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FOOD PROTECTION TRENDS

SCIENCE AND NEWS FROM THE INTERNATIONAL ASSOCIATION FOR FOOD PROTECTION

JUNE 2003

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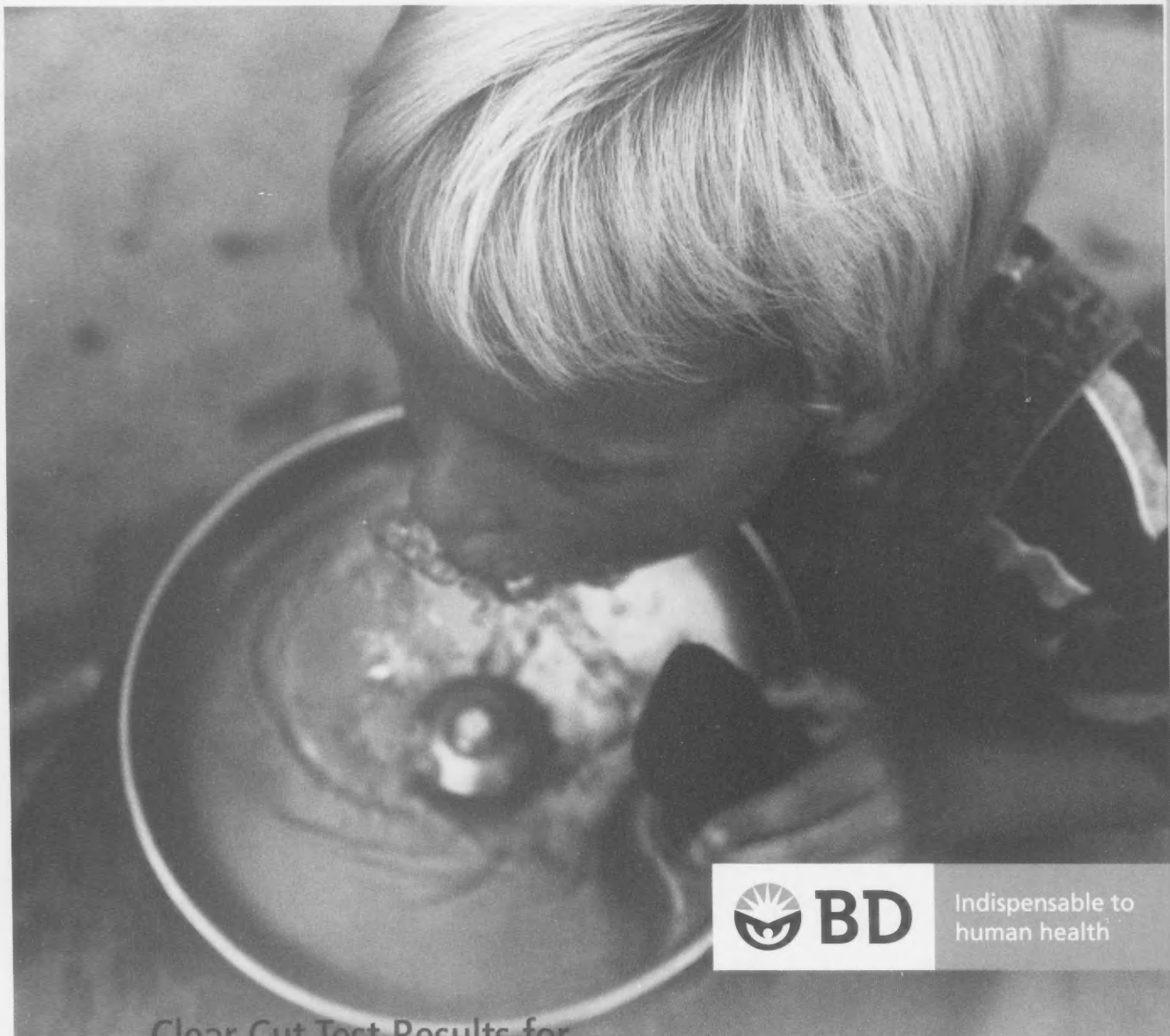

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FOOD PROTECTION TRENDS

VOLUME 23, NO. 6

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FOOD PROTECTION TRENDS
SCIENCE AND NEWS
FROM THE INTERNATIONAL ASSOCIATION FOR FOOD PROTECTION

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FOOD PROTECTION TRENDS

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"THOUGHTS" FROM THE PRESIDENT

By ANNA M. LAMMERDING
PRESIDENT

"Foodborne diseases kill more people than SARS has to-date"

The spring of 2003 brought to Canada, and other parts of the world, a nasty surprise. We were aware of its coming, although its exact name and arrival date were unknown. But it did arrive, and its name was SARS, Severe Acute Respiratory Syndrome. In Canada, as of May 2, it has caused 23 deaths, with 346 probable or suspect cases across the country. The "minidemic" is thought to be largely under control, but there are still some mysteries about SARS and its etiology. The agent is believed to be a specific coronavirus, and a particularly hardy one, but the virus has not been detected in all suspect cases, and it has been identified in a number of individuals that remained healthy after being exposed in a SARS-infected environment. It is at this time suggested that infection might cause mild cases without any symptoms, and with no evidence to-date that such cases transmit the virus to others. However, more than 10,000 people in the Toronto area were quarantined for up to 10 days, the estimated maximum incubation time for symptoms to arise, if any exposure at all had occurred.

The media in Canada has not been lacking for headlines or issues for commentaries, and occasionally the news arises across the border. An editorial in USA Today, April 28th, noted that "the newness of the virus and the uncertainty about its virulence" has made it difficult to separate "precaution from unnecessary panic". This was in reference to a travel advisory issued by the World Health Organization (WHO) warning against unnecessary travel to Toronto, the apparent epicentre for SARS in Canada.

However, the editorial continued with a comment about putting the disease into perspective by comparing the approximately 320 SARS-related deaths worldwide with the 36,000 people killed by the flu in the USA, annually, and the estimated 2.7 million people worldwide that die from malaria each year.

Journalist André Picard of the Canadian national newspaper *The Globe and Mail* noted similar statistics for Canada, and included the 2,583 deaths in a year that are attributable to infectious and parasitic diseases. While not all these deaths were associated with foodborne pathogens, the statistics provide a reality check: foodborne diseases kill more people than SARS has to-date. Of course, foodborne illness is not the top of the list of causes of death, but, it is largely preventable. In addition, few of us live isolated from the global community. Our foods come from anywhere in the world, and, although rarely considering the volume in international trade, foods can bring along nasty surprises of the foodborne pathogen genre.

Whenever something unexpected like the SARS outbreak happens, the finger-pointing begins once the issue has been brought under control. On Saturday May 3rd, *The Globe and Mail* published a story that dissected what went wrong in the early days of the outbreak. The primary focus was on the government's lack of an adequate public health care system. Funding cuts had dismantled research and testing facilities. There was a notable quote from a Health Ministry spokesperson, prior to SARS, to justify cutting back on public health scientific expertise, " It would be highly unlikely that we would find a new organism in Ontario" (Ontario is a province in Canada, where the city of Toronto is located, in case you weren't sure...!).

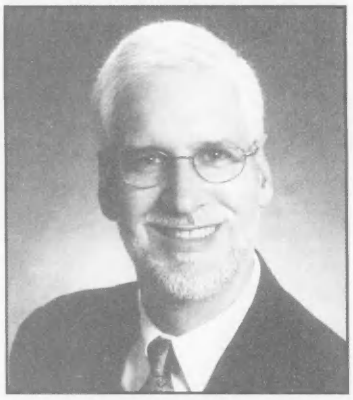
Understandably, the officials of the city of Toronto were openly outraged by the travel advisory issued by the WHO. It devastated tourism, affecting hotels and service industries, the film industry, and more, even as the outbreak was being contained. Although the travel warning was lifted in a matter of days, on May 1st it was reported that WHO acknowledged, somewhat apologetically, that "The travel advisory imposed on Toronto could ultimately harm the fight against SARS and other infectious diseases because less-transparent countries will be afraid to report outbreaks... for fear of economic consequences". Were the actions of WHO right or wrong? Clearly, in our global community, an effective international surveillance system must rely on nations to be forthcoming with statistics on infectious diseases that can be exported to other countries.

A close friend commented to me that "SARS" could have been an acronym for something else, such as "Safety Awareness & Response System". His observation was that it seems we were and we still are completely unprepared for control and eradication of nasty surprises of the infectious disease type. Another friend discussing the SARS issue pondered that, most important of all, we need to "Capture the lessons... how can we do better the next time?" Neither of these individuals are in the line of public health work, yet, the simple facts seem to speak for themselves.

Lessons learned from SARS should include the need for continuing vigilance through effective national surveillance, maintaining the intelligence and laboratory capabilities to respond to new, emerging, and re-emerging infectious diseases quickly, close communications between epidemiologists and laboratory personnel, efficient linkages and reporting systems among public health facilities at every level of government, and the need for an effective global surveillance system.

But then, I think that most of us in the field of food safety protection already knew all that....

"COMMENTARY"
FROM THE EXECUTIVE DIRECTOR



By DAVID W. THARP, CAE
EXECUTIVE DIRECTOR

"Have you ever contributed to the IAFP Foundation Fund?"

Do you have a financial plan? Do you have a will? Have you thought about where your assets will go when you die? I realize these are all tough questions, but they are questions that, when answered with a YES, can make your life easier. It is agreed that developing a financial plan is time consuming and sometimes not the most pleasant task to undertake. Talking about death and writing a will can also be unpleasant, but in many cases if you don't have a will, you do not control where your assets are distributed!

Today I would like you to consider something that you may not have thought of before. The IAFP Foundation Fund is a part of the IAFP entity and is considered a not-for-profit, 501(c)(3) organization. This means that contributions to IAFP and the IAFP Foundation Fund qualify for a tax deduction in the United States and many other countries around the world. You can contribute cash (checks), stocks, bonds, or any other tangible asset to the Foundation to help further the mission of IAFP.

Have you ever contributed to the IAFP Foundation Fund? Have you made an annual contribution? I want to continue by bringing to your attention the programs that the Foundation supports.

The Foundation Fund is supported through the generosity of Members like you and though a portion of our Sustaining Member fees. By the time you finish reading this column, I hope that you will consider joining your colleagues by sending your contribution to the IAFP Foundation to help "Advance Food Safety Worldwide." Maybe you will even want to include the Foundation in your will!

Two worthwhile projects sponsored through Foundation funds are the Audiovisual Library and the Developing Scientists Competition. Both are critical in carrying out the Association mission. The Audiovisual Library of training tapes is available to all Members for use in teaching and training. The Foundation purchases tapes and then pays the cost to send tapes to IAFP Members after receiving their order. Members are expected to pay the return shipping expense and that is it! What could be easier or more beneficial?

The second project sponsored by the Foundation is our Developing Scientists Competition at the Annual Meeting. The Foundation has supported cash prizes and presentation of Association Memberships to finalists and winners of the Competition. Since 1994, three awards have been presented in two categories, oral presentations and poster presentations. This competition is responsible for attracting student involvement in the Association and is very successful. Many former competitors continue to be very active in the Association and have worked their way in to leadership roles not only in the Association, but also in the food safety community.

Just from these two examples, you can see the valuable work the IAFP Foundation Fund supports, but the Foundation's work continues! Each year, the Foundation supports shipment of excess IAFP Journals to FAO in Rome for further distribution to developing countries. We receive letters from recipients of these journals telling how helpful it is to receive current, food safety information. Without the help of FAO and the Foundation, these food safety professionals would not have access to the latest scientific research presented in our Journals.

Two additional areas of support are provided by the Foundation during the Annual Meeting. The Foundation allocates a portion of

their budget to assist with speaker travel support. We have been able to increase our speaker sponsorship with the help of our new Sustaining Member Program. Support is also provided for the Ivan Parkin Lecture given during our Opening Session. This provides a perfect opportunity to publicize the work of the IAFP Foundation. The Foundation sponsorship allows us to attract leaders in food science to address our attendees. The announcement of this year's Ivan Parkin Lecturer is shown on page 497.

The Foundation also provides IAFP sponsorship of the Samuel J. Crumbine Award. The Crumbine Award is presented annually recognizing excellence in food protection services at public health agencies in the US and Canada.

The IAFP Foundation Fund carries out projects that support the mission of IAFP. Hopefully, from these short descriptions, you can see how essential the Foundation support is for the Association, its Members and for food safety.

Now that you know all the good things the IAFP Foundation supports, please consider a donation to help further the work. You may simply write a check, or if you are interested in donating an asset or including the Foundation in your will, feel free to contact me. Either way, we will put your contributions to work supporting IAFP's mission.

ARTICLES

Food Protection Trends, Vol. 23, No. 6, Pages 466–473

6200 Aurora Ave., Suite 200W, Des Moines, IA 50322-2864

International Association for Food Protection

A Survey of Dairy Producer Practices and Attitudes Pertaining to Dairy Market Beef Food Safety

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SUMMARY

A national survey of dairy producers assessed their willingness to improve safety of food products from their farms (response rate 9%). The majority considered a veterinarian as their first choice for information concerning dairy market food safety, with more than 33% reporting that they would pay for veterinarians to perform food safety assessments. Nearly half reported that they had been well informed by their veterinarians concerning food safety issues. Income from market beef was important to 75%, but few had toured a slaughter facility and less than 35% were aware that HACCP was required in US slaughter facilities. Most believed that consumer food safety concerns affected their profits, but less than half reported that on-farm HACCP would reduce the risk of foodborne disease. Several reported that they would change practices if doing so would increase profits, and most preferred that profits come from incentives paid by slaughter establishments. Few preferred government subsidies, and most opposed on-farm government regulatory programs. Ultimately, respondents expected consumers to pay for on-farm food safety practices and expected little of the corresponding increase in price to trickle to them. Overall, results indicate that producers might benefit from better knowledge of HACCP. Further research is needed to help producers determine if implementing on-farm HACCP improves profits as well as public health.

A peer-reviewed article

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TABLE 1. Producers' perception of a veterinarian's role on dairy farms

Item	SD[1]	D[2]	N A nor D[3]	A[4]	SA[5]
	%[6]				
Testing cows	32.6[a]	29.1[ac]	24.4[bc]	11.9[d]	2.0[e]
Locate harmful bacteria	18.2[a]	22.0[a]	21.5[a]	29.9[b]	8.4[c]
Train personnel	20.6[a]	20.4[a]	26.0[b]	27.0[b]	6.0[c]
Certify practices	19.0[a]	22.0[a]	20.3[a]	28.0[b]	10.7[c]
Well-informed about food safety	9.2[a]	21.2[b]	24.5b[c]	30.0[c]	15.1[d]

[1]Strongly disagree, [2]disagree, [3]neither agree nor disagree, [4]agree, [5]strongly agree, [6]percents of respondents within row (n=607) that share the same superscript do not differ ($P < 0.05$).

INTRODUCTION

Meat from dairy market cows (cull cows) comprises 15% (1 out of 7 meals) of the beef consumed in the United States *(8)*. Dairy market beef (DMB) is cut into steaks such as rib, loin, and sirloin, which are served in family steak houses, casino buffets, and airline meals. Muscles from the round and other cuts that produce 100% visual lean beef are manufactured into roast beef used for sandwiches typically served at fast food restaurants. Trimmings from the deboning process and the cutting of other cuts of meat are used to produce ground beef, which is used in many school lunch programs and fast food restaurants. Thus, people of all ages and social status consume dairy market beef, and as a result, dairy market cow management affects nearly everyone eating meat.

Dairy market cows have reached the end of their milk production profitability and may be ill, non-ambulatory, or weak. Animals in these conditions may harbor greater numbers of pathogens, and their slaughter may increase spread of pathogens at the slaughter establishment. The United States Department of Agriculture (USDA) requires beef slaughter establishments to have hazard analysis critical control point (HACCP) plans designed to identify and reduce any physical, chemical, or biological hazards that are reasonably likely to cause injury or illness to consumers, and these pathogen reduction performance standards must be met *(9)*. Such regulations portend regulation at dairy farms, but the USDA currently has no jurisdiction there, so dairy farm HACCP implementation must be voluntary.

Some have proposed that veterinarians could help dairy farms adhere to production practices that minimize food safety hazards *(1, 2, 3)*. Previous studies used questionnaires to investigate production management practices *(4, 5)*, and recently a survey targeting slaughter establishments and veterinarians was used to identify the perceived market or client demand for dairy on-farm food safety services *(6)*. However, to the authors' knowledge, no one has surveyed dairy producers about their management practices and attitudes regarding food safety. The objective of our questionnaire was to assess attitudes of dairy producers about practices that might affect the safety of food and food products derived from market dairy beef.

To assess the feasibility of "veterinary certified (VC) HACCP" at dairy farms, a questionnaire was constructed to determine dairy producers' attitudes about management practices with regard to market dairy cows and understanding of HACCP and food safety practices. We assessed their knowledge of what happens to market cows — what products they become, how much waste is associated with those products, and who are the consumers of DMB — and their knowledge of how foodborne diseases impact DMB and associated profit. The survey also assessed producers' willingness to adopt food safety practices, their opinion about "certified/labeled production practices", incentives for changing their practices, and handling and disposal practices of non-ambulatory (downer) and dead cows. This information should provide knowledge that may be used to encourage producers to adopt practices that result in the production of safer food.

MATERIALS AND METHODS

A questionnaire with 59 questions was developed, which required ordinal, binomial, and ranking responses. The questionnaire was pretested at 7 dairy farms in four US geographical regions — Southeast (FL), Midwest (OK, KS), Northwest (CO, ID), and Southwest (CA, TX). Feedback from dairy managers and owners was used to revise the questionnaire. The questionnaire was printed, labeled, and mailed from the Kansas State University Agricultural Experiment Station and Cooperative Extension Service, Umberger Hall, Manhattan, KS. The mailing list was

TABLE 2. Average mean rank of producers' preference relative to where to seek information about dairy market beef safety

Item	Rank[1]
Veterinarian	2.2[a]
University extension agents	3.1[d]
Non-veterinarian consultant	4.1[b]
Salesperson	4.2[b]
Other dairy producers or dairy associations	4.4[b]
Government	4.8[c]
Slaughter establishments	5.2[e]

[1]Mean rank of all responses; the lower the rank value, the more likely the person or place was preferred for seeking information (1 = most likely, 5 = least likely). Ranks that share the same superscript do not differ ($P < 0.05$).

TABLE 3. Average mean rank of producers' most likely practice to employ in an attempt to prevent disease from entering or spreading throughout their dairy herd

Entering	Rank[1]
Implement biosecurity	2.5[a]
Veterinarian assistance	2.7[a]
Test prior to purchase	2.9[ab]
Trusted supplier	3.0[b]
Test at freshening	4.0[c]
Spreading	**Rank[1]**
Veterinarian assistance	2.1[a]
Implement biosecurity	2.6[e]
Test clinically ill animals	2.9[d]
Market clinically ill animals	3.5[c]
Market before clinically ill	3.9[b]

[1]Mean rank of all responses; the lower the rank value, the more often the item was selected. Ranks that share the same superscript do not differ ($P < 0.05$).

provided by a major pharmaceutical company; however, addresses from the list had not been restricted to those who had purchased products from the company.

A total of 6,736 questionnaires were sent by US postal mail during the first week of June 2001. Fifty-seven surveys were unable to reach their destination because of address problems. Questionnaires were 8 pages, saddle stitched. The title page included with the questionnaire asked for a response by July 1. Some of our questionnaires did not reach their destination before this return date because they were mailed fifth class, which may have contributed to a lower-than-expected response rate (about 10%). A total of 607 questionnaires were returned and used for analysis.

For ease of data entry, the responses were entered into a computer spreadsheet (Excel) and then imported into Statistical Analysis System (SAS) *(7)* files. The Chi-square test (General association Cochran Mantel Hansen) was used to detect pair-wise differences in response frequency to questions requiring multinomial or binomial responses. For ranking questions, each rank was treated as a repeated measure and averaged, using the Least Square mean procedure in SAS. Responses were categorized by the 5 geographical regions defined by NAHMS (1996), and the responses among regions were compared statistically. Farm sizes vary between regions, and responses between regions may reflect differences in farm sizes.

RESULTS

Sample information

The dairy farms surveyed were representative of farms nationally. They varied in herd size: less than 250 (26.3%), 251 to 500 (38.4%), 501 to 1,000 (21.8%); 13.5% of farms had more than 1,000 milking cows. Producers milked their cows twice (56.2%) or three times (43.6%) daily.

TABLE 4. Producer's perception of dairy beef processing

Item	%[1]
Have toured slaughter establishment	15.0
Unaware HACCP was mandated for slaughter establishments	65.0
Believed HACCP was government agency	10.0
Unaware of the amount of beef derived from dairy animals	42.0
Unaware of the amount of dairy beef products that become roast beef and/or steaks	94.0

[1] Percent of total number of respondents (n = 607).

TABLE 5. Average mean rank of the greatest threats/risks to dairy beef food safety as reported by dairy producers

Threats	Rank[1]
Foot and mouth disease	2.4[a]
Salmonella	2.5[a]
Mad cow disease (BSE)	3.5[b]
E. coli O157:H7	3.5[b]
Bangs disease (*Brucellosis abortus*)	4.0[c]
Johne's disease (*Mycobacterium paratuberculosis*)	5.0[d]
Risks	**Rank[1]**
Antibiotics	1.6[a]
Injection site abscesses	2.0[b]
Vaccines	3.4[c]
BSt and other growth hormones	4.0[d]
Prostaglandins and other injections for reproductive performance	4.0[d]

[1]Mean rank of all responses; the lower the rank value, the more often the item was selected. Ranks that share the same superscript do not differ ($P<0.05$).

Eighty-three percent of the dairy farms were within 50 miles of the nearest auction market, 13.1% were 201 to 500 miles and 2.3% were between 501 and 1,000 miles. Approximately 85% were within two hundred miles of a slaughter establishment (37.2% within 50 miles). Mean rolling herd average and calving interval of the dairy farms were 9,937 kg and 13.6 months, respectively. Forty-three percent of producers surveyed had culling rates of 21 to 30% and 37.7% had a slightly higher rate of 31 to 40%, and 19.3% led more than 20%.

