analysis Coordination Team (RACT) on a *Listeria monocytogenes* Retail Pilot study to help improve the development of a RI cross-contamination model being developed by FDA and FSIS.

- JIFSAN will continue co-sponsorship of symposia, workshops, conferences and other types of meetings, including the 5th Asian Conference on Food and Nutrition Safety, November 3-7, 2008, in Cebu, Philippines, Tools for Prioritizing Food Safety Risk, November 18-19, 2008, Greenbelt, MD, and CSL/JIFSAN Joint Symposium on Methods and Systems for Tracking, Tracing and Verifying Foods, May 13-15, 2009, Greenbelt, MD. JIFSAN also plans to co-sponsor two workshops on *Listeria monocytogenes* risk assessment in early 2009.