Producer perceptions about the role of veterinarians

More than a third of the respondents would pay a veterinarian to certify that their production practices protect the safety of meat, locate hot spots of bacteria on the farm, and train their personnel about HACCP (Table 1). However, the respondents were less willing to pay a veterinarian to test cows in an effort to monitor meat safety. More than 45% of the producers believed that they had been well informed about issues of food safety by their veterinarian (Table 1).

Producers were more willing to get information about dairy market beef safety from a veterinarian than from product sales representatives, non-veterinary consultants, university

TABLE 6. Average mean rank of the greatest challenges facing their own farms and the entire dairy industry, as reported by dairy producers

Their farm	Rank[1]
Reproduction problems (open, infertile)	1.9[a]
Health problems (lame, injury, ketosis, DA)	2.3[b]
Production problems (low yield)	2.9[c]
Milk quality problems (high SCC/CMT, residues)	3.1[c]
Need cash	4.9[d]
The dairy industry as a whole	**Rank[1]**
Environmental issues	1.6[a]
Milk safety	2.5[b]
Meat safety	3.4[c]
Animal welfare	3.4[c]
Bioterrorism	4.2[d]

[1]Mean rank of all responses; the lower the rank value, the more often the item was selected. Ranks that share the same superscript do not differ ($P > 0.05$)

extension specialists, government agencies, or slaughter establishments (Table 2). To prevent diseases from entering the herd, respondents were equally likely to implement biosecurity programs and test cows for disease before purchasing them as they were to contact a veterinarian for assistance. Purchasing animals from a trusted supplier and testing cows at freshening were other preventive measures selected by the respondents. Producers were more likely to contact a veterinarian for assistance if a disease was already in the herd and they needed assistance in preventing its spread (Table 3).

Producer perceptions about the processing and distribution of dairy market beef

Fewer than 15% of the respondents had toured a slaughter establishment where their market cows were sold. More than 65% of the respondents were unaware that HACCP plans are required for slaughter establishments, and more than 10% of the respondents thought, incorrectly, that HACCP was a government program or agency. Most producers underestimated or did not know the amount of meat derived from dairy market cows, and more than 38% of the producers did not know that, in addition to ground meat, steaks and roasts are derived from dairy market beef (Table 4). More than 50% of the producers overestimated or were unsure of the amount of dairy market meat that is condemned because of the condition of dairy market cows at slaughter.

Producers perceptions about consumers of dairy market beef

Respondents report that what consumers value most about dairy market beef is that it is safe to eat. Following that, producers perceive that consumers value taste and tenderness, ease of preparation, and leanness. They believe consumers are least concerned about production practices that are protective of the environment or that maximize animal well-being and welfare.

Producers' perception of threats and/or risks to dairy market beef

Producers report that Foot and Mouth disease poses the greatest threat to dairy market beef safety in the US, followed by *Salmonella*, Bovine Spongiform Encephalopathy (mad cow disease), *E. coli* O157:H7, brucellosis (*Brucella abortus*), and Johne's disease (*Mycobacterium paratuberculosis*). Producers ranked antibiotics as the greatest risk to dairy beef food safety, followed by injection site abscesses, vaccines and other disease prevention products, recombinant Bovine Somatotropin (rBSt), and prostaglandin injections for enhancing reproductive performance (Table 5).

Producers ranked cattle bedding and housing areas as the most likely source for dairy cows to acquire bacteria, followed by water troughs and feed bunks, other animals (wild, domestic, rodents, and birds), and recycled flush water; they ranked employees as least likely.

When asked to rank from least to most the challenges facing their dairy farm, reproduction ranked first followed by production management (low milk yield), herd health, manure management, animal welfare/well-being, and finally dead animal disposal. When asked to rank the challenges facing the dairy industry as a whole, environmental issues ranked as the most challenging, with an average ranking of 1.6, followed by milk safety (2.5), and both meat safety animal and welfare (tied at 3.4). Producers perceived bioterrorism as the least challenging, with an overall ranking of 4.2 (Table 6).

Producer perceptions about the profitability of HACCP

More than 57% of the producers who responded depend on profits from the sale of dairy market cows and not solely on profits from the sale of milk, but more than 45% were unsure if implementing HACCP would increase profits. Forty percent of the respondents would be willing to change practices related to meat safety if doing so would increase profits. However, there is no pricing system or regulation that currently encourages producers to alter their practices. For producers to change their behavior, 65% would prefer incentives (premiums vs. dockage) from slaughter establishments. Only 29.6% indicated that slaughter establishments should demand on-farm HACCP. Few respondents preferred government subsidies as an incentive to alter production practices. Respondents generally opposed on-farm government regulatory programs. Ultimately, the respondents expected the consumer to pay for on-farm food safety programs such as HACCP because they believe the consumer would benefit most from certified beef safety production practices. However, respondents expected that little of the resulting increase in beef prices would "trickle down" to the dairy farmer for implementing food safety programs. They believed that slaughter establishments, retailers, and certifiers (e.g., veterinarians) would realize profits before the dairy farmer.

Producers were asked to rank, the most likely to least likely, forces that would cause producers to change practices that might impact dairy market beef safety. Respondents ranked premiums or dockage from slaughter establishments as the most likely, followed by government subsidies for destroying downers or sick animals, government regulations, and consumer demand; the least likely force was recommendations from dairy and beef associations (NMPF, DHIA, NCBA).

More than 60% of the respondents would implement a 30-day premarket feeding program to create added value. Half the respondents would clean their trailers before marketing cows if they would receive a premium of US$0.01 per pound of hot carcass weight, and 15.4% of the respondents would guarantee a minimum body condition score of 2.5 on a 1 (low) to 5 (high) scale in exchange for an additional US $0.01 per pound of hot carcass weight.

About 40.3% of the respondents believed that on-farm HACCP would reduce the risk of disease to people. For those willing to implement on-farm HACCP, the majority did not know how to begin, but considered the veterinarian to be their first choice for acquiring information about dairy market food safety. Before implementing a HACCP program themselves, producers believed that they would first need to know the cost of implementation, followed by what tools are available for implementation, government regulation for slaughter establishments, the effects of antibiotic residues and bacteria on public health, and slaughter establishment practices. Knowledge of who eats dairy market beef was least important to producers contemplating implementing a market cow food safety program.

Producer perceptions about practices that may affect food safety

Over 54% of the producers surveyed indicated that healthy animals on a dairy farm should not share the same pen, eat from the same feed bunk, or drink from the same water trough as sick animals. Over 55% of producers surveyed would consider giving intramuscular injections in the neck to reduce damage to valuable cuts of meat, compared to 28.6% who would not.

According to the producers surveyed, the most humane way to load downer cows into trucks is to use a sled. Less humane ways are by a loader bucket or hip lift. The least humane way is to pull them by a chain with a loader. Producers were asked to rank the ways, most safe to least safe, to dispose of dead cows. A dead pile above ground was ranked safest, followed by a renderer, carcass composting, dead pile in an uncovered hole, and burying; the least safe way was to burn.

More than 56.6% of producers strongly or mildly disagreed with a statement suggesting that only market cows able to walk onto a trailer should be sold for beef, compared to 35.6% that mildly or strongly agreed. Interestingly, 57.9% agreed that slaughter establishments should refuse non-ambulatory (downers) or sick cows with high amounts of "harmful bacteria." When it was suggested to producers that slaughter establishments were not concerned about the quality of market cows, 63.9% of producers disagreed; however, they did not want slaughter establishments to dictate production practices to them.

Regional effects

Significant differences were found in the responses to some questions among the five geographical regions surveyed. More producers (55%) in the NW would implement HACCP only if it would provide them with additional profits than producers in the SE (43%), MW (40%), SW (34%) and NE (33%). More producers in the NW (42%), MW (40%), NE (38%), and SE (34%) than in the SW (24%) believed that non-ambulatory cows should be sold for beef. More dairy producers in the NE (45%) and MW (42%) believed that on-farm HACCP would reduce risk of disease in people than in the SW (39%), NW (31%) and SE (28%). More producers in the NE (63%) believed that healthy animals should not share

the same pen, eat from the same feed bunk, or drink from the same water trough as unhealthy animals than producers in the MW (54%), SW, (51%) NW (18%), and SE (14%). More producers from the MW (61%) and the SW (59%) agreed that intramuscular injections should be given in the neck to reduce damage to valuable cuts of meat than producers in the NE (52%), NW (24%) and the SE (14%).

Culling rates reported also varied by geographical region. The majority of producers in the NW (53%), MW (45%), and SE (44%) reported 21 to 30% culling rates, those responding from the SW and NE had the majority of their culling rates between 31 and 40%, and no more than 5% in any region reported culling rates of more than 40%.

The average price per pound of market cow beef sold in 2001 varied with region of the country. The majority of producers in the (MW [50%] and the NE [49%]) received between 36 and 45 cents per pound of market beef and the majority (MW [62%] NE [73%]), had average herd sizes of less than 500 milking cows. The majority of producers in the NW (63%), SW (55%), and SE (52%) received 26 to 35 cents per pound of market cow beef and the majority of herds surveyed in the NW (69%), SW (67%), SE (65%) averaged between 250 and 1,000 milking cows. Only 13.5% of those surveyed were milking more than 1,000 cows, and of those about 50% were in the SW, 19% in the NW, 18% in the MW, 9% in the NE, and 4% in the SE.

The majority of producers who milked cows 3 times daily were from the MW (55%), and the NW (54%). The majority of producers from the SW (74%), SE (74%), and NE (55%) milked cows twice daily.

DISCUSSION

Producers are ill informed about what happens to their animals after they leave the farm and therefore are not as likely to be concerned with their market cows once they are unloaded at the packing plant. More information must become available and presented in a clear and practical manner to encourage dairy producers to implement programs (VC-HACCP) that may reduce foodborne disease. One problem is that the majority (64.3%) of dairy producers do not know how to begin to implement HACCP. This presents an opportunity for veterinarians to provide such a service, as producers indicated that they would first consult with a veterinarian for food safety information. Research is needed to determine if veterinarians know how to develop a HACCP plan and understand the pre-requisites associated with a HACCP plan. In addition, veterinarians must be compensated for helping producers monitor progress and for following up with suggestions addressing food safety problems. Some dairy producers responded that HACCP is a government regulation or agency. These producers do not realize that it is a program of their own design, and that the proof of success is measured at the packing plant. Dairy producers could increase profits by implementing such a program, which produces high quality and safe meat, if the packers were willing to pay premiums.

Profits from selling market beef are important to producers, and producers are willing to change practices related to meat safety if doing so will increase profits. The majority of respondents indicated that they would inject animals in the recommended locations to minimize damage to meat and allow veterinarians to certify their market cow practices. However, with the current pricing system and regulations, producers do not have a mechanism that enables them to increase profits by changing their behavior. For producers to change their behavior they would prefer incentives (premiums vs. dockage) from the slaughter establishments over government subsidies.

The cost of disposal of animals that die on the farm has increased as environmental regulations have become stronger. Therefore, there is an incentive for dairy farmers to transport for slaughter animals that are near death, non-ambulatory, terminally ill, or poorly conditioned. Even if these animals fail ante-mortem inspection, the dairy producers may profit from the sale of the hide, and certainly may break even if the cost of disposal is factored in. Although it is unclear from the literature, these animals may harbor greater amounts of pathogens and their transport to slaughter may prove hazardous to public health. In addition, should these animals pass ante-mortem and subsequent inspections during the slaughter process, the quality and quantity of products may be undesirable.

Market cow processing plants (packers) are dwindling, which increases the distance that cows are transported and the volume of cows processed in those plants receiving market animals. Eventually, dairy market beef may have to adhere to higher standards, and the financial impact on the dairy industry as a whole could be devastating. The destiny of cows are normally marketed for beef but would no longer be eligible under stricter inspection requirements is unclear. Such changes could impact the consumer meat market. Dairy producers may have to "fatten" cows before slaughter to reach a minimum BCS acceptable for meat being used for human consumption. Eighty-five percent suggested that it would take more than a penny a pound to guarantee a BCS of 2.5 or greater. Such practices may not be profitable, or able to meet consumer quality standards. Currently, market dairy cows represent a small proportion of the dairy producer's profit, and there are no financial incentives for producers to change their behavior.

CONCLUSION

Producers are not consumer or customer (slaughter establishments) driven, because slaughter establishments are a means of disposing of animals that have concluded their milk production profitability. Meat producers in other agriculture sectors have become more customer driven and have modified production because of greater food safety accountability. Dairy producers oppose government regulatory programs; however, some are willing to implement their own programs voluntarily if they can make additional profits. The majority, though, do not know how to implement voluntary programs if producers are willing to do so, they prefer that a veterinarian help them. Dairy producers prefer subsidies and premiums over government regulation or dockage. The biggest challenges facing dairy producers in today's industry, according to our survey, were reproduction/production, herd health, and manure management. Producers feel that the slaughter establishment should absorb their costs for improved dairy market beef practices, but agree that consumers will benefit the most. How much impact will food safety have at the farm level and how soon will its impact be felt? Will changing our current practices at the farm assure consumers the best quality and safest dairy market beef possible, and if so, who is going to pay for it? Further research is needed to answer these questions and to help producers determine if implementing on-farm HACCP will improve profits and the public health.

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International Association for Food Protection

Decontamination of Cleaned Personal Equipment Used during Beef Carcass Processing

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SUMMARY

After the usual cleaning of personal equipment used in carcass dressing or breaking processes at a beef packing plant, aerobes were recovered from most items of equipment at numbers up to > 6 log CFU/item; coliforms and *Escherichia coli* were recovered from a minority of items at numbers up to > 4 and > 3 log CFU/item, respectively. After treatment of cleaned equipment by immersion in water of 83 ± 2°C for 60 s the numbers of aerobes recovered from a group of 25 steel mesh gloves were 5 log units less than the numbers recovered from cleaned, untreated gloves, and coliforms and *E. coli* were not recovered. Similar reductions in the numbers of aerobes were achieved when the same treatment was applied to cleaned rubber aprons and sharpening steels, but coliforms and *E. coli* were recovered in small numbers from some of those treated items. It appears that current cleaning procedures will not reliably remove bacteria from personal items of equipment used at beef packing plants. Some decontaminating treatment for personal equipment seems to be needed if meat is not to be contaminated by the bacteria that can persist on such equipment after it is cleaned.

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INTRODUCTION

During the dressing and breaking of beef carcasses, meat can be contaminated with bacteria that apparently originate from detritus that is not removed from fixed equipment by current cleaning and sanitizing procedures *(3, 6)*. Unlike fixed equipment, the personal equipment of meat plant workers is not usually subjected to consistent cleaning. Instead, cleaning of personal equipment is largely left to the discretion of the individual worker *(4)*. Thus, it is possible that not all personal equipment is adequately cleaned between periods of work. Some items of personal equipment may then harbor persistent detritus that could be a source of contaminants for meat. Therefore, the microbiological conditions of items of cleaned personal equipment at a beef packing plant were examined with a view to investigating the decontamination of equipment should bacteria prove to be present in substantial numbers.

MATERIALS AND METHODS

Sampling of cleaned equipment

Personal equipment used by workers in the carcass dressing or carcass-breaking facilities of a beef packing plant that processes about 280 fed cattle per hour was examined. At the end of each working day workers wash their personal equipment with sprayed or running water. The equipment is not cleaned again before it is used on the next working day. In each facility on each of 5 days, 5 samples were collected from each of steel mesh aprons, rubber aprons, steel mesh gloves, scabbards, knives, sharpening steels and hooks. Items of equipment to be sampled were selected at random from those carried by workers entering the facilities at the beginning of the working day. A single sample was obtained from each selected item of equipment.

Steel mesh aprons were sampled by rinsing about 100 cm^2 of one corner of each apron with 100 ml of 0.1% wt/vol peptone water (Difco Laboratories, Detroit, MI) in a stomacher bag. The whole of each steel mesh glove was similarly sampled by rinsing. Rubber aprons were sampled by swabbing an area of about 100 cm^2 at the bottom of the outer surface of each, using a gauze swab (Curity gauze sponge; Kendall Canada, Peterborough, Ont., Canada) that had been moistened with 0.1% wt/vol peptone water. The blades and handles around the points of insertion of blades of knives, sharpening steels and hooks were similarly swabbed. Each swab was placed in a separate stomacher bag with 10 ml of 0.1% wt/vol peptone water. Samples were stored on ice and were processed within 3 h of being collected.

Sampling of equipment treated with hot water

In the carcass dressing facility on each of 9 days, 25 steel mesh gloves, rubber aprons or sharpening steels were collected at the end of the working day, after each item of equipment had been cleaned. The collected items were treated by being immersed, for the same time on each day, in a tank of hot water maintained at 83 $\pm$ 2°C. Steel mesh gloves were wholly immersed for 15, 30 or 60 s; the bottoms of rubber aprons were immersed for 15, 60 or 120 s; and sharpening steels were wholly immersed for 15, 60 or 120 s. After being treated, each item of equipment was sampled, as were the cleaned items of the same type of equipment.

Enumerations of bacteria

Each sample was stomached for 2 min. Serial 10-fold dilutions of each stomacher fluid were prepared, with dilution of 1 ml each of the undiluted, and 10-, 100- or 1000-fold diluted stomacher fluid in 9 ml volumes of 0.1% wt/vol peptone water. The whole 9 or 10 ml volume of each dilution was filtered through a hydrophobic grid membrane filter (QA Life Sciences, San Diego, CA). In addition, for steel mesh gloves treated with hot water, a 10 ml portion of each undiluted stomacher fluid was filtered. Each filter was placed on a plate of tryptone soy fast green agar (QA Life Sciences), which was then incubated at 25°C for 3 days. Squares containing green or blue-green colonies on filters preferably bearing between 20 and 200 such colonies were counted, and a most probable number (MPN) for aerobic counts was obtained by application of the formula: $MPN=N \times \log_0 (N/N - X)$ where N is the total number of squares on a filter and X is the count of squares containing green or blue-green colonies.

A 1-ml portion of the stomacher fluid from each rinse sample or a 0.1- ml portion of the fluid from each swab sample was diluted into 10-ml of 0.1% wt/vol peptone water. A 10-ml portion of the fluid from each rinse sample and all the remaining fluid from each swab sample was mixed with 1-ml of a papain solution (EZ-Enzyme: QA Life Sciences) and was incubated at 25°C for 20 min. The whole of each diluted or enzyme-treated portion of fluid was then filtered through a hydrophobic grid membrane filter. Each filter was placed first on a plate of lactose monensin glucuronate agar (QA Life Sciences) that was incubated at 35°C for 24 h. Squares containing blue colonies were counted, and an MPN value for coliforms was obtained from that count by the same calculation as was used for aerobic counts.

Each filter was then transferred to a plate of buffered 4-methylumbelliferyl-β-D-glucuronide agar (QA Life Sciences) that was incubated at 35°C for 3 h. After incubation, the filter was illuminated with long-wave-

TABLE 1. Log total numbers (n) of aerobes recovered from groups of 25 items of equipment used by workers in the carcass dressing or carcass breaking facilities at a beef packing plant, and the number (No.) of items in each group from which bacteria were not recovered

Type of equipment	Dressing facility		Breaking facility	
	n	No.	n	No.
Steel mesh aprons [a]	9.71	0	7.83	0
Rubber aprons [a]	8.94	0	8.23	0
Steel mesh gloves [b]	9.36	4	7.96	1
Scabbards[b]	8.34	3	6.47	2
Knives [c]	7.89	2	7.66	1
Sharpening steels [c]	9.03	0	6.80	1
Hooks [c]	8.12	1	7.47	0

[a] 100 cm^2 of each item was sampled.

[b] The whole of each item was sampled.

[c] The blade of each item was sampled.

TABLE 2. Log total numbers (n) of coliforms recovered from groups of 25 items of equipment used by workers in the carcass dressing or carcass breaking facilities at a beef packing plant, and the number (No.) of items in each group from which bacteria were not recovered

Type of equipment	Dressing facility		Breaking facility	
	n	No.	n	No.
Steel mesh aprons [a]	6.54	15	5.77	14
Rubber aprons [a]	4.23	17	4.13	17
Steel mesh gloves [b]	4.08	21	4.31	15
Scabbards[b]	2.35	21	3.19	19
Knives [c]	6.00	18	5.22	16
Sharpening steels [c]	4.09	17	n.d [d]	25
Hooks [c]	1.34	24	3.85	21

[a] 100 cm^2 of each item was sampled.

[b] The whole of each item was sampled.

[c] The blade of each item was sampled.

[d] No coliforms were detected.

length ultra-violet light, and squares containing blue-white, fluorescent colonies were counted. An MPN value for *E. coli* was obtained from that count.

For each group of 25 items of equipment of the same type, from the same facility, not treated or subjected to the same treatment with hot water, a value for the log of the total number recovered (n) was calculated for each set of counts by summing the counts in each set and obtaining the log of the sum.

RESULTS

Aerobes were recovered from most items of cleaned, personal equipment used by workers in either the slaughtering or the carcass breaking facility (Table 1). The numbers recovered varied widely, from < 1 to > 5 log CFU/item or 100 cm^2 for equipment used in the breaking facility, or to > 6 log CFU/item or 100 cm^2 for equipment used on the slaughtering floor. Consequently, the log total numbers recovered from equipment used on the slaughtering floor were generally larger than the numbers recovered from the corresponding equipment used in the carcass breaking facility.

Coliforms were recovered from eleven or fewer items in each group of cleaned items of equipment (Table 2). The log total numbers of coliforms recovered were from 2 to 7 log units less than the numbers of aerobes recovered from the same equipment. The log total numbers of coliforms recovered from steel mesh aprons, knives and sharpening steels used in the dressing facility were greater than the numbers recovered from the corresponding equipment used in the breaking facility. However, the numbers recovered from rubber aprons and steel mesh gloves from both facilities were similar, while larger numbers were recovered from scabbards and hooks used in the breaking facility that from the corresponding

TABLE 3. Log total numbers (n) of *Escherichia coli* recovered from groups of 25 items of equipment used by workers in the carcass dressing or carcass breaking facilities at a beef packing plant, and the number (No.) of items in each group from which *E. coli* were not recovered

Type of equipment	Dressing facility		Breaking facility	
	n	No.	n	No.
Steel mesh aprons [a]	4.11	21	4.45	22
Rubber aprons [a]	2.17	21	0.78	23
Steel mesh gloves [b]	1.66	23	3.04	21
Scabbards[b]	2.19	23	2.70	22
Knives [c]	3.07	20	4.27	21
Sharpening steels [c]	3.71	22	n.d.[d]	25
Hooks [c]	1.34	24	3.10	23

[a] 100 cm^2 of each item was sampled.

[b] The whole of each item was sampled.

[c] The blade of each item was sampled.

[d] No *E. coli* were detected.

equipment used in the dressing facility.

E. coli were recovered from five or fewer items in each group of cleaned items of equipment (Table 3). The log total numbers of *E. coli* recovered were from 0 to 3 log units less than the numbers of coliforms recovered from the same equipment. The log total numbers of *E. coli* recovered from rubber aprons and sharpening steels used in the dressing facility were greater than the numbers from the corresponding equipment used in the breaking facility. However, the numbers recovered from all other types of equipment were larger for equipment used in the breaking facility than for the corresponding equipment used in the dressing facility.

When steel mesh gloves were treated with hot water for 60 s, the numbers of aerobes recovered were 5 log units less than the numbers recovered from untreated gloves, and no coliforms or *E. coli* were recovered (Table 4). With shorter treatment times the numbers of aerobes recovered from gloves were 1 log unit more than after the 60 s treatment, and *E. coli* and/or coliforms were recovered from some items. When rubber aprons were treated with hot water for 15 s the numbers of aerobes, coliforms and *E. coli* that were recovered were 6, 1 and 1 log unit less, respectively, than the numbers recovered from untreated aprons. Treatment with hot water for 60 s or 120 s did not result in fewer aerobes being recovered than after treatment for 15 s, but treatment for 120 s did result in fewer coliforms, and no *E. coli*, being recovered from aprons. When sharpening steels were treated with hot water for 15 s, the numbers of aerobes recovered were 4 log units less than the numbers recovered from untreated steels. The numbers of coliforms recovered from untreated or treated steels were the same, but no *E. coli* were recovered from treated steels. Treatment with hot water for 60 s resulted in aerobes and coliforms being recovered at numbers that were 1 and 2 log units less, respectively, than the numbers recovered from steels treated for 15 s. The numbers of each of those groups of organisms were 1 log unit less when steels were treated for 120 s. However, *E. coli* were recovered in small numbers from one or two steels treated for 120 or 60 s.

DISCUSSION

The procedures used for cleaning personal equipment were evidently often ineffective for removing bacteria. The larger numbers of aerobes recovered from equipment used in the dressing facility than from equipment used in the breaking facility may reflect contamination of the dressing facility equipment with material from hides that bear numerous bacteria *(1)*. The larger numbers on the dressing facility equipment may, however, simply reflect a lesser concern with the cleanliness of equipment among those who must handle the hides and other parts of carcasses that are often visibly contaminated.

When coliforms on meat are derived directly from fecal matter, most are *E. coli (5)*; but if they are derived from persistent detritus in equipment, then *E. coli* are usually only a fraction of the coliform population *(7)*. Thus, the general recovery of larger numbers of coliforms than *E. coli* from the equipment was to be expected. The recovery of larger numbers of *E. coli* from equipment used during breaking than from equipment used during dressing could also be expected, because larger numbers of *E. coli* are commonly found on cuts than on carcasses at beef packing plants *(3)*.

The inadequate removal of bacteria by current cleaning of personal equipment might be remedied by subjecting all cleaned equipment to a decontaminating treatment. Various decontaminating treatments could be

TABLE 4. Log total numbers (n) of aerobes, coliforms and *Escherichia coli* recovered from groups of 25 items of equipment used by workers in the carcass dressing facility at a beef packing plant, and the numbers (No.) of items in each group from which bacteria were not recovered, after equipment was treated by immersion in water of 85°C

Type of equipment	Treatment Time (s)	Aerobes		Coliforms		*E. coli*	
		n	No.	n	No.	n	No.
Steel mesh gloves [a]	15	5.81	1	4.23	19	1.30	24
	30	5.75	1	2.15	23	n.d.	25
	60	3.92	0	n.d.[d]	25	n.d.	25
Rubber aprons [b]	15	2.84	3	1.70	21	0.70	23
	60	3.16	1	1.78	19	1.74	21
	120	3.12	0	0.95	21	n.d.	25
Sharpening steels [c]	15	5.06	2	4.03	20	n.d.	25
	60	4.28	9	2.09	21	1.52	23
	120	3.26	4	1.04	24	1.04	24

[a] The whole of each item was sampled.

[b] 100 cm^2 of each item was sampled.

[c] The blade of each item was sampled.

[d] No bacteria were detected.

considered if equipment was collected from workers and returned to them after the equipment was treated. However, workers much prefer that they retain personal equipment at all times, because of discomfort or inconvenience that might arise if equipment was pooled for treatment and return of the equipment specific to each individual was uncertain. For workers to retain control over their own equipment, a decontaminating treatment would have to be applied on the work floor; and the treatment would have to be rapid, to avoid the development of a bottleneck at the beginning or end of the working day.

Decontamination of equipment by immersing it in water at a temperature about 82°C is an obvious treatment to consider, in view of the mandated use of such a treatment for equipment that contacts product during the processing of meat *(2)*. However, immersion of equipment for only a few seconds, as during the processing of meat, has been reported to be inadequate *(8, 9)*. The recovery of coliforms and *E. coli* from some items of all three types of equipment after their treatments with hot water for 15 s is agreeable with those reports, while the recovery of those organisms from steels and rubber aprons after treatment for 2 min indicates that total elimination of enteric organisms from personal equipment is probably not possible in routine practice. Presumably the surviving organisms are those that occupy grooves or cuts in surfaces or around the joints of handles and blades. Destruction of bacteria in such locations would require heating of the surrounding material to lethal temperatures, which would involve prolonged heating when the mass to be heated was large and/or thermal conductivities of the materials involved were low.

Nonetheless, it is apparent that the numbers of bacteria surviving cleaning of personal equipment could be much reduced by routine treatment of all such equipment with hot water for a moderate time. Therefore, some such treatment can be suggested as a means of controlling the contamination of product by bacteria that persist in personal equipment.

ACKNOWLEDGMENTS

We thank the managers and staff of the company involved with this study for facilitating and assisting with the treatment of and the collection of samples from the personal equipment of workers at the packing plant. Funding for the study was provided from the Canada-Alberta Beef Industry Development Fund.

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NOTIFICATION OF PROPOSED AMENDMENTS TO THE INTERNATIONAL ASSOCIATION FOR FOOD PROTECTION BYLAWS

Membership vote to take place at IAFP 2003 Business Meeting

August 12, 2003 • 4:45 p.m.
Hilton New Orleans Riverside
New Orleans, Louisiana

Proposal 1.
SECTION I.
MEMBERSHIP AND DUES

B. Membership Qualifications and Entitlements

2. Student Members

2.1 Full-time students ~~Students~~ pursuing undergraduate or graduate degrees in colleges or universities are entitled to membership in IAFP at one-half the dues of regular members.

Rationale: This change requires students to be "full-time" students in order to receive the reduced Membership rates available to students.

Proposal 2.
SECTION V.
PUBLICATIONS

B. *Food Protection Trends* ~~*Dairy, Food and Environmental Sanitation*~~ shall be the official publication of IAFP and the *Journal of Food Protection* will be the scientific publication.

1. These Journals will be the property of IAFP, which will own the copyrights and all ~~the~~ articles published therein.

Rationale: This change is made to reflect the change of journal title to *Food Protection Trends*. The change in Section V, B, 1. is grammatical.

Proposal 3.
SECTION VI.
STANDING COMMITTEES, SPECIAL COMMITTEES, PROFESSIONAL DEVELOPMENT GROUPS and TASK FORCES

A. Standing Committees

1. Standing committees provide operational or functional support to IAFP and shall consist of the following: *Food Protection Trends* ~~*Dairy, Food and Environmental Sanitation*~~ Management Committee, *Journal of Food Protection* Management Committee, and Program Committee.

1.1. Journal Management Committees

The Journal Management Committees (*Food Protection Trends* ~~*Dairy, Food and Environmental Sanitation*~~ Management Committee and *Journal of Food Protection* Committee) shall consist of a chairperson, vice chairperson and other individuals appointed by the President-Elect and confirmed by the Executive Board. Membership appointments shall be for 3-year terms on a rotating basis, with balanced representation from education, government and industry. The chairperson shall serve a 2-year term and is normally succeeded by the vice chairperson. All appointments may be renewed for one additional term.

Rationale: These changes are made to reflect the change of journal title to *Food Protection Trends*.

Proposal 4.
SECTION VI.
STANDING COMMITTEES, SPECIAL COMMITTEES, PROFESSIONAL DEVELOPMENT GROUPS and TASK FORCES

B. Special Committees

1.7. Fellows Selection Committee

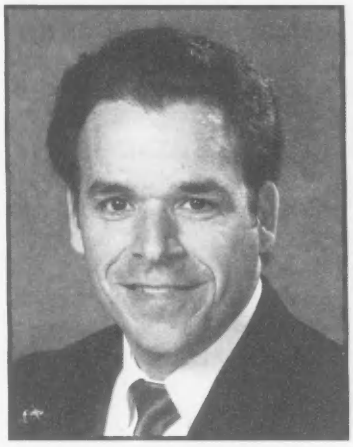
The Fellows Selection Committee shall be chaired by the Immediate Past President and consist of at least 3 other Fellows recommended by the chairperson to the President-Elect and confirmed by the Executive Board. The Fellows Selection Committee solicits nominations and makes recommendations to the Executive Board for eligible members to be confirmed as Fellows by the Executive Board.

1.7.1 Any Regular, Retired, Honorary Life or Sustaining Member who has contributed to IAFP and its Affiliates with quiet distinction over an extended ~~a prolonged~~ period of time may be selected by the Fellows Selection Committee for consideration to become a Fellow of the Association by action of the Executive Board. Special benefits accorded Fellows shall be determined by the Executive Board.

Rationale: This change is made to reflect current award terminology.

Changes shown in red

Frank Yiannas Elected IAFP Secretary



The International Association for Food Protection welcomes Frank Yiannas to the Executive Board as Secretary. Mr. Yiannas will take office at the conclusion of the Awards Banquet at IAFP 2003, the Association's 90th Annual Meeting in New Orleans, Louisiana. By accepting this position, he made a five-year commitment to the Association and will begin his term as President in August of 2006.

As Manager of Walt Disney World's Food Safety & Health Department, Mr. Yiannas oversees all food safety programs, as well as other public health functions, for one of the world's strongest and well-recognized global brands. His scope of responsibilities includes: food safety oversight of major theme parks and resorts, two cruise ships, two water parks, and hundreds of the world's busiest food locations. More than 15,000 food and beverage employees, hundreds of food suppliers, and a number of critical regulatory compliance issues also come under his purview.

Since joining Disney in 1989, Mr. Yiannas has expanded Disney's program beyond testing and inspections by creating leading-edge risk management strategies. Under his tenure, Disney has been recognized as a pioneer in food safety training, implementing HACCP at the food service level, developing hand-held computer technology to conduct food safety audits, and utilizing progressive microbial testing approaches. In 2001, Walt Disney World received the prestigious Black Pearl Award for corporate excellence in food safety by the International Association for Food Protection (IAFP).

As a frequent speaker at national and international conferences, Mr. Yiannas is known for his ability to build partnerships and for his innovative approaches to food safety. He has given many invited presentations to professionals in the United States and abroad and is frequently cited in industry publications.

Mr. Yiannas' commitment and involvement with IAFP includes numerous positions within the association such as: Immediate Past Chairperson of the Annual Meeting Program Committee, Past Chairperson of the Food Sanitation PDG, and Past Black Pearl Award Jury Committee Member. He has organized numerous symposia and workshops for annual meetings and lectured on relevant food safety topics as well as currently serving as the Chairperson of the Retail Food Safety & Quality PDG. Mr. Yiannas led a groundbreaking initiative on behalf of this PDG and IAFP, leading a task force to develop International Food Safety Icons, pictorial representations of important food safety concepts that can be recognized regardless of a person's native language.

At the affiliate level, Mr. Yiannas supports IAFP through his involvement with the Florida Association for Food Protection (FAFP) as their Immediate Past President. During his tenure as President in 2000 and 2001, FAFP received the Shogren Award for two consecutive years. The Shogren Award is given annually by IAFP to the best overall affiliate.

At the national level, Mr. Yiannas is Vice Chair of Council I, Laws and Regulations, of the Conference for Food Protection (CFP). This council reviews proposed changes to the Food and Drug Administration (FDA) Model Food Code. In addition, he participates in numerous professional committees involved with issues of national importance, including co-chairing a committee for the CFP to develop standards for permanent, outdoor cooking sites. Mr. Yiannas also participated on the FDA-sponsored, 10-member panel organized through the Institute of Food Technologists to review the current definition of potentially hazardous food.

Mr. Yiannas is a registered microbiologist with the American Academy of Microbiology. He holds memberships with several professional associations, including the National Environmental Health Association, the American Society of Microbiology, and the Institute of Food Technologists. He received his BS in Microbiology from the University of Central Florida and is completing a Master of Public Health (MPH) from the University of South Florida.

Congratulations!

Thank you for your support of the Foundation Fund!

- Ulf Ahlin
- Tom Angstadt
- Henry V. Atherton
- Marc P. Bates
- Michael B. Bayoud
- Barb Beckman
- Steve Bell
- Reginald W. Bennett
- Barbara Blakistone
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- Nobumasa Tanaka
- David W. Tharp
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- Tony A. Valenzuela
- Fred Weber
- Lisa M. Weddig
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- Palmer D. Zottola

- Florida Association for Food Protection
- Ontario Food Protection Association

- Kraft Foods, Inc.
- Walt Disney World Co.
- Wayne Farms LLC

International Association for Food Protection®

The above list represents individual contributors to the Association Foundation Fund during the period April 1, 2002 through April 30, 2003. In addition, a portion of the Sustaining Member dues are allocated to support this Fund. Your contribution is welcome. Call the Association office at 800.369.6337 or 515.276.3344 for more information on how you can support the Foundation.

Highlights of the Executive Board Meeting April 27-28, 2003

Following is an unofficial summary of actions from the Executive Board Meeting held at the Des Moines Four Points by Sheraton on April 27-28, 2003:

Approved the following:

- Minutes of January 19-20, 2003 Executive Board Meeting
- Minutes of January 19, 2003 Executive Board Executive Session
- Revocation of Affiliate Charter for Virginia Association of Sanitarians and Dairy Fieldmen
- Issuance of Affiliate Charter for the United Kingdom Association for Food Protection
- Honorary Life Memberships for Randall Daggs and Lloyd Luedecke
- Budget for FYE August 31, 2004

Discussed the following:

- E-mail votes taken since the last meeting
- *FPT & JFP* update —*FPT* in need of submissions for 2003, *JFP* Online subscriptions limited to a given location for corporate or a university, online publishing of papers
- Web site e-commerce report
- Membership report
- Advertising sales
- February financial statements reviewed and compared to budget
- Spring Affiliate Newsletter
- IAFP Officers made presentations at three spring Affiliate meetings. Six are scheduled for late spring through next fall
- Affiliate Awards
- Potential new Affiliate organizations — Portugal and Vermont
- Affiliate Educational Session Sponsorship
- Committee Appointments
- International Food Safety Icons — CD available for purchase, establishing a task force for plant and / or farm series of Icons
- Proposed changes to IAFP Bylaws
- Awards processes
- IAFP 2003 — LAC issues, MS State and LA State University to assist
- IAFP 2003 — exhibitor sign up and sponsorship commitments outpacing last year IAFP 2003 — Developing Scientists Competition
- IAFP 2003 — possible program adjustments
- IAFP 2003 — proposal for additional program session
- IAFP 2004 — sponsorship opportunities
- IAFP 2006 — contract signed for Calgary, Alberta, Canada
- Future Annual Meeting site selection
- IAFP on the Road — Food Safety Summit-March 2003—good for IAFP exposure
- IAFP on the Road — Worldwide Food Expo-October 2003
- European Meeting — continued investigation—possible coordination with ILSI Europe
- 3-A Sanitary Standards, Inc. — update given on recent board meetings
- IAFP and World Health Organization Non-Governmental Organization status
- Future planning goals for IAFP
- Possible Food Toxicology PDG
- Proposal to be listed as a sponsor for FoodHACCP.com
- Association International Market Development program

Next Executive Board meeting: August 8-14, 2003.

NEW MEMBERS

CANADA

Wendell S. Joyce
Canadian Poultry & Egg Processors Council, Ottawa, Ontario

Jean Kamanzi
Canadian Food Inspection Agency
Ottawa, Ontario

Lorraine F. McIntyre
BC Centre for Disease Control
Burnaby, British Columbia

ICELAND

Elin Gudmundsdottir
Environment & Food Agency
Reykjavik

JAPAN

Mikio Ozawa
Nippon Del Monte
Numata, Gunma

MEXICO

Tania Karely Molleda Contreras
Universidad Autonoma de Queretaro
Queretaro, Queretaro

Maria Del Pilar Hernandez Galaviz
Universidad Autonoma de Queretaro
Queretaro, Queretaro

Leopoldo Orozco Ramirez
Universidad Autonoma de Queretaro
Queretaro, Queretaro

SOUTH KOREA

S. K. Won
MSL Inc.
Seoul

UNITED ARAB EMIRATES

Sandra L. Poirier
Zayed University
Dubai

UNITED STATES

ARIZONA

Thomas P. Lopez
Scottsdale

CALIFORNIA

Mark G. Bellis
Ruiz Food Products Inc.
Dinuba

Martin De Anda
ITT Industries Jabsco
Foothill Ranch

William E. Terre, III
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Diamond Bar

DISTRICT OF COLUMBIA

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National Food Processors Association
Washington

GEORGIA

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USDA-ARS
Athens

IDAHO

Paul E. Guenther
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Lewiston

ILLINOIS

Carol C. Schlitt
University of Illinois Extension
Edwardsville

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Bledar Bisha
Iowa State University
Ames

Doug M. Bowers
Rousselot
Dubuque

Toshiba Traynham
Iowa State University
Ames

KANSAS

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Excel Corp.
Wichita

MARYLAND

Leslie Philip
Avendra
Rockville

Keith A. Sykes
Sodexho
Gaithersburg

MASSACHUSETTS

Ayesha I. Berlind
ERG
Lexington

MICHIGAN

Cedric Marks
Detroit Health Dept.
Detroit

Erin E. Natvig
NSF International
Ann Arbor

MINNESOTA

Dawn L. Amundson
Dairy Farmers of America
Zumbrota

MISSISSIPPI

Anne Baldwin Hogue
Mississippi State Dept. of Health
Canton

Ruth A. Posadas
Mississippi Dept. of Marine Resources
Biloxi

Jesse K. Shields
Mississippi State Dept. of Health
Tupelo

NEW MEMBERS

MISSOURI

Robert W. Mount
Hussmann Corp.
Bridgeton

PENNSYLVANIA

Bonnie C. Ford
Pennsylvania State University
University Park

Wei Zhang
Pennsylvania State University
University Park

TENNESSEE

Carl A. Doane
University of Tennessee
Knoxville

TEXAS

Jason L. Dickhaut
Metromedia Restaurant Group
Plano

Paulette Platko
US Dept. of Agriculture
College Station

Lacey M. Smith
Lubbock

VERMONT

Errol Groves
University of Vermont
Burlington

Crystal Ngutter
University of Vermont
Burlington

Todd J. Prichard
University of Vermont
Burlington

VIRGINIA

Joemel M. Quicho
Virginia Tech
Blacksburg

WISCONSIN

Patrick R. Eimerman
Food Research Institute
Madison

Terri Lilyquist
Schneider Cheese Inc.
Waldo

Shannon Losing
Lallemand Animal Nutrition
Milwaukee

UPDATES

New Chief Executive for Food Standards Agency

Dr. Jon Bell has been appointed chief executive of the U.K. Food Standards Agency. He was previously deputy chief executive and director of food safety and has been acting chief executive since December 2002.

Before joining the agency in 2000, Dr. Bell held a wide variety of posts in the Ministry of Agriculture, Fisheries and Food, including a number at senior managerial level, and oversaw many of the areas that are now the responsibility of the FSA.

He has a degree and post-graduate qualifications in chemistry and joined the Civil Service in 1975, following post-doctoral studies and a period of work in the private sector.

Dr. Bell's appointment, which was made following open competition, has been approved by the Secretary of State for Health and the appropriate authorities in the devolved national administrations

Craig Henry Joins National Food Processors Association (NFPA)

Craig Henry has joined NFPA as vice president of food safety programs. In this position, he will direct NFPA's food safety activities, including food inspections, HACCP and crisis management. Mr. Henry replaces Dane Bernard.

Henry comes from Koch Foods of Mississippi, LLC, where he served as vice president of quality and food safety. Prior to joining Koch Foods, he was director of sales and technical support for animal health and nutrition for DVC Inc.'s Life Sciences Division.

Silliker, Inc. Names Catherine "C.J." Reynolds Director of Education Services

Silliker, Inc. has appointed Catherine "C.J." Reynolds director of education services. Reynolds was director of marketing for the company for five years, and in her new role will be responsible for the growth of the education business, which includes short courses, training videos, and customized food safety education programs for industry clients.

Reynolds has over 16 years of food industry, business, and communication experience and served as director of public relations for the National Cattlemen's Beef Association prior to joining Silliker in 1998. She has developed collaborative public health and food safety initiatives, food safety awareness programs, and crisis management workshops for food industry professionals.

Interim Head Named for the Department of Food Science and Nutrition at the University of Minnesota

William Schafer has been named as interim head of the Department of Food Science and Nutrition at the University of Minnesota. Dr. Mindy Kurzer and Dr. David Smith will join Dr. Schafer as interim assistant heads, forming an administrative leadership team to manage the department's teaching, research, and outreach programs and to represent the department at academic-related activities.

Schafer received his Ph.D. from the University of Wisconsin-Madison in 1975 and joined the university of Minnesota in 1985 as assistant professor. Prior to joining the university, he served as a senior scientist and project leader with the Pillsbury Company. His current research interests include ways to control foodborne pathogens in minimally processed fruits and vegetables. His most recent outreach activities include food safety programs for food service managers and for wildlife sports (chronic wasting disease).

McDonald Joins Elgin Dairy as Commercial Sales Manager

Elgin Dairy Foods, Inc. announced the appointment of Jeff R. McDonald as commercial sales manager for the Eastern United States region. He will handle the in-store bakery, bakery distributor and ingredient manufacturing segments for Elgin Dairy Foods.

McDonald joins Elgin with over 15 years of food industry experience, and in almost every segment of the in-store bakery market. He's worked with several other major manufacturers to bring regional products and programs to a national level. McDonald has a long history of successful broker and customer partnerships, and he specializes in customer relationships and sales force management.

UPDATES

University of Minnesota College of Veterinary Medicine Appoints Associate Director to Center for Animal Health and Food Safety

The University of Minnesota College of Veterinary Medicine has appointed Shaun Kennedy to the newly created position of associate director of its Center for Animal Health and Food Safety (CAHFS).

Before joining CAHFS, Kennedy was vice president of Global Food and Beverage Research and Development for Ecolab, where he led the development of animal health and food safety technologies, including FDA-approved red meat tissue sanitizing rinses, poultry process water sanitizers, and udder health care systems. Kennedy holds five patents covering surfactants, detergent technologies, and novel antimicrobials.

Kennedy received his bachelor of science and engineering degree in chemical engineering from Princeton University. He is a member of the Industrial Research Institute.

International Association for Food Protection® NEWS

Gilmore Receives Distinguished Service Award

IAFIS took time out during its recent 2003 Annual Conference in Marco Island, FL, to honor one of its own for his contribution to the food and dairy industry. Dr. Tom Gilmore was the recipient of the IAFIS Distinguished Service Award.

IAFIS Chairman, Steve Schlegel presented Dr. Tom Gilmore, the Distinguished Service Award. The IAFIS Honor Award acknowledges the superior achievement of an individual who has served IAFIS by deed and devotion. It is the highest form of recognition by IAFIS of an individual for effort on behalf of the Association and the industry.

The Distinguished Service Award is given to an individual who has labored and accomplished on behalf of IAFIS and the industry. It has been awarded seven times since its inception in 1989.

After 17 years with IAFIS, Gilmore is now a consultant with 3-A Sanitary Standards, Inc. Gilmore's road to the Distinguished Service Award began with his upbringing on a family farm and working in a local dairy. He went on to receive three degrees in chemistry — a bachelor's degree from Lock Haven University, a master's degree from the University of Delaware, and a doctorate from Penn State University. Gilmore was a college professor at South Dakota State University, where he taught dairy chemistry, technical process control, dairy product processing, and advanced research methods.

Gilmore joined IAFIS in 1985, directing the association's technical affairs and administering the IAFIS Foundation, including its scholarship programs and the Collegiate Dairy Products Evaluation Contest. He then became the secretariat for the 3-A Sanitary Standards program and has played a key leadership role in the development of the standards and their acceptance throughout the industry.

Gilmore worked diligently to ensure the integrity of the 3-A program through the careful and deliberate development of standards and the gathering of program stakeholders at the annual 3-A meeting.

From Farm to Table: A Global Approach to Food Safety

Food safety is a global issue which demands an integrated, global response. But the answer to tackling the issue of foodborne hazards which know no geographical boundaries lies very close to home — in the farms, fields, orchards and rivers, large or small — where our food has its source. Food and Agriculture Organization (FAO) is advocating a new approach to ensuring that the food we eat is free from foodborne hazards — everything from pesticides and industrial chemicals, through to unwanted bacteria and contaminants — the "Food Chain Approach".

The system was discussed during a week-long high-level Committee on Agriculture meeting (March 31 – April 4, 2003), at FAO headquarters in Rome urged prevention as well as cure.

The key is to strengthen each and every link in the complex process of food reaching the consumer — from the way it is grown or raised, to how it is collected, processed, packaged, sold and consumed. Which came first — the chicken or the egg?

Traditionally, the food safety net has targeted the intermediary stages of the food chain — when food is processed from its raw state — rather than the initial or final stages of the food chain, where food is grown or consumed.

But a spate of outbreaks of foodborne diseases has highlighted the fact that many breaches of food safety have their origins at the very beginning of the food chain. The outbreak of BSE or "mad cow" disease, for example, was linked to contaminated feed. It set the United Kingdom back some US $6 billion and badly bruised consumer confidence.

Such episodes have led to heightened consumer awareness becoming a driving force in food production. Consumers want to know what they are eating and where it comes from. "There are already good standards of safety and hygiene in the meat and dairy processing industries," said FAO assistant director-general, Hartwig de Haen, "but we need to give more consideration to hygiene on the farm and the health of the animal, including what it is fed and how it is managed, to avoid contamination of animal products and risks to human health from diseases that can be transmitted to humans."

"We need to strengthen every single part of the food chain. One weak link, especially near the beginning, can make the whole food chain collapse," he added.

In developing countries almost two million children die each year from diarrhea, caused mainly by microbe-contaminated food and water. The food chain approach extends to the very end of the food chain — the consumer — by advocating training and education on the safe storage, preparation and consumption of food. The problem is all the more serious as what could once be contained within national borders now spreads with speed.

In 1999, for example, a single source of contaminated animal feed spread the industrial waste-product dioxin across continents in weeks.

"Frontiers no longer exist for contaminants," de Haen said, "Chemical and biological contaminants travel within the global marketplace further and faster than ever before. We need global measures just as we need to strengthen the whole length of the food chain."

Sharing the responsibility for providing safe food among all players in the food and agriculture sector — from food producers and processors to retailers and households — is mirrored by an approach in which developed countries offer developing ones the resources and experience to build their capacity to ensure their food chains are safe. FAO's approach includes the adoption of Good Agricultural Practices (GAP) which establish basic principles for farming, including soil and water management, crop and animal production, storage, processing and waste disposal. The aim of the food chain approach, which incorporates these improved farming practices, is to ensure that the food chain becomes more transparent so national and global food crises can be prevented rather than treated.

FSIS Increases Efficiency in Detecting *Salmonella*

The US Department of Agriculture's Food Safety and Inspection Service has announced a new measure that will increase efficiency and allow FSIS to further protect public health. FSIS has adopted the BAX® system to screen for *Salmonella* in ready-to-eat meat and poultry and pasteurized egg products.

After an evaluation, FSIS determined that the BAX® system was as sensitive as the current method of detecting *Salmonella* but also reduced the reporting time for negative samples by at least three days.

"This new screen test will save valuable agency time and resources that can then be applied in other ways to protect public health," said Dr. Elsa A. Murano, Under Secretary for Food Safety. "This will be another tool that we will use to wage war on pathogens."

The BAX® system was evaluated at the FSIS Microbial Outbreaks and Special Projects Laboratory (MOSPL) in Athens, GA, to determine whether it would be beneficial to the agency. Testing methods used by FSIS laboratories undergo rigorous evaluations to determine their validity and reliability.

After the successful MOSPL evaluation, the agency's three field service laboratories, located in Athens, GA, St. Louis, MO, and Alameda, CA analyzed approximately 828 random samples for *Salmonella* using both the current method and the BAX® system. A portion of the enrichment broth was used to conduct the BAX® test. The official confirmation analysis method was used to confirm that the BAX® system reduced reporting time.

FSIS implemented the BAX® system to screen ready-to-eat meat and poultry samples for *Salmonella* on Feb. 17, in the agency's three field service laboratories and the MOSPL laboratory. FSIS began using the BAX® screening system for *Listeria monocytogenes* in April 2002.

Radio Frequencies Blast Bacteria in Fruit Juice

Radio waves may be invisible, but they enrich life in many ways. Without them, radios, televisions, cellular phones and global positioning systems wouldn't be possible. Now, an agricultural research service scientist is using them to make fruit juice safer.

The radio frequency electric fields (RFEF) technique inactivates bacteria in apple juice without heating it. Although RFEF has been studied for more than 50 years as a pasteurization method, this is the first confirmed instance of a successful inactivation of bacteria using this technique in fruit juice.

Conventional pasteurization using heat can affect the nutrient composition and flavor of fruit and vegetable juices. The RFEF technique itself is nonthermal because the inactivation is not produced by heat. However, when moderate heat is applied, the combined effect is much greater than the effect of either process used alone.

David Geveke, a chemical engineer in the ARS Food Safety Intervention Technologies Research Unit at the agency's Eastern Regional Research Center at Wyndmoor, PA, built a specially designed treatment chamber to

apply high-intensity RFEF to apple juice. Researchers conducted experiments using *Escherichia coli* K12, a harmless form of bacteria used by researchers to study similarly behaving pathogenic strains, such as *E. coli* O157:H7.

Apple juice was exposed to electrical field strengths of up to 20 kilovolts per centimeter and frequencies in the range of 15 to 70 kilohertz, using a 4-kilowatt power supply. For some perspective, lightning occurs at field strengths of 30 to 40 kilovolts per centimeter, and 20 kilohertz is considered to be in the upper range of human hearing. Increasing the field strength and temperature as well as decreasing the frequency enhanced inactivation, according to Geveke. *E. coli* in juice at 50°C (about 122°F) was reduced by 99.9 percent.

RFEF could provide an alternative to pasteurization by heat. According to Geveke, the RFEF process could be used to treat heat-sensitive products such as fruit juices, vegetable juices and liquid egg products.

New Study Reveals Room for Improvement in Food Hygiene Knowledge and Practices in the Home

The preliminary results of a study into the bacteria found in domestic fridges in Ireland have been released. The research commissioned by safefood, the Food Safety Promotion Board and carried out by Teagasc – The National Food Centre, the University of Ulster at Jordanstown also investigated consumer food safety knowledge and behavior.

The microbial survey found that food poisoning bacteria were commonly present in home fridges. *Staphylococcus aureus* was found in four out of ten fridges in the home. This bacterium produces a toxin in foods which is not destroyed by cooking and when ingested may cause rapid onset of food poisoning. Symptoms include, nausea, vomiting and cramps.

The presence of *E. coli* (6%) and *Salmonella* (7%) both potentially serious pathogens indicate that some fridges are unclean and unsafe for food storage.

Listeria is of particular concern for pregnant women. It can grow at low temperatures and was found in 6% of fridges.

The food safety knowledge survey of over 1,000 people revealed that most people are unaware of *Campylobacter*, the organism which is known to cause most incidents of food poisoning with only 10% of respondents recognizing the name.

Not surprising was the large number of people who were aware of *Salmonella* (93%) and *E. coli* (77%). While most people associated *Salmonella* with eggs (40%), significantly less people associated it with poultry or meat products.

The findings demonstrate that when it comes to fridge management, a large majority of people are unequipped with the basic information about fridge management. The survey shows that 78% of people do not know the correct temperature to operate the fridge. Barney Whelan, director of marketing and communications, safefood, stated, "the survey yielded some very interesting results, in particular the statistics relating to fridge management. We were very surprised to see that most people in Ireland do not know the correct temperature to operate the fridge at. The recommendation from safefood is to operate the fridge below 5°C."

Just over one-third of those surveyed knew how to correctly defrost frozen meat — either in the fridge or the microwave. Only half of the sample knew that raw meat should be stored in the bottom shelf of the fridge, while four out of five people (80%) knew that leftovers should be refrigerated.

The area of personal hygiene illustrates a clear need for greater information about food safety. When asked "On what occasions do you think it is important to wash your hands?" nearly half of those questioned failed to mention after using the toilet, one third failed to mention before preparing meals or after handling raw meat and almost nine out of ten failed to consider after touching animals.

These findings illustrate a clear need for greater information on food safety. The Food Safety Promotion Board has developed a communications campaign designed to raise awareness of food safety issues and increase people's general knowledge about how to prepare and store food properly.

Bioterrorism: Preparedness Varied Across State and Local Jurisdictions

State and local officials in the United Statesreported varying levels of preparedness to respond to a bioterrorist attack. Officials reported deficiencies in capacity, communication, and coordination elements essential to preparedness and response, such as

workforce shortages, inadequacies in disease surveillance and laboratory systems, and a lack of regional coordination and compatible communications systems. Some elements, such as those involving coordination efforts and communication systems, were being addressed more readily, whereas others, such as infrastructure and workforce issues, were more resource-intensive and therefore more difficult to address. Cities with more experience in dealing with public health emergencies were generally better prepared for a bioterrorist attack than other cities, although deficiencies remain in every city.

State and local officials reported a lack of adequate guidance from the federal government on what it means to be prepared for bioterrorism. They said they needed specific standards (such as how large an area a response team should be responsible for) to indicate what they should be doing to be adequately prepared. The need for federal guidance has continued to be an issue as states have proceeded in their planning and preparedness activities with funding from the Department of Health and Human Services (HHS). For example, in their progress reports to HHS in late 2002 two states reported that they were seeking guidance from HHS on assessing vulnerabilities for foodborne or waterborne diseases and preparedness steps they should take for these hazards. One of these states has declared that it could not make further efforts on testing for these types of diseases until it receives more guidance. State officials also expressed a desire for more sharing of best practices.

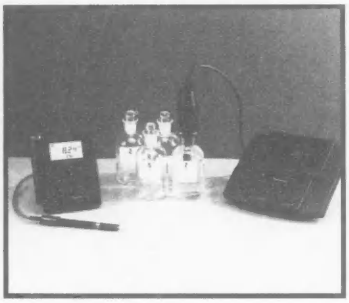
Officials stated that, while each jurisdiction might need to adapt procedures to its own circumstances, time could be saved and needless duplication of effort avoided if there were better mechanisms for sharing strategies across jurisdictions. They stated that HHS was better positioned to know about different strategies that states were pursuing and they want information on the best practices.

Much of the response to a bioterrorist attack would occur at the local level. Many local areas and their supporting state agencies, however, may not be adequately prepared to respond to such an attack. In the Public Health Improvement Act that was passed in 2000, Congress directed the Government Account Office (GAO) to examine state and local preparedness for a bioterrorist attack. In this report GAO provides information on state and local preparedness and state and local concerns regarding the federal role in funding and improving preparedness. To gather this information, GAO visited seven cities and their respective state governments, reviewed documents, and interviewed officials.

Cities are not identified because of the sensitive nature of this issue. GAO recommends that the HHS, in consultation with the Department of Homeland Security DHS, develop specific benchmarks that define adequate preparedness for a bioterrorist attack and can be used by jurisdictions to guide their preparedness efforts; and develop a mechanism for evaluating and sharing useful solutions to problems among jurisdictions.

HHS and the DHS concurred with the recommendations.

INDUSTRY PRODUCTS



Thermo Orion

Thermo Orion Introduces the New Dissolved Oxygen Auto-Stir™ Probe

This dissolved oxygen probe is designed for fast and easy BOD analysis with the Thermo Orion 862A DO/BOD/Temperature Meter. The built-in stirrer provides vigorous sample agitation, preventing oxygen stratification and can easily be disassembled for cleaning. The probe stand, which is free standing, can be used to store the probe when not in use, and also functions as an air calibration beaker.

Additional product features include an ergonomic one-touch™ control, dual automatic temperature compensation and a low maintenance polarographic design. Thermo Orion also offers electrolyte solution, a polishing disk and membrane caps, which may be purchased individually or together as a probe maintenance kit.

Thermo Orion is an ISO 9001-registered manufacturer of quality chemical measurement products. Thermo Orion's line of products includes pH, ion selective electrode, colorimeters, conductivity and dissolved oxygen meter, electrodes, accessories, and solutions. Thermo Orion also offers a complete line of syringe pumps, microbalances, titrators and Pure Water™ online process monitors. Most recently, the company expanded its already extensive product offering to include a complete line of liquid-handling systems, autosampler, the award-winning EZ-Flash® gas chromatography accessory, and the TEA Analyzer® detector for HPLC and GC. These systems prove that Thermo Orion is committed to providing the best instrumentation for a wide array of laboratory analyses.

Thermo Orion, Waltham, MA

READER SERVICE NO. 268

DuPont Qualicon BAX® System Adopted by USDA Food Safety and Inspection Service

The BAX® system, a genetics-based screening method developed by DuPont Qualicon, has been adopted by the United States Department of Agriculture (USDA) Food Safety and Inspection Service (FSIS) to detect *Salmonella* in the nation's ready-to-eat meat, poultry and pasteurized eggs.

FSIS adopted the BAX® system to screen for *Salmonella* in these foods after an evaluation determined that the DuPont system was as sensitive as the current method of detecting *Salmonella*, but reduced reporting time by at least three days. According to FSIS Under Secretary for Food Safety Dr. Elsa A. Murano, this new screen test will save valuable agency time and resources that can then be applied in other ways to protect public health. FSIS already has adopted the BAX® system for *Listeria monocytogenes* and is now evaluating it for detection of *Escherichia coli* O157:H7.

"This is great news for the food industry," said Kevin Huttman, president of DuPont Qualicon. "Our customers depend on the BAX® system as a cost-effective means to provide fast and reliable results. That's because the BAX® system uses DNA molecular biology in an automated, standardized format to quickly and definitively screen for foodbome pathogens."

Salmonella is a serious food pathogen. Although thorough cooking will kill the bacteria, cross-contamination of ready-to-eat foods can occur through contaminated utensils and hands. Each year, approximately 40,000 cases of salmonellosis are reported in the United States. It is estimated that 1,000 people die each year from acute salmonellosis.

The BAX® system is a breakthrough genetics-based screening method that detects target bacteria in raw ingredients, finished food products and environmental samples. The automated system, which takes little space and looks like a desktop computer, has been available since November 2000. More than 200 BAX® systems already are in use by governments, food companies and laboratories in 30 countries.

Qualicon, Inc., Wilmington, DE

READER SERVICE NO. 269

Carmina Technologies Launches Assur Monitoring Product Line

Carmina Technologies Inc. has launched its line of Assur products which improve and enhance the inspection and quality control process for a variety of industries. President and chief executive officer John Alston said, "With the Assur product lines we are bringing tested and developed technology to the market launch. Our Assur family of monitoring services provide for a reliable, cost effective system of monitoring the performance of services critical to maintaining quality control and public health and safety."

Developed in response to companies' and regulators' urgent needs, intensified by post 9/11 concerns, the Assur systems utilize hand-held units in the field, which accept inspection data directly in accordance with preprogrammed instructions and download to servers by wireless or other means. These in turn provide reports on demand to management or regulators, eliminating manual re-entry and possible corruption of data.

Recent scandals rising from faulty inspections of municipal water supplies, outbreaks of *E. coli* contamination from inadequately inspected food plants and other failures in critical inspections plus concern over "bio-terrorism" demonstrate the need for Carmina's products and services. The sensitivity of regulatory agencies to these highly publicized problems and to the threat of terrorism has provided a favorable climate for introducing the Assur monitoring products. Wherever inspections are mandated that are currently unmonitored, the Assur technology provides a solution with real economic benefit.

The services and products of Carmina are not marketed to the public but rather to individuals in decision-making positions in the inspection sector of the targeted industries or regulatory agencies. The market potential is huge and our efforts at market penetration are only just beginning. Sales commenced in the final quarter of 2002. With the current public concern over environmental and terrorist issues, management anticipates that new applications currently planned will find a ready market.

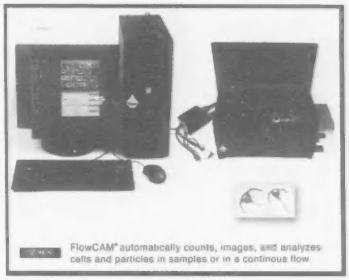
An agency agreement was recently signed with a non-profit corporation of Canadian food producers, processors, transporters and marketers set up to implement in Canada the Hazard Analysis Critical Control Point protocol, which is an internationally recognized means of assuring food safely from harvest to consumption. This breakthrough has the potential of placing the company's Assur product as the technology of choice in jurisdictions around the world.

Carmina Technologies, Inc., Calgary, Alberta, Canada

READER SERVICE NO. 770

Fluid Imaging Technologies Water Quality Protection Firm Unveils Patented Imaging Technology

New FlowCAM® may detect presence of anthrax, cryptosporidium and more automatically counts, images, analyzes particles and cells in real time. Water quality protection firm Fluid Imaging Technologies has introduced the FlowCAM®, a high speed imaging flow cytometer that automatically counts, images and analyzes cells or particles in a discrete



Fluid Imaging Technologies, Inc.

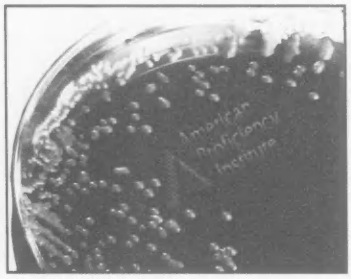
water sample in one minute or in a continuous flow in real time and stores the pictures and other data in a spreadsheet for instant review. Using proprietary pattern recognition technology, the FlowCAM compares the images against a digital history library of cells and particles, enabling water/wastewater engineers, process engineers, quality control managers; plant managers, environmental compliance officers, laboratory managers, and other water security professionals to help detect the presence of anthrax, giardia, cryptosporidium and other targeted organic agents, as well as in organic matter such as metallic impurities. Once a match is confirmed, the FlowCAM may trigger an early-warning system that alerts appropriate personnel or emergency authorities.

In review by the Environmental Protection Agency and Department of Defense for use national water infrastructure security, the innovative FlowCAM adds an unprecedented level of protection against potential bioterror attacks at reservoirs, municipal water treatment plants and other public water supply facilities. The FlowCAM is ideal for use in the food, beverage, dairy; pharmaceutical, chemical, semiconductor, aquaculture, biomedicine and other industries where safeguarding and documenting the purity of water and other fluids is paramount.

The FlowCAM is based on patented technology that permits continuous optical focus in a moving volume of fluid, delivering clarity and definition at magnifications never before possible while eliminating time-intensive and laborious microscopy protocols. Designed for field and laboratory usage, the FlowCAM is offered with several magnification options to permit detection of cells and/or particles ranging from .5um to 3mm in size and positive visual identification from as minute as 10um.

Fluid Imaging Technologies, Inc., Edgecomb, ME

READER SERVICE NO. 271



Hardy Diagnostics

Hardy Diagnostics is Your Distributors for the American Proficiency Institute (API)

Hardy Diagnostics offers API proficiency testing programs for labs performing microbiology and chemistry analyses on food products. Participants can select from a variety of programs and food matrices to match the testing performed at their facility. The enrollment fee includes three shipments per year, easy-to-understand evaluation reports comparing your performance to other laboratories, and extra report copies sent to any management personnel or accreditation agencies that require them. API has refined the food microbiology proficiency testing process by using lyophilized microorganisms derived from traceable reference cultures. Performing internal laboratory proficiency testing is not only good science but also increases the quality assurance of your products thus making it more marketable to your customers.

Hardy Diagnostics, Santa Maria, CA

READER SERVICE NO. 272

BD Diagnostic Systems Peptone Technical Manual Now Available

BD Diagnostic Systems announces the release of the BD Peptone Technical Manual, designed to help in the selection of BD bionutrient products for use in cell culture, microbial fermentation production, industrial research, QA/QC and environmental monitoring. Covering a wide range of peptones, the BD Peptone Manual contains sections on Meat Peptones and Media, Casein Peptones and Non-Animal Peptones. Both cell culture and fermentation applications are addressed. Product by product descriptions are provided, with each description containing data on physical, chemical analysis and amino acid distribution, as well as detail on the product's most common applications. Most product pages also display growth curve diagrams, showing how the growth of five common organisms was affected by use of the product. A complete listing of BD regulatory services is also included, with an alphabetical listing of products for easy reference.

The BD Peptone Technical Manual contains useful information for both BD BBL™ brand and BD Difco™ brand peptones and media, used widely in the biotechnology, pharamaceutical, animal and human vaccine, and bioremediation arenas. The Manual provides information on the full line of BD meat peptones. Carrying forward the reputation established under the Difco name, BD operates the previous Difco hydrolyzation facility in Detroit as a source for the high quality Difco™ and Bacto™ brand products. BD also continues investing in research and development for peptone products, creating a deeper understanding of their application in cell culture and microbial fermentation.

The BD Peptone Technical Manual also highlights the expanding BD line of non-animal origin products. As early as 1998, BD started offering non-animal products to the fermentation industry, introducing its Select APS™ (Alternative Protein Source) Super Broth, Select APS™ LB Broth and Select Soytone products.

BD Diagnostic Systems, Sparks, MD

READER SERVICE NO. 273

Ingenium Packaging's New Eco-Safe™ Can Reduces Food Packaging Costs and is Safer for Consumers and the Environment

Ingenium Packaging announced the national launch of the EcoSafe™ can that uses a patented design and pressurized packing technology and thus requires approximately 40 percent less steel than conventional two-piece and three-piece tinplate cans. In addition, the EcoSafe can features unique concave ends that visibly pop up if gas pressure builds within the can due to either a chemical or microbiological reaction.

"The Ingenium EcoSafe can promises to change the food packaging industry forever by offering consumers

a safer food package that is significantly better for the environment and actually costs less to produce than a conventional can," said Tom Liber, president and CEO of Ingenium Packaging, LLC.

In addition to its unique concave ends that visibly pop up when bacteria is present, the EcoSafe can offers several other safety improvements over conventional cans. In fact, the United States patent examiner said the Ingenium EcoSafe can "...yields a safer food package than all previous claims filed." For instance, if leaks or metal failure occurs, the can's thin walls will no longer be firm to the touch. In addition, Ingenium's pressurized-packing process eliminates the need for steam and forces any possible contaminants away from the can rather than into it.

Unlike conventional cans, which are vacuum packed, the Ingenium EcoSafe can's patented design and pressurized packing technology delivers a can that is 40 percent lighter yet 20 percent stronger than a conventional two-piece can.

"Grocers and food processors love our can because its light weight reduces freight costs and its added strength results in significantly lower returns," said Liber. The Ingenium EcoSafe can is also more versatile than a conventional can.

Because it is stronger, the can does not need the ridges that give conventional can added strength. Consequently, the EcoSafe can has a smooth side wall which enables food packers to utilize a wider variety of label options. Additionally, the Ingenium EcoSafe can will accommodate both a conventional end and Ingenium's E-Z Lift™ end. Just as important, because its patented pressurized packing technology leverages existing food manufacturing processes, the conversion cost for adopting the EcoSafe can is typically less than $150,000 per food packing plant.

The Ingenium EcoSafe can will be on store shelves in late 2003. Ingenium has already signed R&D/commercialization agreements with several major food processors.

In addition, the company is in the process of negotiating restricted licensing agreements with a number of other major food processors and container manufacturers.

Ingenium Packaging, LLC, Canton, OH

READER SERVICE NO. 274

Dr. Elsa A. Murano

Under Secretary for Food Safety
United States Department of Agriculture

Plenary Session —

"Breaking the Cycle of Foodborne Illness: The War on Pathogens"

August 12, 2003 — 3:45 p.m. – 4:30 p.m.
New Orleans, Louisiana

Dr. Elsa A. Murano will deliver a special presentation during a plenary session on Tuesday, August 12 at IAFP 2003 in New Orleans, Louisiana. Dr. Murano is uniquely qualified to address the IAFP audience having obtained her doctorate in food science and technology from Virginia Tech and having held various faculty positions at both Texas A&M and Iowa State University for 10 years prior to her work with the United States Department of Agriculture. Time will be allowed for a question and answer period during the 45 minute plenary session.

Dr. Murano was sworn in as Under Secretary for Food Safety by Agriculture Secretary Ann M. Veneman on October 2, 2001. In this position, she oversees the policies and programs of the Food Safety and Inspection Service.

Dr. Murano has extensive public and private experience in the field of food safety as both a manager and educator. From 1995 until her swearing-in, Dr. Murano held several positions with Texas A&M University at College Station, Texas. Between 1997 to 2001 she served as the Director of the university's Center for Food Safety within the Institute of Food Science and Engineering. During this time she also served on the university's Department of Animal Science Research Advisory Committee and the Food Safety Response Team of the Texas Agriculture Extension Service, and served from 1999 to 2001 as the Chair of the Food Safety State Initiative Committee of the Texas Agriculture Experiment Station. She held the position of the Center for Food Safety's Associate Director from 1995 to 1997. In 2000 she was appointed Professor in the Department of Animal Science, after having been an Associate Professor in that same department from 1995 to 2000. In addition, in 2000 Dr. Murano was awarded the Sadie Hatfield Endowed Professorship in Agriculture.

Dr. Murano served as a Professor-in-Charge of research programs at the Linear Accelerator Facility at Iowa State University in Ames, Iowa from 1992 to 1995. She was an Assistant Professor in the Department of Microbiology, Immunology, and Preventive Medicine at that university since 1990.

Before joining the USDA, from 2001 until her appointment, Dr. Murano served as a member of the USDA National Advisory Committee for Meat and Poultry Inspection. Since 1998 she also served on the National Alliance for Food Safety Operations Committee, which she chaired during 2000. She was a member of several professional organizations, which included the International Association for Food Protection, American Society for Microbiology, the Association of Meat Science, the Institute of Food Technologists, and the Poultry Science Association.

A native of Havana, Cuba, Dr. Murano holds a B.S. degree in biological sciences from Florida International University in Miami. She also holds a M.S. degree in anaerobic microbiology and a Ph.D. in food science and technology, both from Virginia Polytechnic Institute and State University in Blacksburg, Virginia.

Ivan Parkin Lecture

presented by

Donald L. Zink, Ph.D.

Lead Scientist, Food Processing
Food and Drug Administration
Center for Food Safety and Applied Nutrition
Office of Plant, Dairy Foods, and Beverages
College Park, Maryland

"On the Trail of Food Safety — From the Early Days to the Future"

Sunday, August 10, 2003
Opening Session — 7:00 p.m.

Dr. Donald L. Zink received his undergraduate degree from Abilene Christian University. He earned an M.S. degree in Microbiology and a Ph.D. in Biochemistry and Biophysics from Texas A&M University. Between 1978 and 1983, he held faculty positions at Texas A&M University's College of Veterinary Medicine and at The University of Arizona in the Department of Microbiology and Immunology and the Department of Food Science. He joined Campbell Soup Company in 1983 as Manager of Process Microbiology where he worked in the area of refrigerated food safety and aseptic processing. In 1990, he joined Nestlé, where he held various positions in Quality Assurance for the Carnation Company and later served as Director of Food Safety for Nestlé USA. In 2000, he joined a new beef processing venture company, Future Beef Operations, as Vice President of Research and Development and Product Safety. Recently, he joined the US Food and Drug Administration's Center for Food Safety and Applied Nutrition in the Office of Plant, Dairy Foods, and Beverages, where he serves as the Lead Scientist for Food Processing.

Dr. Zink has served as a member of several advisory committees including the Committee on Program and Technical Review of the US Army Natick RDEC for the National Research Council and the National Advisory Committee on Microbiological Criteria for Foods.

IAFP 2003 Preliminary Program

DSC – Developing Scientist Competition

SUNDAY EVENING – AUGUST 10, 2003
7:00 p.m. – 8:00 p.m.

Opening Session
Presentation of the International Association for Food Protection Fellows Awards

Ivan Parkin Lecture – On the Trail of Food Safety – From the Early Days to the Future, Donald L. Zink, Ph.D., Lead Scientist, Food Processing, Food and Drug Administration, Center for Food Safety and Applied Nutrition, Office of Plant, Dairy Foods, and Beverages, College Park, MD, USA

Cheese and Wine Reception will follow in the Exhibit Hall

MONDAY MORNING – AUGUST 11, 2003
8:30 a.m. – 12:00 p.m.

S01 Use of Food Safety Objectives and Other Risk-based Approaches to Reduce Foodborne Listeriosis

Sponsored by ILSI N.A.
Organizer: Catherine Nnoka
Convenors: Michael Doyle and Isabel Walls

8:30 *Listeria monocytogenes* in Foods – An Update – PAUL S. MEAD, CDC, Atlanta, GA, USA

9:00 Use of Food Safety Objectives as a Tool for Reducing Listeriosis – ROBERT L. BUCHANAN, FDA-CFSAN, College Park, MD, USA

9:30 Factors Affecting Exposure of Individuals to *Listeria monocytogenes* – KATHERINE SWANSON, General Mills, Inc., Minneapolis, MN, USA

10:00 Break

10:30 Hazard Characterization Issues: Virulence, Pathogenicity and Modeling Dose-Response – CATHERINE W. DONNELLY, University of Vermont, Burlington, VT, USA

11:00 Process Control Strategies for Reducing Foodborne Listeriosis – DONALD L. ZINK, FDA-CFSAN, College Park, MD, USA

11:30 Education Strategies for Reducing Foodborne Listeriosis – LYDIA C. MEDEIROS, Ohio State University, Columbus, OH, USA

S02 Intervention Strategies for Ready-to-Eat Meat Products

Organizer: Margaret Hardin
Convenors: Peter Bodnaruk and Margaret Hardin

8:30 Food Safety Objectives for Ready-to-Eat Meat Products – BRUCE TOMPKIN, ConAgra Foods, Downers Grove, IL, USA

9:00 Facility Design and Sanitation Best Practices – DAVID HERWEYER, Wayne Chemical Co., Fort Wayne, IN, USA

9:30 Additive Intervention Technologies – KATHLEEN GLASS, University of Wisconsin-Madison, Madison, WI, USA

10:00 Break

10:30 Non-thermal Intervention Strategies for Ready-to-Eat Meat Products – LISA SZABO, Food Science Australia, North Ryde, NSW, Australia

11:00 Thermal Post Pasteurization Interventions for Ready-to-Eat Meats – HARSHAVARDHAN THIPPAREDDI, University of Nebraska-Lincoln, Lincoln, NE, USA

11:30 Irradiation of Ready-to-Eat Meat Products – Update and Future – KEVIN E. NANKE, SureBeam Corporation, Glendale Heights, IL, USA

S03 Hazard Identification in the Fresh Produce Industry

Organizer: Jennylynd James
Convenors: Jack Guzewich and Jennylynd James

8:30 Food Worker Hygiene in Fruits and Vegetables – EWEN TODD, Michigan State University, East Lansing, MI, USA and BARRY MICHAELS, Georgia Pacific Corp., Paltaka, FL, USA

9:00 On-Farm Survival of Indicators, Surrogates, and Pathogens – TREVOR V. SUSLOW, University of California, Davis, CA, USA

9:30 Clean Greens – A Field Study of the Microbiological Quality of Domestic Produce – LEE ANN JAYKUS, North Carolina State University, Raleigh, NC, USA

10:00 Break

10:30 Highlights of FDA Findings from Farm Investigations – JACK GUZEWICH, FDA-CFSAN, College Park, MD, USA

11:00 Survey of *Listeria monocytogenes* in Ready-to-Eat Vegetables and Use of the Data in Risk Assessment – YUHUAN CHEN, NFPA, Washington, D.C., USA

11:30 Information Needs for the Transportation and Distribution Component of a Produce Risk Assessment: Data and Models – MARK O. WALDERHAUG, FDA-CFSAN, College Park, MD, USA

S04 Recipe for Food Safety at Retail

Organizer: Frank Yiannas
Convenors: Ernie McCullough and Frank Yiannas

8:30 Mixing It All Together – A Retail Food Safety Overview – FRED REIMERS, H. E. Butt Grocery Company, San Antonio, TX, USA

9:00 Creative Recipes – Special Manufacturing Processes at Retail – STEVE OTWELL, University of Florida, Gainesville, FL, USA

9:30 New Ingredients – Retail Food Safety Innovations – FRANK YIANNAS, Walt Disney World, Lake Buena Vista, FL, USA

10:00 Break

10:30 Know Your Ingredients – Managing Allergens at Retail – ERNIE MCCULLOUGH, Triarc Restaurant Group, Fort Lauderdale, FL, USA

11:00 Changing the Recipe – How to Obtain a Food Code Variance – PETE SNYDER, Hospitality Institute of Technology and Management, St. Paul, MN, USA

11:30 Reading the Recipe – Training Workers Who Do Not Read English – JOSEPH EIFERT, Virginia Tech, Blacksburg, VA, USA

T01 Microbiological Methods

Convenors: David A. Golden and Robert C. Williams

8:30 T01 Evaluation of Several Modifications of an Ecometric Technique for Assessment of Media Performance – Jeffrey L. Kornacki, JOSHUA B. GURTLER, Zhinong Yan, and Chad M. Cooper, University of Georgia, Griffin, GA, USA

8:45 T02 Comparison of a Modified Plate Drop and a Solid Agar Overlay Method for Recovery of *Listeria monocytogenes* with Spread Plating and Spiral Plating Using Several Media – Zhinong Yan and JEFFREY L. KORNACKI, University of Georgia, Griffin, GA, USA

9:00 T03 DSC Comparison and Recovery of Airborne Microorganisms in a Swine Facility Using Selective Agar an Thin Agar Layer Resuscitation Media – BETH ANN CROZIER-DODSON, Daniel Y. C. Fung, and Joshua A. Reed, Kansas State University, Manhattan, KS, USA

9:15 T04 DSC Detection of Total and Pathogenic *Vibrio vulnificus* Using PCR and Oligonucleotide Microarrays – GITIKA PANICKER, Douglas R. Call, and Asim K. Bej, University of Alabama-Birmingham, Birmingham, AL, USA

9:30 T05 Evaluation of Second Generation VIDAS® *Listeria monocytogenes* and Automated BAX® Methods for Detection of *Listeria monocytogenes* in Ready-to-Eat Meat and Poultry – WENDY A. LEPPER and Ann M. Schultz, Silliker, Inc., South Holland, IL, USA

9:45 Break

10:15 T06 Validation of a Microwell DNA Probe Assay for Detection of *Listeria* spp. in Foods – OMAR A. OYARZABAL, Nicole M. Behnke, Gregory W. Durbin, Kathryn Telford, and Mark A. Mozola, Neogen Corporation, Lansing, MI, USA

10:30 T07 Nucleic Acid Sequence-based Amplification for the Rapid and Sensitive Detection of *Salmonella enterica* from Foods – DORIS H. D'SOUZA and LeeAnn Jaykus, North Carolina State University, Raleigh, NC, USA

10:45 T08 Multiplex Nucleic Acid Sequence-based Amplification to Detect Norwalk-like Viruses (GI and GII) and Hepatitis A Virus in Food Commodities – JULIE JEAN, Doris D'Souza, and Lee-Ann Jaykus, North Carolina State University, Raleigh, NC, USA

11:00 T09 Rapid Enumeration of Yeast and Mold in Salad Dressings Using the BioSys – LORALYN H. LEDENBACH,Siobhan Ruff, Rozka Gabova, and Paul Hall, Kraft Foods, Glenview, IL, USA

11:15 T10 DSC Rapid and Specific Detection of *Penicillium expansum* by Polymerase Chain Reaction – PATRICK J. MAREK, Thirunavukkarasu Annamalai and Kumar Venkitanarayanan, University of Connecticut, Storrs, CT, USA

11:30 T11 DSC Nitrite-induced Injury of *Listeria monocytogenes*: Impact of Selective Versus Non-selective Recovery Procedures on Recovery from Frankfurters – C. M. NGUTTER and C. W. Donnelly, University of Vermont, Burlington, VT, USA

11:45 T12 Pathogen Detection Using an Optical Interferometer Biosensor – Jie Xu, Carolyn Goodridge, and DAVID S. GOTTFRIED, Georgia Tech Research Institute, Atlanta, GA, USA

P01 Pathogens and Their Controls

10:00 a.m. – 1:00 p.m.
(Authors present 10:30 a.m. – 12:30 p.m.)

P001 *Escherichia coli* and *Staphylococcus aureus* Inhibition with Ternary Mixtures of Thymol, Carvacrol and Potassium Sorbate – Reyna Leon-Cruz, Enrique Palou, and AURELIO LOPEZ-MALO, Universidad de las Américas-Puebla, Cholula, Puebla, Mexico

P002 Origanox as a Natural Ingredient to Inhibit the Growth of Foodborne Pathogens – S.R.K. DHARMAVARAM, G. Shahbazi, C. W. Seo, and S. A. Ibrahim, North Carolina A & T State University, Greensboro, NC, USA

P003 Use of Lactoferrin to Inhibit the Growth of Foodborne Pathogens and Meat Spoilage Bacteria – Anas Al-Nabulsi and RICHARD HOLLEY, University of Manitoba, Winnipeg, MB, Canada

P004 Antimicrobial Activity of Cetylpyridinium Chloride against *Listeria monocytogenes* in Ready-to-Eat Meat – MANPREET SINGH, R. K. Phebus, H. Thippareddi, J. L. Marsden, and T. J. Herald, Kansas State University, Manhattan, KS, USA

P005 Antimicrobial Effects of Colloidal Silver on Beef Inoculated with *Salmonella* spp. – R. R. COGER, R. K. Phebus, J. L. Marsden, and T. J. Herald, Kansas State University, Manhattan, KS, USA

P006 Influence of EDTA on the Antimicrobial Efficacy of Thai Spices – CHITSIRI THONGSON, P. M. Davidson, W. Mahakarnchanakul, and P. Vibulsresth, University of Tennessee, Knoxville, TN, USA

P007 Evaluation of Antimicrobial Packaging Materials and Modified Atmosphere Packaging for the Preservation of Foods – KAZUE TAKEUCHI and James Yuan, Air Liquide, Countryside, IL, USA

P008 DSC Antibacterial Effect of Black Seed Oil on *Listeria monocytogenes* – PRADEEP VASUDEVAN, Manoj Kumar Mohan Nair, and Kumar Venkitanarayanan, University of Connecticut, Storrs, CT, USA

P009 DSC Protamine's Antimicrobial Activity against *Escherichia coli* Depends Upon Cell Envelope Structure and Electrostatic Interactions – KRISTIN SLOAN, Lisbeth Truelstrup-Hansen, Chris Whitfield, and Heidi Schraft, University of Guelph, Guelph, ON, Canada

P010 Inhibition of *Aspergillus flavus* by Sourdough Lactic Acid Bacteria – Marketa Giesova, LLOYD B. BULLERMAN, and Valerie Martinez, University of Nebraska-Lincoln, Lincoln, Nebraska, USA

P011 DSC Antimicrobial Activity of Selected Chemical Components from Essential Oils against *Salmonella* Typhimurium and *Listeria monocytogenes* – VALERIE W. LING, P. Michael Davidson, and F. Ann Draughon, University of Tennessee-Knoxville, Knoxville, TN, USA

P012 Antimicrobial Activity of Potassium Sorbate and Phenolic Compound Mixtures – Angélica Santiesteban, Stella M. Alzamora, Enrique Palou, and AURELIO LOPEZ-MALO, Universidad de las Américas-Puebla, Cholula, Puebla, Mexico

P013 Carvacrol, Citral, Eugenol, Potassium Sorbate, Sodium Benzoate, Thymol, and Vanillin Inhibitory Concentrations of *Zygosaccharomyces bailii* Growth Determined by Probabilistic Modeling – ENRIQUE PALOU and Aurelio Lopez-Malo, Universidad de las Américas-Puebla, Cholula, Puebla, Mexico

P014 Shiga Toxin-Producing *Escherichia coli* in Nevada Sheep – HUSSEIN HUSSEIN, University of Nevada-Reno, Reno, NV, USA

P015 A PCR-based Method for the Rapid Detection of the Genus *Listeria* and the Species *Listeria monocytogenes* in Food Products – Lilach Sommer and YECHEZKEL KASHI, Technion, Haifa, Israel

P016 DSC Biofilm Forming Potential of *Listeria monocytogenes* Isolates on Stainless Steel Using Two Different Media – JAMES FOLSOM and Joseph Frank, University of Gergia, Athens, GA, USA

P017 Effect of Natural Antimicrobials on *Escherichia coli* O157:H7 in Refrigerated MAP Ground Beef – Parthiban Muthukumarasamy, Jung H. Han, and RICHARD A. HOLLEY, University of Manitoba, Winnipeg, MB, Canada

P018 Activity of Dermaseptin Derivatives against Foodborne Pathogens – Shachar Oliel, Sima Yaron, Dina Shachar, and AMRAM O. MOR, Technion-Israel Institute of Technology, Haifa, Israel

P019 An Exopolysaccharide, Colanic Acid, Production by Shiga-toxin-producing and Enterohemorrhagic *Escherichia coli* – Jui-Yueh Yeh, Joy Adams, and JINRU CHEN, University of Georgia, Griffin, GA, USA

P020 DSC Adaptation to Low pH Changes; Membrane Lipid Composition, Verotoxin Secretion, and Acid Resistance of *Escherichia coli* O157:H7 – HYUN-GYUN YUK and Douglas L. Marshall, Mississippi State University, Mississippi State, MS, USA

P021 DSC Effect of Ultrasonication and Sodium Chloride Concentration on Inactivation of *Escherichia coli* O157:H7 and *Listeria monocytogenes* – KIMBERLY D. STANLEY, David A. Golden, and Jochen Weiss, University of Tennessee, Knoxville, TN, USA

P022 DSC Comparison of Inoculation Method and Drying Time on Survival and Recovery of *Escherichia coli* O157:H7, *Salmonella*, and *Listeria monocytogenes* Inoculated onto Raw Tomatoes and Lettuce – MEGAN M. LANG, Linda J. Harris, and Larry R. Beuchat, University of Georgia, Griffin, GA, USA

P023 DSC Changes in the Acid Tolerance of *Escherichia coli* O157:H7 as Affected by Acid Adaptation Procedures – LAURA V. ASHTON, John Samelis, Patricia A. Kendall, and John N. Sofos, Colorado State University, Fort Collins, CO, USA

P024 Comparison of Media, Incubation Time, Temperature, and Environmental Conditions on the Recovery of Heat-injured *Escherichia coli* O157:H7 in a Broth System – STACY K. STOLTENBERG, Kelly J. K. Getty, Randall K. Phebus, Hashavardhan Thippareddi, and Thomas M. Loughin, Kansas State University, Manhattan, KS, USA

P025 Protective Effect of *Escherichia coli* O157:H7 Colainc Acid to Osmotic Shock and Oxidative Stress – JINRU CHEN and Shiao Mei Lee, University of Georgia, Griffin, GA, USA

P026 Survival and Growth of *Escherichia coli* O157:H7 on Fresh Beef Inoculated Before and After Decontamination with Hot Water and Lactic Acid in Different Sequences – KONSTANTINO P. KOUTSOUMANIS, Laura V. Ashton, Ifigenia Geornaras, Patricia A. Kendall, and John N. Sofos, Colorado State University, Fort Collins, CO, USA

P027 Acid Tolerance of *Escherichia coli* O157:H7 during Aerobic Storage at 4°C, 10°C and 25°C of Beef Treated with Hot Water and Lactic Acid – LAURA V. ASHTON, Konstantinos P. Koutsoumanis, Ifigenia Geornaras, Patricia A. Kendall, and John N. Sofos, Colorado State University, Fort Collins, CO, USA

P028 DSC The Effect of Simulated Spray-chilling on Acid-habituated and Non-acid-habituated *Escherichia coli* O157:H7 Cells Attached to Beef Carcass Tissue – J. D. STOPFORTH, Y. Yoon, K. E. Belk, G. C. Smith, and J. N. Sofos, Colorado State University, Fort Collins, CO, USA

P029 Thermal Inactivation of *Enterobacter sakazakii* in Rehydrated Infant Formula – SHARON G. EDELSON-MAMMEL and Robert L. Buchanan, DHHS-FDA-CFSAN, College Park, MD, USA

P030 Bioluminescent Monitoring of LEE Gene Expression in Living Cells – HAIFENG WANG, Shuyan Liu, and Mansel W. Griffiths, University of Guelph, Guelph, ON, Canada

P031 Survivability of Calicivirus in Foods and on Surfaces: Experiments with Feline Calicivirus as a Surrogate for Norwalk Virus – SABAH BIDAWID, Naeem Malik, Kalavathi Balagulam, Syed A. Sattar, and Jeffrey M. Farber, Health Canada, Ottawa, ON, Canada

P032 DSC Survival and Growth of Acid-adapted *Shigella flexneri* in a Traditional Fermented Ghanaian Weaning Food – GLORIA L. TETTEH, Samuel L. Sefa-Dedeh, R. Dixon Phillips, and Larry R. Beuchat, University of Georgia, Griffin, GA, USA

P033 DSC Impact of Selected Environmental Stresses on the Resistance of *Listeria monocytogenes* Scott A to Electron Beam Irradiation – CLINT JOHNSON, Aubrey Mendonca, James Dickson, and Alan DiSpirito, Iowa State University, Ames, IA, USA

P034 Studies on Enterotoxin Producing *Staphylococcus aureus* Isolated from Dairy Products in Jordan – SAEB N. EL-SUKHON and Salam A. Ramini, Jordan University of Science and Technology, Irbid, Irbid, Jordan

P035 Growth of Heat Treated *Clostridium perfringens* Carrying the Enterotoxin Genes on the Chromosome vs. a Plasmid – S. KNOCHEL, T. B. Hansen, and Karin Andersen, Royal Veterinary and Agricultural University, Frederiksberg, Denmark

P036 DSC Expression of Cold Shock Proteins by *Yersinia enterocolitica* in Synthetic Medium and Foods – THIRUNAVUKKARASU ANNAMALAI and Kumar Venkitanarayanan, University of Connecticut, Storrs, CT, USA

P037 Effects of Hot Water and Lactic Acid Applied Singly and in Combination on Survival and Growth of *Salmonella* on Fresh Beef Stored at 4, 10 or 25°C – Ifigenia Geornaras, Konstantinos P. Koutsoumanis, LAURA V. ASHTON, Patricia A. Kendall and John N. Sofos, Colorado State University, Fort Collins, CO, USA

P038 Molecular Surveillance of Shiga Toxigenic *Escherichia coli* O157:H7 by PulseNet USA in 2002 – JENNIFER KINCAID, Susan Hunter, Kristy Kubota, Kelley Hise, Mary Ann Lambert-Fair, Michelle Huddle, James Jones, and Peter Gerner-Smidt, CDC, Atlanta, GA, USA

P039 Laboratory Investigation of a Multistate Outbreak of Listeriosis in the Northeastern United States, 2002 – L. M. GRAVES, S. B. Hunter, K. Hise, L. Kornstein, Dianna Schoonmaker-Bopp, M. A. Head, J. C. Jones, K. Pupedis, E. Ahanotu, S. Gottlieb, and B. Swaminathan, CDC, Atlanta, GA, USA

P040 School-related Foodborne Disease Outbreaks in the United States – NICOLE A. TUCKER, Alana C. Sulka, John Painter, Alicia M. Fry, and Paul S. Mead, CDC, Atlanta, GA, USA

P041 Contributing Factors to Foodborne Disease Outbreaks: Lessons Learned from the Foodborne Outbreak Reporting System, 1998-2000 – ALANA C. SULKA, Nicole A. Tucker, Alicia M. Fry, and Paul S. Mead, CDC, Atlanta, GA, USA

P042 Foodborne Disease Outbreaks of Undetermined Etiology, 1998–2000 – MICHELLE E. HUDDLE, Alicia M. Fry, Alana C. Sulka, and Paul S. Mead, CDC, Atlanta, GA, USA

P043 DSC Tracking Canadian Foodborne Outbreaks: A New Tool for Canadian Researchers – KRISTEN BROWN and Judy Greig, University of Guelph, Guelph, ON, Canada

P044 DSC Quantification of Biofilm Formation by Cold injured and Cold-starved *Listeria monocytogenes* – LINDSEY A. KESKINEN, Ewen C. D. Todd, and Elliot T. Ryser, Michigan State University, East Lansing, MI, USA

P045 Comparative Characterization of Two *Listeria monocytogenes* Isolates That May Have Originated from the Same Strain Persisting in the Same Food Processing Establishment for Over a Decade – FONE MAO WU, Lewis M. Graves, Catalina Horescu, Michael P. Doyle, and Bala Swaminathan, CDC, Atlanta, GA, USA

P046 Human Infections in Canada Caused by *Listeria monocytogenes* – FRANCO PAGOTTO, Clifford Clark, Jeffrey Farber, Nathalie Corneau, Johanne Ismaïl, Manon Lorange, David Woodward, and the Canadian Public Health Laboratory Forum, Health Canada, Food Directorate, Ottawa, ON, Canada

P047 DSC Investigation of the Role of Quorum-sensing Mechanisms on Virulence Factor Expression in *Listeria monocytogenes* – STACY FAVRIN and Mansel Griffiths, University of Guelph, Guelph, ON, Canada

P048 Modeling Liquid and Surface Growth Limits of *Listeria monocytogenes* as a Function of pH, a_w and Temperature – KONSTANTINO P. KOUTSOUMANIS, Patricia A. Kendall, and John N. Sofos, Colorado State University, Fort Collins, CO, USA

P049 DSC Unusual Genetic Features of the *Listeria monocytogenes* Strains Implicated in a Recent Mexican-style Soft Cheese Outbreak – MATTHEW R. EVANS, Charles R. Woods, and S. Kathariou, North Carolina State University, Raleigh, NC, USA

P050 Thermal Resistance of *Listeria monocytogenes* Scott A during Starvation in Phosphate Buffer, 0.85% Sodium Chloride, or Phosphate Buffered Saline – MAKUBA LIHONO, Aubrey Mendonca, Clint Johnson, and Ainura Orozalieva, University of Arkansas-Pine Bluff, Pine Bluff, AR, USA

P051 Survival and Recovery of Viable but Non-culturable (VBNC) *Listeria monocytogenes* Cells Starved in a Nutritionally Depleted Medium – SALLY C. C. FOONG and James S. Dickson, Iowa State University, Ames, IA, USA

P052 Evaluation of Nisin-coated Cellulose Casings for Control of *Listeria monocytogenes* on the Surface of Frankfurters Formulated with Lactates and Stored At 4°C – JEFFREY E. CALL, Myron D. Nicholson, and John B. Luchansky, USDA-ARS-ERRC, Wyndmoor, PA, USA

P053 Effects of Irradiation on Survival and Growth of *Listeria monocytogenes* and Natural Microflora in Vacuum-packaged Turkey Ham – MEIJUN ZHU, Aubrey Mendonca, Hesham Ismail, and Dong Ahn, Iowa State University, Ames, IA, USA

P054 DSC Persistence of *Escherichia coli* O157:H7, *Salmonella* Newport, and *Salmonella* Poona in the Gut of a Free-living Nematode, *Caenorhabditis elegans* – STEPHEN J. KENNEY, Gary L. Anderson, Phillip L. Williams, and Larry R. Beuchat, University of Georgia, Griffin, GA, USA

P055 Incorporation of Sodium Lactate and/or Sodium Diacetate Enhances Thermal Destruction of *Escherichia coli* O157:H7, *Salmonella* Typhimurium, or *Listeria monocytogenes* in Meat and Poultry Products – CATHERINE N. CUTTER and Niraja Ramesh, Pennsylvania State University, University Park, PA, USA

P056 Control of *Campylobacter jejuni* on the Surface of Raw Chicken Coated with Edible Zein Films Containing Ethylenediaminetetra-aacetate and/or Nisin – MARLENE E. JANES and Michael G. Johnson, Louisiana State University Agricultural Center, Baton Rouge, LA, USA

P057 Comparison of Attachment and Penetration Abilities of *Campylobacter jejuni* Isolated from Humans and from Chicken Carcasses Acquired at Processing and Retail – C. D. GILBERT and M. F. Slavik, University of Arkansas, Fayetteville, AR, USA

MONDAY AFTERNOON – AUGUST 11, 2003
1:30 p.m. – 5:00 p.m.

S05 Effective Food Worker Hygiene Interventions: A Risk Assessment Approach

Sponsored by the IAFP Foundation Fund
Organizer: Ewen Todd
Convenors: Judy D. Greig and Ewen Todd

1:30 Role of Infected Foodworker in Foodborne Illness Outbreaks and Intervention Strategies – BARRY MICHAELS, Georgia-Pacific Corporation, Palatka, FL, USA

1:40 Qualitative Data on Restaurant Workers and Managers Concerning Facilitators and Barriers to Handling Food Safely – CAROL A. SELMAN, CDC, EHS-Net, Atlanta, GA, USA

2:10 Application of QMRA to Study Mitigation Strategy Effectiveness at Reducing Pathogen Transmission – BARRY MICHAELS, Georgia-Pacific Corporation, Palatka, FL, USA

2:50 Break

3:30 The Effective Training of Food Workers to Improve Overall Sanitary Hygiene and Food Safety – CHRIS GRIFFITH, University of Wales Institute, Cardiff, Wales, UK

4:00 Strategies for Food Worker Hygiene in Developing Countries – ALEX VON HOLY, University of the Witwatersrand, Johannesburg, South Africa and EWEN TODD, Michigan State Univesity, East Lansing, MI, USA

4:30 Benefit Cost Analysis of Personal Hygiene Activities in Reducing Pathogen Transmission in the Healthcare and the Food Industry – BARBARA SOULE, Association for Professionals in Infection Control and Epidemiology Inc., Washington, D.C., USA

S06 Costs of Industry and Government Food Safety Actions: What is at Stake?

Organizer: Stan Bailey
Convenors: Stan Bailey and Jenny Scott

1:30 The Human Cost of Foodborne Bacterial Diseases – To be announced

2:00 The Costs of On-Farm Interventions to Reduce Pathogen Contamination – STAN BAILEY, USDA-ARS, Athens, GA, USA

2:30 The Costs of In-Plant Interventions to Reduce Pathogen Contamination – LARRY COHEN, Kraft Foods, Glenview, IL, USA

3:00 Break

3:30 The Costs of Microbiological Testing – In-House vs. Contract Laboratories – LORI LEDENBACH, Kraft Foods, Glenview, IL, USA

4:00 Federal Mandate to Show Costs of New Food Regulations, A Case Study Dealing with *Listeria* Control in RTE Meat and Poultry Products – PHIL SPINELLI, USDA-FSIS-RDDS, Washington, D.C., USA

4:30 Food Industry Perspective on Costs of Intervention vs. Recalls – JENNY SCOTT, NFPA, Washington, D.C., USA

S07 Current Issues in the Microbiological Safety of Dairy Foods – From Farm to Table

Organizer: Kathryn Boor, Steven C. Murphy, and Martin Wiedmann
Convenor: Steven Murphy

1:30 Dairy Farm Biosecurity – New York State Cattle Health Assurance Program, a Model for Protecting Dairy Herds and Public Health – KATHLEEN D. KAUFMAN, Cornell University, Ithaca, NY, USA

2:00 The Role of Microbiological Criteria and Performance Standards in Ensuring Safe Dairy Foods – A Report from the National Academy of Sciences – KATHRYN J. BOOR, Cornell University, Ithaca, NY, USA

2:30 Ensuring Microbiological Safety of Dairy Foods through Processing Management – MARK CARTER, Kraft Foods, Inc., Glenview, IL, USA

3:00 Break

3:30 Microbiological Safety Concerns with Fluid Milks – From Conventional Pasteurization to Aseptic Processing – To be announced

4:00 Factors Affecting the Microbiological Safety of Raw Milk Cheese – CATHERINE W. DONNELLY, University of Vermont, Burlington, VT, USA

4:30 Farm to Table Dairy Food Safety: Challenges and Opportunities in Research and Implementation – MARTIN WIEDMANN, Cornell University, Ithaca, NY, USA

S08 Hot Topics in Seafood Quality and Safety

Sponsored by the IAFP Foundation Fund
Organizers/Convenors: Linda Andrews and Brian Himelbloom

1:30 Histamines and Carbon Monoxide-Packaged Tuna – GEORGE FLICK, JR., Virginia Tech, Blacksburg, VA, USA

2:00 Scombrotoxin Production and Prevention – DAVID GREEN, North Carolina State University, Morehead City, NC, USA

2:30 Risk Assessment of *Vibrio* in Oysters – ANDY DEPAOLA, FDA, Dauphin Island, AL, USA

3:00 Break

3:30 Heavy Metals in Seafood – RITA SCHOENY, EPA, Washington, D.C., USA

4:00 Detection and Quantification of Genetically Modified Foods and Seafood – MIKE RUSSELL, Gene Scan USA, Inc., Belle Chasse, LA, USA

4:30 Safety of Ready-to-eat Seafood and Retail Sushi – DOUG MARSHALL, Mississippi State University, Mississippi State, MS, USA

T02 Food Safety Management and Communication

Convenors: Randy W. Worobo and Purnendu C. Vasavada

1:30 T13 DSC Prevalence of *Escherichia coli* O157 among Finishing Beef Cattle Supplemented with Live Cultures of *Lactobacillus* and *Propionibacterium* – SPRING YOUNTS-DAHL, Mindy Brashears, Michael Galyean, Guy Loneragan, and Nathan Elam, Texas Tech University, Lubbock, TX, USA

1:45 T14 DSC Factors Influencing the Recovery of Microorganisms from Surfaces Using Sterile Sampling Sponges –GINNY MOORE and Chris Griffith, University of Wales Institute-Cardiff, Cardiff, UK

2:00 T15 DSC Transfer of *Listeria monocytogenes* during Commercial Slicing of Delicatessen Products – K. L. VORST, Ewen C. D. Todd, and Elliot T. Ryser, Michigan State University, East Lansing, MI, USA

2:15 T16 Handwashing and Gloving for Food Protection – Microbial Transfer from Contaminated Hands, Gloves, and Utensils to Food – Elanor J. Fendler, Yusuf Ali, Michael J. Dolan, and JAMES W. ARBOGAST, GOJO Industries, Inc., Akron, OH, USA

2:30 T17 Air Quality Issues Associated with Hand Drying Devices in Food Processing, Food Service and Public Facility Handwash Stations – ROGER BAILEY, Liz Redmond, Barry Michaels, Christopher Griffith, Vidhya Gangar, and Armando D'Onorio, University of Wales Institute-Cardiff, Cardiff, Wales, UK

2:45 Break

3:15 T18 DSC An Examination of Food Safety Risk Management Behavioral Trends of Ontario Greenhouse Vegetable Growers – BENJAMIN CHAPMAN, Amber Luedtke, and Douglas Powell, University of Guelph, Guelph,ON, Canada

3:30 T19 Assessing the Cost of Microbiological Failures to Food Manufacturers and the Primary Reasons for Product Contamination – DAVID LLOYD, University of Wales Institute-Cardiff, Cardiff, South Glamorgan, Wales, UK

3:45 T20 Development of Information Resources to Assist Small Businesses in Hazard Identification – LOUISE FIELDING, Leanne Ellis, Cliff Beveridge, and Adrian Peters, University of Wales Institute-Cardiff, Cardiff, UK

4:00 T21 Review of the Use of Scientific Criteria and Performance Standards for Safe Food – RICARDO MOLINS, Maria Oria, and Tazima Davis, Institute of Medicine of the National Academies, Washington, D.C., USA

4:15 T22 Improving Urgent Public Health Information Dissemination in California: The Food Safety Notification System – JENNIFER THOMAS and Jeff Farrar, California Dept. of Health Services, Sacramento, CA, USA

4:30 T23 DSC Development and Evaluation of an Educational Resource to Engage Senior High School Students in Dialogue Regarding Genetically Engineered Food – LIZ V. GOMES and Doug Powell, University of Guelph, Guelph, ON, Canada

4:45 T24 DSC Spot the Mistake: What Television Cooking Shows Teach Viewers – LISA MATHIASEN, Ben Chapman, Bonnie Lacroix, and Douglas Powell, University of Guelph, Guelph, ON, Canada

P02 Microbiological Methods

3:00 p.m. – 6:00 p.m.
(Authors present 3:30 p.m. – 5:30 p.m.)

P058 Evaluation of Coliform and *Escherichia coli* Methods for Testing Raw Materials and Finished Products of Nutritional Foods and Supplements – Y. JENNIFER LEE and Nathan A. Lewis, Access Business Group, Ada, MI, USA

P059 Study on Presumptive Test Methods for the Detection of *Escherichia coli* in High-salted Seasoning – DONG-KYU KIM, Hye-Won Shin, Kyung-Hee You, Dae-Woo Park, and Hee-Kyung Park, CJ Corporation, SEOUL, Korea

P060 Validation of a New ELISA-based Method for the Detection of VTEC in Food – Véronique Buecher, Marie-Laure Sorin, Bruno Cristau, and PATRICE ARBAULT, Diffchamb SA, Lyon, France

P061 Evaluation and Development of Methods for Recovery of *Escherichia coli* O157:H7 from Artificially Contaminated Chicken Litter – P. PANGLOLI, C. A. Doane, O. Ahmed, D. A. Golden, and F. A. Draughon, University of Tennesse, Knoxville, TN, USA

P062 Combination of Immunomagnetic Separation and Liposome Immunoassay for the Detection of *Escherichia coli* Serotype O157 – MYUNGHEE KIM, Richard A. Montagna, and Richard A. Durst, Korea Food Research Institute, Sungnam, Kyounggi, Republic of Korea

P063 Potential for Underestimation of *Escherichia coli* O157:H7 Prevalence in Beef Feedlot Cattle – G. H. LONERAGAN, M. M. Brashears, and G. Dewell, West Texas A & M University, Canyon, TX, USA

P064 *Escherichia coli* O157 LPS Contamination in Reusable Sampling Vessels as a Source of Falsely Positive Immunoassay Test Results – T. Lawruk, O. CLOAK, G. Teaney, K. Westmoreland, A. Miele, C. Tidrick, and Y. Rosa, Strategic Diagnostics Inc., Newark, DE, USA

P065 Comparison of Methods for Detection and Isolation of Cold-stressed *Escherichia coli* O157:H7 in Raw Ground Beef – PINA M. FRATAMICO and Lori K. Bagi, USDA-ARS-ERRC, Wyndmoor, PA, USA

P066 DSC Characterization and Antibacterial Susceptibility of *Staphylococcus aureus* Strains Isolated from Mastitic Milk by 3M Staph Express Count System – ALISON WIECKOWICZ, Michelle Frederick, and Purnendu C. Vasavada, University of Wisconsin-River Falls, River Falls, WI, USA

P067 Immunoaffinity Columns as a Clean-up Tool for Improving the Detection of Staphylococcal Enterotoxins in Foods – Laure Buscarlet, Guillaume Boigey, Bruno Cristau, and PATRICE ARBAULT, Diffchamb SA, Lyon, France

P068 Application of Extended Single-reaction Multiplex PCR for Toxin Typing of *Staphylococcus aureus* isolates in Korea – N. H. KWON, S. H. Kim, K. T. Park, W. K. Bae, J. Y. Kim, J. Y. Lim, J. S. Ahn, K. S. Lyoo, J. M. Kim, W. K. Jung, K. M. Noh, G. A. Bohach, and Y. H. Park, Seoul National University, Seoul, Korea

P069 Validation of the USDA-ARS Package Rinse Method for Recovery of *Listeria monocytogenes* from Naturally Contaminated, Commercially-prepared Frankfurters – F. MORGAN WALLACE, Jeffrey E. Call, and John B. Luchansky, USDA-ARS, Wyndmoor, PA, USA

P070 Detection of *Listeria* sp. in Meat and Meat Products Using Tecra® *Listeria* VIA™ and Biocontrol VIP® for *Listeria* Immunoassays and a Cultural Procedure – L. C. Aragon, M. Landgraf, B. D. G. M. Franco, and M. T. DESTRO, Universidade de São Pãulo, São Pãulo, Brazil

P071 Multi-laboratory Comparative Study of a PCR-based System and the Standard Cultural Methods for the Detection of *Listeria monocytogenes* in Foods – KAREN SILBERNAGEL and Mark Barbour, rtech laboratories, St. Paul, MN, USA

P072 Evaluation of a Harmonized Enrichment Method for the Detection of *Listeria monocytogenes* by Two Individual Assays – CHARLES CARVER, Karen Silbernagel, and Ron Johnson, rtech laboratories, St. Paul, MN, USA

P073 Comparison of a Chromogenic Agar to Conventional Agar Media for the Detection of *Listeria monocytogenes* – ROBERT P. JECHOREK, Michele Lattrez, and Wendy Lauer, rtech laboratories, St. Paul, MN, USA

P074 A Method for Evaluating Changes to UVM Media for Improving the Growth of *Listeria monocytogenes* – DARRELL O. BAYLES, USDA-ARS, Wyndmoor, PA, USA

P075 Evaluation of the MicroFoss System for the Detection of *Listeria* Species in Environmental Samples – JOSEPH A. ODUMERU and Jennifer Belvedere, University of Guelph, Guelph, ON, Canada

P076 Development and Optimization of a Real-time PCR Assay for the Detection of *Listeria monocytogenes* Using the LightCycler® System – KAREN SUSAN DUFFY, Maura Glennon, Louise O'Connor, and Majella Maher, National Diagnostics Centre, Galway, Ireland

P077 Multiplex PCR for Serotype Identification of *Listeria monocytogenes* – FONE MAO WU, M. O. Rivera, L. Graves, P. Fields, S. Kathariou, and B. Swaminathan, CDC, Atlanta, Georgia, USA

P078 DSC Comparison of MPN Procedures Designed for Recovery of Low-level Healthy and Injured *Listeria monocytogenes* in Ready-to-Eat Foods – E. GROVES, T. M. Silk and C. W. Donnelly, University of Vermont, Burlington, VT, USA

P079 Use of Sequence Typing for Characterization of Virulence Factors and for the Development of a Novel Molecular Typing Scheme for *Listeria monocytogenes* – FRANCO PAGOTTO, Nathalie Corneau, Sandy Smole, and Jeffrey M. Farber, Health Canada, Ottawa, ON, Canada

P080 Twenty-four Hour Enrichment and Detection of Stressed *Listeria monocytogenes* on Stainless Steel Surfaces Using PATHIGEN® *Listeria* Broth and the PATHIGEN *Listeria* Test – Zainab Abbas, CHARLES YOUNG, and Jill White, IGEN International, Inc., Gaithersburg, MD, USA

P081 Comparative Analysis of a Rapid Immunoassay to the Standard Cultural Methods for the Detection of *Listeria monocytogenes* in Ready-to-Eat Foods and Dairy Products – KAREN SILBERNAGEL, Charles Carver, and Ron Johnson, rtech laboratories, St. Paul, MN, USA

P082 Evaluation of a Lateral Flow Immunoassay for the Detection of *Salmonella* in Raw Beef – J. Li, O. Cloak, T. Joaquim, A. McCardell, and G. TEANEY, Strategic Diagnostics Inc., Newark, DE, USA

P083 Use of Automated Immunomagnetic Separation for Detection of *Salmonella* in Cattle Feces – Narelle Fegan and PATRICIA DESMARCHELIER, Food Science Australia, Tigalpa DC, Qld, Australia

P084 Comparison of Electrochemical, Impedance and Optical Sensors for Rapid Detection of Live *Salmonella* Typhimurium in Food Products – YANBIN LI, Xiao-Li Su, Byungchul Kim, and Liju Yang, University of Arkansas, Fayetteville, AR, USA

P085 A Rapid 24-hour Enrichment Protocol for *Salmonella* in Foods – J. LI, G. Teaney, O. Cloak, and J. Stave, Strategic Diagnostics Inc., Newark, DE, USA

P086 Evaluation of Methods for Recovery of *Salmonella* from Poultry and Swine Feed – F. R. JACKSON, P. Pangloli, Y. Dje, S. P. Oliver, A. Mathew, D. A. Golden, W. J. Taylor, and F. A. Draughon, University of Tennessee-Knoxville, Knoxville, TN, USA

P087 A Rapid Test Method for the Detection of *Salmonella* in Dairy Factory Environmental Samples – JILL GEBLER and Scott McAlpine, Murray Goulburn Co-op Co. Ltd., Yarram, Victoria, Australia

P088 Real Time PCR Analysis of Primary *Salmonella* Enrichments from Broiler Carcasses Using the R.A.P.I.D. IT – *Salmonella* Assay – G. R. SIRAGUSA, W. C. Cray, D. O. Abbott, J. C. Jones, and I. Son, USDA-ARS, Athens, GA, USA

P089 Detection of *Salmonella* from Chicken Rinse and Chicken Franks with Electrochemiluminescence and Automated PCR Assays – J. S. BAILEY and D. E. Cosby, USDA-ARS-RRC, Athens, GA, USA

P090 Evaluation of a Classic PCR Method and an Electrochemical ELISA Method Coupled with an FIA System for the Detection of *Salmonella* in Meat – L. CROCI, G. Palleschi, G. Volpe, E. Delibato, D. De Medici, and L. Toti, Italian National Institute of Health, Rome, Italy

P091 Duplex SYBR-Green Real Time PCR for Detection of *Salmonella* spp. and *S.* Enteritidis in Poultry – D. DE MEDICI, L. Croci, E. Delibato, S. Di Pasquale, E. Filetici, and L. Toti, Italian National Institute of Health, Rome, Italy

P092 Evaluation of Methods for Recovery of *Salmonella* spp. from Dairy Environmental Samples – P. PANGLOLI, Yobouet Dje, W. J. Taylor, D. A. Golden, S. P. Oliver, and F. A. Draughon, University of Tennessee, Knoxville, TN, USA

P093 DSC Validation Assay of Two Immuno-diagnostic Methods (VIDAS SLM and VIDAS ICS) and Two Classical Methods (SP-VG-M002 and NMKL 71) for *Salmonella* Detection in Fecal Samples from Porcine Origin – N. KORSAK, J. -N. Degeye, G. Etienne, E. Samuëls, P. Van Nieulande, and G. Daube, Liege University, Liege, Belgium

P094 DSC Fluorescent In Situ Hybridization for the Culture–independent Detection of *Campylobacter jejuni* – LISA M. WADDINGTON and Heidi Schraft, Lakehead University, Thunder Bay, ON, Canada

P095 In Vitro Invasive Assay for *Campylobacter jejuni* from Raw Broiler Carcass Rinses – R. Nannapaneni, R. Story, K. Wiggins, and M. G. JOHNSON, University of Arkansas, Fayetteville, AR, USA

P096 Comparison of Total Cost, Method Efficiency, and Laboratory Productivity of Selected Microbiological Test Kits – DEBORAH McINTYRE, rtech laboratories, St. Paul, MN, USA

P097 Methods for the Recovery and Detection of Human Enteric Viruses from Complex Food Matrices – MICHAEL J. CASTEEL, David C. Love, and Mark D. Sobsey, University of North Carolina-Chapel Hill, Chapel Hill, NC, USA

P098 Evaluation of Methods for Declumping of *Mycobacterium avium* ssp. *paratuberculosis* – NIMITA H. FIFADARA and Jeffrey L. Kornacki, University of Georgia, Griffin, GA, USA

P099 DSC Effect of Enumeration Media on the Recovery of High-pressure Processed *Bacillus subtilis* Spores – V. RASANAYAGAM, E. Patazca, J. Dunn, and V. M. Balasubramaniam, NCFST, Illinois Institute of Technology, Summit Argo, IL, USA

P100 The Use of Immuno- and Cytotoxicity Assays in the Detection of Enterotoxins in Filtrate from Strains of *Bacillus* spp. – ALEX Y. TEO and Hai-Meng Tan, Kemin Industries (Asia) Pte. Ltd., Singapore, Republic of Singapore

P101 Efficacy of Clostridial Plate Counts as a Substitute for Botulinum Toxin Detection during Botulinal Challenge Studies of Foods – ANN E. LARSON and Eric A. Johnson, University of Wisconsin-Madison, Madison, WI, USA

P102 3M™ Petrifilm™ Staph Express Count Plate for the Rapid Enumeration of *Staphylococcus aureus* in Foods – Collaborative Study – BARBARA HORTER and Kathryn Lindberg, 3M Microbiology, St. Paul, MN, USA

P103 Enumerating 3M™ Petrifilm™ Aerobic Count Plates Using The PetriScan™ Automated Colony Counter – EILEEN GARRY, Meredith Pesta, and Patrick Williams, Advanced Instruments, Inc., Norwood, MA, USA

P104 Fourier Transform Infrared Spectroscopy for Rapid Detection, Identification, and Enumeration of Bacteria in Foods – H. Yang, S. A. IBRAHIM, and C. W. Seo, North Carolina A&T State University, Greensboro, NC, USA

P105 Menadione–catalyzed Luminol Chemiluminescent Assay for the Rapid Detection and Estimation of Viable Bacteria – S. KAWASAKI, S. Yamashoji, A. Asakawa, and K. Isshiki, National Food Research Institute, Tsukuba-shi, Ibaraki, Japan

P106 A Rapid Protocol for the Isolation and Identification of Pathogens from a Lateral Flow Device – J. LI, G. Teaney, O. Cloak, and J. Stave, Strategic Diagnostics Inc., Newark, DE, USA

P107 DSC Direct Detection of Bacterial Pathogens in Representative Dairy Products Using a Combined Bacterial Concentration – PCR Approach – KELLY A. STEVENS, Mark Cullison, and Lee-Ann Jaykus, North Carolina State University, Raleigh, NC, USA

P108 Rapid and Simultaneous Detection of Nine Foodborne Pathogenic Bacteria Using Multiplex PCR Method – Soon Yong Choi, Kwang Won Hong, Gang Gwon Lee, Jung Soon Kim, Kap Soo Kim, Sun Mi Choi, Soo Bok Kim, and YONG SUK NAM, R&D Center, KoGene BioTech., Inc, Seoul, Korea

P109 PCR-based Fluorescent Assay for Rapid Detection of *Escherichia coli* O157:H7 and *Listeria monocytogenes* – H. WANG, Y. Li, and M. Slavik, University of Arkansas, Fayetteville, AR, USA

P110 Detection of Biowarfare Agents in Food Using Fluorescent PCR – John W. Czajka, Tracey Biggs, Leslie Williams, Diane L. Dutt, and JAMES E. ROGERS, Soldier's Biological and Chemical Command, Aberdeen Proving Ground, MD, USA

P111 A Comparative Study of Two Immunoassays for the Detection of Chloramphenicol in Milk and Shrimps – Cors Arts, Piet van Wichen, Anders Hestner, and PATRICE ARBAULT, Diffchamb SA, Lyon, France

P112 Rapid Determination of Histamine in Food Using a Colorimetric Enzyme Assay – TSUNEO SATO and Ikuko Nishimura, Kikkoman Corporation, Noda City, Chiba Pref., Japan

P113 DSC Screening for Potential Aflatoxin-producing Molds in Korean Fermented Foods and Grains by Multiplex PCR and Enzyme Immunoassay – WON-BO SHIM, Zheng-You Yang, Seon-Ja Park, and Duck-Hwa Chung, Graduate School of Gyeongsang National University, Chinju, Gyeongnam, Korea

P114 In Vitro Study of Ochratoxin A Production by *Aspergillus carbonarius* and *A. niger* Isolates and Detection by HPLC and Enzyme Immunoassay – Maria Lígia Martins, H. Marina Martins, and FERNANDO BERNARDO, CIISA-Faculdade Medicina Veterinária, Lisbon, Portugal, Portugal

P115 DSC Efficacy of Capric/Caprylic Acid, Lactic Acid, Glycerol Monolaurate and Peroxyacid Alone or in Combination for Inactivating *Escherichia coli* O157:H7 on Artificially Contaminated Alfalfa Seeds – PASCALE M. PIERRE, Jerry N. Cash, and Elliot T. Ryser, Michigan State University, East Lansing, MI, USA

P116 Applicability of Image Analysis in Modeling of Bacterial Growth – E. Varzakis, P. N. Skandamis, and G. J. E. Nychas, Agricultural University of Athens, Athens, Votanikos, Greece

TUESDAY MORNING – AUGUST 12, 2003
8:30 a.m. – 12:00 p.m.

S09 New Horizons in Diagnostic Food Microbiology

Sponsored by ILSI N.A.
Organizer: Catherine Nnoka
Convenors: J. Stan Bailey, Les Smoot, and Bala Swaminathan

8:30 Overview – PETER FENG, FDA-CFSAN, College Park, MD, USA

9:00 Real-time PCR – PINA FRATIMICO, USDA-ARS-ERRC, Wyndmoor, PA, USA

9:30 Biosensors – MARIANNE F. KRAMER, University of South Florida, Tampa, FL, USA

10:00 Break

10:30 Molecular Identification of *Salmonella* Serotypes – PATRICIA FIELDS, CDC, Atlanta, GA, USA

11:00 Biochip/Microarray – CLAUDE MABILAT, bioMérieux, Venissieux, France

11:30 International Standardization and Harmonization of Detection Methods – MICHAEL H. BRODSKY, Brodsky Consultants, Thornhill, ON, Canada

S10 Food Allergens: Past, Present, and Future

Organizer: Veny Gapud
Convenors: Tong-Jen Fu and Veny Gapud

8:30 Food Allergens: What are the Issues? – SUSAN L. HEFLE, University of Nebraska, Lincoln, NE, USA

9:00 Regulatory Perspective: Current Practice and Future Directions – KENNETH J. FALCI, FDA-CFSAN, College Park, MD, USA

9:30 Updates on Food Allergen Detection – JUPITER YEUNG, NFPA, Washington, D.C., USA

10:00 Break

10:30 Food Allergens and Sanitary Design – BOB RICHARDSON, General Mills, Inc., Minneapolis, MN, USA

11:00 How Clean is Allergen Clean and How Do You Know? – MARK MOORMAN, W. K. Kellogg, Battle Creek, MI, USA

11:30 Food Allergens and the Food Service Industry – SHEILA COHN, National Restaurant Association, Washington, D.C., USA

S11 Investigative Molecular Techniques and Their Application to Food Safety

Organizer: Manan Sharma
Convenors: Michelle Danyluk and Manan Sharma

8:30 The Role of Molecular Techniques in the Identification of Emerging Agents of Foodborne Disease – LEE-ANN JAYKUS, North Carolina State University, Raleigh, NC, USA

9:00 Molecular Subtyping to Detect Foodborne Disease Outbreaks: The Past, Present, and Future – MARTIN WIEDMANN, Cornell University, Ithaca, NY, USA

9:30 The Use and Impact of Molecular Biology Data on Microbial Risk Assessment – DON SCHAFFNER, Rutgers University, New Brunswick, NJ, USA

10:00 Break

10:30 The Role of Molecular Techniques in the Food Industry – VICKIE LEWANDOWSKI, Kraft Foods, Glenview, IL, USA

11:00 DNA Microarray Technology for Food Safety: Theory and Applications – FRANCO PAGOTTO, Health Canada, Ottawa, ON, Canada

11:30 Panel Discussion

S12 Spoilage and Pathogenic Fungi and Yeasts

Organizers/Convenors: Ailsa D. Hocking and Eric A. Johnson

8:30 A Loaf of Bread, a Jug of Wine, and Ochratoxin A – AILSA D. HOCKING, CSIRO – Food Science Australia, North Ryde, NSW, Australia

9:00 Detection of Fungi – MARIBETH A. COUSIN, Purdue University, West Lafayette, IN, USA

9:30 Metabiotic Associations of Fungi and Foodborne Pathogens – LARRY R. BEUCHAT, University of Georgia, Griffin, GA, USA

10:00 Break

10:30 Economic Impact and Control of Fungi and Mycotoxins in Foods – LLOYD L. BULLERMAN, University of Nebraska-Lincoln, Lincoln, NE, USA

11:00 Strategies for Control of Aflatoxin Contamination in Food and Feeds – DEEPAK BHATNAGAR, USDA-SRRC, New Orleans, LA, USA

11:30 Use of Genomics to Develop Novel Antifungals for Food Use – STANLEY BRUL, University of Amsterdam/Unilever Research, Amsterdam, The Netherlands

T03 Produce Microbiology

Convenors: Alejandro Castillo and Linda J. Harris

8:30 T25 The Bactericidal Use of Ozone in the Treatment of Fresh Strawberries – ROGER BAILEY, Chris Griffith, Tim Jackson, and Louise Fielding, University of Wales Insitute-Cardiff, Cardiff, South Glamorgan, Wales, UK

8:45 T26 Comparison of Inoculation Methods to Determine the Efficacy of Chlorine Dioxide Gas and Chlorinated Water Treatments to Reduce *Escherichia coli* O157:H7 on Strawberries – Y. HAN, R. H. Linton, and P. E. Nelson, Purdue University, W. Lafayette, IN, USA

9:00 T27 Elimination of Molds on Dried Fruits and Nuts by Electron Beam Irradiation – Erhan Ic, Joe Maxim, and SURESH D. PILLAI, Texas A&M University, College Station, TX, USA

9:15 T28 UV Disinfection of Juices: Challenges of Microbiological Validation of Flow-through Reactors –TATIANA KOUTCHAM and Brian Parisi, NCFST-IIT, Summit-Argo, IL, USA

9:30 T29 Infiltration and Survival of *Escherichia coli* ATCC 25922 on Apples under Orchard Conditions – BASSAM A. ANNOUS, Angela Burke, and Mosbah K. Kushad, USDA-ARS-ERRC, Wyndmoor, PA, USA

9:45 Break

10:15 T30 Antilisterial Activity in Cut Iceberg Lettuce Extracts – PASCAL DELAQUIS, Aimin Wen, and Peter Toivonen, Agriculture and Agri-Food Canada, Summerland, BC, Canada

10:30 T31 Organically Grown Lettuce: Hygienic Quality and Risk of Transfer of Pathogenic Bacteria – GRO S. JOHANNESSEN, Randi Berland, Liv Solemdal, Anne Margrete Urdahl, and Liv Marit Rørvik, National Veterinary Institute, Oslo, Norway

10:45 T32 A Survey to Determine Field and Packing House Hygiene Practices in New York – ROBERT B. GRAVANI and Elizabeth A. Bihn, Cornell University, Ithaca, NY, USA

11:00 T33 DSC A Field Study of the Microbiological Quality of Fresh Produce – LYNETTE KLEMAN, Lee-Ann Jaykus, Deborah Moll, Christine Moe, Cecilia Martinez, and Juan Anciso, North Carolina State University, Raleigh, NC, USA

11:15 T34 Preliminary Evaluation of *Citrobacter* spp. as a Surrogate for *Salmonella* in Controlled Release Field Studies – TREVOR V. SUSLOW, Marcella Zuniga, and Bradley Butterfield, University of California-Davis, CA, USA

11:30 T35 Pre-symptomatic Infection of Asparagus by *Pectobacterium carotovora* subsp. *carotovora* Increases Wound Co-colonization by *Escherichia coli* O157:H7 and *Salmonella* Serotypes – Lorena Fernandez, Marcella Zuniga, Alex Baker, and TREVOR SUSLOW, University of California-Davis, CA, USA

11:45 T36 The Use of Gradient Plates to Study the Combined Effect of Temperature, pH and NaCl Concentration on the Growth of *Monascus ruber* van Tieghem, an Ascomycetes Fungus Isolated from Green Table Olives – E. Z. Panagou, P. N. Scandamis and G. -J. E. NYCHAS, Agricultural University of Athens, Athens, Votanikos, Greece

P03 Foods of Animal Origin

10:00 a.m. – 1:00 p.m.
(Authors present 10:30 a.m. – 12:30 p.m.)

P117 DSC Effect of Liquid Alum on Naturally Occurring *Salmonella* and *Campylobacter* in Poultry Broiler Production Facilities – KEN A. ARMSTRONG, Felix R. Jackson, Robert T. Burns, Forbes R. Walker, and F. Ann Draughon, University of Tennessee-Knoxville, Knoxville, TN, USA

P118 Genotypic Characterization by Pulsed-Field Gel Electrophoresis and Antibiotic Resistance of *Campylobacter* Strains Isolated from Poultry Litter – J. E. STRATTON, R. W. Hutkins, and M. M. Brashears, University of Nebraska, Lincoln, NE, USA

P119 Mycoflora and Occurrence of Aflatoxin and Fumonisin in Poultry Feeds – RAIZA CASANOVA, Leonardo Altuve, and Amaury Martínez, Instituto de Ciencia y Tecnología de Alimentos, Universidad Central de Venezuela, Caracas, DC, Venezuela

P120 Prevalence of *Campylobacter* in Chicken from Pluck Shops in Trinidad – S. RODRIGO, Z. Asgaralli, W. H. Swanston, and A. A. Adesiyun, University of the West Indies, Mt. Hope, Republic of Trinidad and Tobago

P121 *Campylobacter* and *Salmonella* in Raw Chicken: Updated Baseline Figures for 2002 – RICHARD MELDRUM and Ceri Edwards, Public Health Laboratory Service, Wales, Penarth, UK

P122 Effect of Gut Content Contamination on Broiler Carcass *Campylobacter* Counts – MARK BERRANG, Doug Smith, W. Robert Windham, and Peggy Feldner, USDA-ARS, Athens, GA, USA

P123 Characterization of Aerobically Growing *Campylobacter jejuni* IC 21 Isolated from Chicken Carcasses – YOUNG DUCK LEE, Jung Soon Jang, Ji Hyun Jang, Mi Kyoung Jung, Hak Gil Chang, and Jong-Hyun Park, Kyungwon University, Seongnam, Kyonggi, Republic of Korea

P124 DSC Influence of Dietary Vitamin E on Behavior of *Listeria monocytogenes* and Color Stability in Ground Turkey Meat Following Electron Beam Irradiation – MARIA ROMERO, Aubrey Mendonca, and Dong Ahn, Iowa State University, Ames, IA, USA

P125 DSC A Longitudinal Analysis of *Campylobacter* Colonization in Sibling Turkey Flocks with Marked Differences in Colonization by *Campylobacter* – KATIE SMITH, Nancy Reimers, John Barnes, Bong Choon Lee, Robin Siletzky, and Sophia Kathariou, North Carolina State University, Raleigh, NC, USA

P126 The Potential for Retail Poultry Packs to be a Source of *Campylobacter* or *Salmonella* Infection – ROSEMARY WHYTE, TeckLok Wong, Angela Hough, and J. Andrew Hudson, Institute of Environmental Science and Research, Christchurch, New Zealand

P127 Strain Persistence and Fluctuation of *Campylobacter coli* Colonizing Turkeys Over Successive Production Cycles – BONG-CHOON LEE, Nancy Reimers, John Barnes, Robin Siletzky, and Sophia Kathariou, North Carolina State University, Raleigh, NC, USA

P128 Effect of Freezing on the Survival of Cold-stressed *Campylobacter jejuni* in Ground Chicken and Chicken Skin – SAUMYA BHADURI, USDA-ARS-ERRC, Wyndmoor, PA, USA

P129 Incidence of *Bacillus cereus* in Retail Poultry Products – D. P. SMITH, M. E. Berrang, and P. W. Feldner, USDA-ARS, Athens, GA, USA

P130 Inhibitory Effects of Organic Acid Salts on Growth of *Clostridium perfringens* from Spore Inocula during Chilling of Marinated Ground Turkey Breast – VIJAY K. JUNEJA and H. Thippareddi, USDA-ARS-ERRC, Wyndmoor, PA, USA

P131 *Aeromonas* spp. Associated with Commercial Poultry Processing – ARTHUR HINTON, JR., J. A. Cason, and Kimberly D. Ingram, USDA-RRC, Athens, GA, USA

P132 Identification of Enterobacteriaceae from Washed and Unwashed Commercial Shell Eggs – M. T. MUSGROVE, D. R. Jones, J. K. Northcutt, N. A. Cox, and M. A. Harrison, USDA-ARS Poultry Processing and Meat Quality Research Unit, Athens, GA, USA

P133 Can *Salmonella* Enteritidis Breach the Vitelline Membrane of Fresh Chicken Eggs? – G. J. FLEISCHMAN, C. L. Napier, and S. A. Palumbo, FDA, Summit-Argo, IL, USA

P134 DSC Hygiene and Food Safety Controls in On-farm Dairies – GORDON HAYBURN, Chris Griffith, and Adrian Peters, University of Wales Institute-Cardiff, Cardiff, Wales, UK

P135 Comparative Studies on Milk Discard Period of Two Ceftiofur Products: Accent™ and Naxcel™ – by TTC and Charm II Beta-lactam Receptor Assay – Jin-Hyang Choi, Su-Jung Park, Sang-Hyun Lee, HYE-JIN YANG, Chang-Hoon Han, Hang Lee, and Mun-Han Lee, Seoul National University, Seoul, Kwanak-gu, Republic of Korea

P136 DSC Inactivation of *Escherichia coli* O157:H7 and *Listeria monocytogenes* in Milk by Caprylic Acid and Monocaprylin – MANOJ KUMAR MOHAN NAIR, Pradeep Vasudevan, and Kumar Venkitanarayanan, University of Connecticut, Storrs, CT, USA

P137 Listeriosis Outbreak in Québec, Canada Linked to Heat-treated Cheeses – COLETTE GAULIN, Danielle Ramsay, and Louise Ringuette, Ministry of Health, Province of Québec, Canada

P138 DSC Survival of *Salmonella* and *Listeria monocytogenes* on Shredded Cheese – PATRICK EIMERMAN, Michelle Hanson, Ann Larson, Lindsey McDonnell, Kathy Glass, and Eric Johnson, University of Wisconsin-Madison, Madison, WI, USA

P139 DSC Survival of *Listeria monocytogenes* in Vanilla Flavored Soy and Dairy Products Stored at 8°C – SIREESHA TIPPARAJU, Sadhana Ravishankar, and Peter J. Slade, Illinois Institute of Technology, Summit-Argo, IL, USA

P140 Viability of Bifidobacteria in Yogurt Products – J. P. CARR, M. Worku, G. Shahbazi, C. W. Seo, and S. A. Ibrahim, North Carolina A&T State University, Greensboro, NC, USA

P141 DSC Geographic Information System and Epidemiological Associations among Foodborne Pathogens at the Farm – KIMBERLY D. LAMAR, Phillipus Pangloli, David Golden, Stephen P. Oliver, and F. Ann Draughon, University of Tennessee-Knoxville, Knoxville, TN, USA

P142 Shiga Toxin-producing *Escherichia coli* in Beef Heifers Grazing Rangeland Forages – HUSSEIN HUSSEIN, Brandolyn Thran, and Mark Hall, University of Nevada-Reno, Reno, NV, USA

P143 Supplementing Feedlot Cattle Diets with Whole Cottonseed to Decrease the Prevalence of *Escherichia coli* O157:H7 – SPRING YOUNTS-DAHL, Mindy Brashears, Michael Galyean, and Guy Loneragan, Texas Tech University, Lubbock, TX, USA

P144 Experimental and Field Evaluation of Excision and Swab-based Sampling Methods for Porcine, Ovine and Bovine Carcasses – M. L. Hutchison, D. Wilson, C. -A. Reid, A. M. Johnston, M. Howell, and S. BUNCIC, University of Bristol, Langford, Bristol, UK

P145 Heat Resistance of Inoculated *Salmonella* on Fresh Beef as Affected by Decontamination Treatments, Storage Temperature, and Storage Time – KONSTANTINOS P. KOUTSOUMANIS, Ifigenia Geornaras, Laura V. Ashton, Patricia A. Kendall, and John N. Sofos, Colorado State University, Fort Collins, CO, USA

P146 Activated Lactoferrin Blocks *Escherichia coli* O157:H7 Interaction with Collagen Matrix and Beef Tissue – K. GUSTILO, C. Martinez, J. Tulpinski, A. Narbad, R. de Waard, F. Buikstra, and A. S. Naidu, N-terminus Research Laboratory, Pomona, CA, USA

P147 Electrostatic Spray Application of Activated Lactoferrin on Beef – Surface Distribution, Tissue Diffusion and Antimicrobial Activity – J. TULPINSKI, R. Galasso, K. Gustilo, R. Nimmagudda, and A. S. Naidu, N-terminus Research Laboratory, Pomona, CA, USA

P148 Evaluation of Hot Water Immersion for Reduction of *Escherichia coli* O157:H7 on Beef Shanks – JASON E. MANN and Mindy Brashears, Texas Tech University, Lubbock, TX, USA

P149 The Sources of *Escherichia coli* Contamination of Ground Beef in a Commercial Beef Processing Plant – Mueen Aslam, Frances Nattress, GORDON GREER, Colin Gill, and Lynn McMullen, Agriculture and Agri-Food Canada, Lacombe, AB, Canada

P150 A Comparative Heat Inactivation Study of Indigenous Microflora in Beef with That of *Listeria monocytogenes*, *Salmonella* Serotypes and *Escherichia coli* O157:H7 – VIJAY K. JUNEJA, USDA-ARS-ERRC, Wyndmoor, PA, USA

P151 Bactericidal Efficacy of GC-100X against Major Foodborne Pathogens and Detaching Effect of It against *Escherichia coli* O157:H7 on Beef – N. H. KWON, S. H. Kim, J. Y. Kim, J. Y. Lim, J. M. Kim, W. K. Jung, K. T. Park, W. K. Bae, K. M. Noh, J. W. Choi, and Y. H. Park, Seoul National University, Seoul, Korea

P152 *Escherichia coli* O157:H7 Distribution in Beef Processed in a Table-top Bowl-cutter – ROLANDO A. FLORES, Tod Stewart, and Benito Martinez, USDA-ARS-ERRC, Wyndmoor, PA, USA

P153 Reduction of *Escherichia coli* O157:H7 in Refrigerated Ground Beef by *Lactobacillus* spp. – LACEY M. SMITH, Jason E. Mann, and Mindy M. Brashears, Texas Tech University, Lubbock, TX, USA

P154 Efficacy of Enrichment Broths Using BAX for Screening Recovery of Freeze-injured *Escherichia coli* O157:H7 in Inoculated Ground Beef – W. C. LIONBERG, L. Restaino, E. W. Frampton, and W. M. Barbour, R & F Laboratories, West Chicago, IL, USA

P155 DSC Influence of Inoculum Level and Acidic Marination on Inactivation of *Escherichia coli* O157:H7 during Drying and Storage of Beef Jerky – Y. YOON, P. A. Kendall, G. C. Smith, and J. N. Sofos, Colorado State University, Fort Collins, CO, USA

P156 Nature of *Escherichia coli* O157:H7, *Listeria monocytogenes* and *Lactobacillus sake* Inhibition by Eugenol, Cinnamaldehyde and Sodium Lactate – A. O. Gill and R. A. HOLLEY, University of Manitoba, Winnipeg, MB, Canada

P157 Occurrence of *Salmonella* on Poultry and Swine Farms – XIN LI, Josh Payne, Fernanda Santos, and Brian Sheldon, North Carolina State University, Raleigh, NC, USA

P158 Validation of Time and Temperature Values as Critical Limits for Ground Pork Processing and Storage – JASON E. MANN, Mindy Brashears, and Lacey Smith, Texas Tech University, Lubbock, TX, USA

P159 Validation of Time and Temperature Values as Critical Limits for Pork Fabrication and Storage – JASON E. MANN and Mindy Brashears, Texas Tech University, Lubbock, TX, USA

P160 Changes in Swine and Cattle Production Practices Since the 1996 PR/HACCP Final Rule – SHERYL C. CATES and Becky L. Durocher, RTI International, Research Triangle Park, NC, USA

P161 Changes in the Identification and Control of Chemical Hazards Since the 1996 PR/HACCP Rule – ROBERTA A. MORALES et al., Research Triangle Institute, Durham, NC, USA

P162 Reduction of *Listeria monocytogenes* Populations during Exposure to a Simulated Gastric Fluid following Storage of Inoculated Frankfurters Formulated and Treated with Preservatives – J. D. STOPFORTH, Y. Yoon, J. Samelis, and J. N. Sofos, Colorado State University, Fort Collins, CO, USA

P163 Control of *Listeria monocytogenes* with Antimicrobials in the Formulation and by Dipping in Organic Acids of Post-processing Inoculated Pork Frankfurters Stored at 10°C in Vacuum Packages – I.M. BARMPALIA, I. Geornaras, P. A. Kendall, K. E. Belk, J. A. Scanga, G. C. Smith, and J. N. Sofos, Colorado State University, Fort Collins, CO, USA

P164 Recovery Rate of *Listeria monocytogenes* from Commercially-prepared Frankfurters during Extended Refrigerated Storage – F. MORGAN WALLACE, Jeffrey E. Call, Anna C. S. Porto, George J. Cocoma, Randall Huffman, and John B. Luchansky, USDA-ARS, Microbial Food Safety Research Unit, Wyndmoor, PA, USA

P165 Efficacy of Sodium Lactate and Sodium Diacetate Alone or Combined with Pediocin for Controlling *Listeria monocytogenes* in Ready-to-Eat Turkey Roll at 4°C and 10°C – BLEDAR BISHA, Aubrey Mendonca, Joseph Sebranek, and James Dickson, Iowa State University, Ames, IA, USA

P166 A Predictive Model for Growth and Inactivation of *Listeria monocytogenes* in pH-Modified Chicken Salad during Cold Storage – ANN GUENTERT, Richard Linton, Rabi Mohtar, Mark Tamplin, John Luchansky, and Maribeth Cousin, Purdue University, West Lafayette, IN, USA

P167 Antibiotic, Biochemical, and Genotypic Characterization of Coagulase-positive *Staphylococcus aureus* – WENDY LANG and Leonard Williams, Alabama A&M University, Normal, AL, USA

P168 Consumer Preferences for Labeling of Not-Ready-to-Eat Meat, Poultry, and Egg Products – HEATHER L. CARTER-YOUNG, Sheryl C. Cates, Katherine M. Kosa, and Robert C. Post, RTI International, Research Triangle Park, NC, USA

P169 Changes in the Identification and Control of Physical Hazards Since the 1996 PR/HACCP Rule – R. A. MORALES et al., Research Triangle Institute, Durham, NC, USA

P170 Cell Surface Attachment of *Listeria monocytogenes* on Ready-to-Eat Meats – SALLY C. C. FOONG and James S. Dickson, Iowa State University, Ames, IA, USA

P171 Combinations of Nisin and Gamma Irradiation for Effective Control of *Listeria monocytogenes* on Meat – H. M. MOHAMED, F. A. Elnawawi, and A. E. Yousef, Ohio State University, Columbus, OH, USA

TUESDAY AFTERNOON – AUGUST 12, 2003
1:30 p.m. – 3:30 p.m.

S13 Assuring Food Safety and Security

Organizers: Jeff Farrar and Jennifer Thomas
Convenor: Jennifer Thomas

1:30 Scientific and Technological Approaches for Counterterrorism of Foods – ART MILLER, FDA-CFSAN, College Park, MD, USA

2:00 A Food Processor Perspective of Bioterrorism and Food Security – JENNY SCOTT, NFPA, Washington, D.C., USA

2:30 Incident Management Systems and Preparing for Biological Terrorism Threats – STEVE THARRATT, University of California-Davis, Sacramento, CA, USA

3:00 The USDA Perspective on Bioterrorism Prevention and Response – JESSE MAJKOWSKI, USDA-FSIS, Washington, D.C., USA

S14 Applied Microbiological Genomics for Food Safety and Quality

Organizer: S. Notermans
Convenor: Tom McMeekin

1:30 The Challenge of Genomics in Food Microbiology – STANLEY BRUL, University of Amsterdam/Unilever Research, Amsterdam, The Netherlands

2:00 Predictive Microbiology Based on Genomics – S. NOTERMANS, TNO Nutrition and Food Research Institute, Zeist, The Netherlands

2:30 Cell-based Assays and Biosensors as the New Tools for the Detection and Quantification in Food Microbiology – PAUL TAKHISTOV, Rutgers University, New Brunswick, NJ, USA

3:00 Panel Discussion

S15 ***Campylobacter*: A Pathogen in Need of Resolution**

Sponsored by the IAFP Foundation Fund
Organizers/Convenors: Robert Brooks and Norman J. Stern

1:30 Sources for *Campylobacter* spp. as Determined through Human Case-Control Studies – ROBERT V. TAUXE, CDC, Atlanta, GA, USA

2:00 Quality Control and Cultural Methods for Detection and Enumeration of *Campylobacter* spp. – ERIC LINE, USDA-ARS-RRC, Athens, GA, USA

2:15 Non-cultural Detection of *Campylobacter* spp. – KELLI HIETT, USDA-ARS-RRC, Athens, GA, USA

2:30 Goals of the Poultry Industry Relative to *Campylobacter* spp. – MICHAEL ROBACH, Wayne Farms LLC, Oakwood, GA, USA

3:00 Application of Quantitative Risk Assessment as a Tool to Understand the Ecology of *Campylobacter* in Poultry and Risk Factors for Human Exposure and Illness – RUFF LOWMAN, Canadian Food Inspection Agency, Nepean, ON, Canada

S16 **Microbial Stress Response to Intervention Technologies**

Organizer: James Yuan
Convenors: John S. Novak and James Yuan

1:30 Radiation Inactivation of Foodborne Pathogens as Affected by the Physiological State of the Microogranisms and MAP – AUBREY F. MENDONCA, Iowa State University, Ames, IA, USA

1:55 Bacterial Survival Following Synergistic Use of Ozone and Heat – JOHN S. NOVAK, USDA-ARS-ERRC, Wyndmoor, PA, USA

2:15 Resistance of Foodborne Pathogens to Pulsed Electric Fields – HOWARD Q. ZHANG, Ohio State University, Columbus, OH, USA

2:40 Inactivation of Enteric Viruses with Intervention Technologies – GARY P. RICHARDS, Delaware State University, Dover, DE, USA

3:05 High Pressure Processing and Resistance of Sporeformers – DALLAS G. HOOVER, University of Delaware, Newark, DE, USA

S17 **Current Issues in Food Toxicology**

Organizers/Convenors: Michael W. Pariza and Joseph Scimeca

1:30 Safety of Biotechnology-derived Foods – ROBERT HOLLINGWORTH, Michigan State University, East Lansing, MI, USA

2:00 Safety Standards for Food Contaminants – MICHAEL BOLGER, FDA-CFSAN, College Park, MD, USA

2:30 Functional Food Ingredients: Regulatory and Safety Challenges – J. CRAIG ROWLANDS, Burdock Group, Vero Beach, FL, USA

3:00 Human Subjects Research in Regulatory Policy – PENELOPE A. FENNER-CRISP, ILSI Risk Science Institute, Washington, D.C., USA

T04 **Food Handling in the Domestic Food Service Environment**

Convenors: Frank Yiannas and Joseph D. Eifert

1:30 T37 Microbiological Risks of Handling Raw Meat in the Domestic Environment – Linda Everis, Gail Betts, Hayley Newsholme, and ROY BETTS, Campden & Chorleywood Food Research Association, Gloucestershire, GL, UK

1:45 T38 Development of a Systems-based Approach to Food Safety – DANIELA QUILLIAM, Carol Selman, John Sarisky, Rick Gelting, and Sharunda Buchanan, CDC-NCEH, Atlanta, GA, USA

2:00 T39 Prevalence of High Risk Egg Handling Practices in Restaurants: An EHS-Net Survey – ROBIN LEE, Mark E. Beatty, April Bogard, Michael-Peter Esko, and Carol Selman, CDC-NCEH, Atlanta, GA, USA

2:15 T40 A Review of Operational Elements of Retail Food Protection Programs Across States – DANIELA QUILLIAM, Carol Selman, and Robin Lee, CDC, Atlanta, GA, USA

2:30 T41 Review of Studies on Food Worker Food Handling – LAURA R. GREEN and Carol Selman, RTI International, Atlanta, GA, USA

2:45 T42 Restaurant Workers' and Managers' Perceptions of Facilitators and Barriers to Safe Food Handling – LAURA R. GREEN, Carol Selman, and the EHS-Net Working Group, RTI International, Atlanta, GA, USA

3:00 T43 A Cooperative Approach to Retail Food Safety – JON-MIKEL WOODY, FDA-CFSAN, College Park, MD, USA

3:15 T44 The Effect of Inaccurate Risk Assessment in HACCP Programs on Manufacturers Operational Performance – DAVID LLOYD, University of Wales Institute-Cardiff, Cardiff, South Glamorgan, Wales, UK

Plenary Session – 3:45 p.m.

Breaking the Cycle of Foodborne Illness: The War on Pathogens
Dr. Elsa A. Murano, Under Secretary for Food Safety, USDA, Washington, D.C., USA

Business Meeting – 4:45 p.m. – 5:30 p.m.

WEDNESDAY, AUGUST 13, 2003
8:30 a.m. – 12:00 p.m.

S18 Science-based Shelf-life Dating of Ready-to-Eat Refrigerated Foods

Sponsored by ILSI, N.A.
Organizer: Catherine Nnoka
Convenors: Jean Anderson and Jenny Scott

8:30 History of Use and Consumer Perception of Code Dates – JILL HOLLINGSWORTH, Food Marketing Institute, Washington, D.C., USA

9:00 Microbiological Concerns Related to Refrigerated Ready-to-Eat Foods – MICHAEL P. DOYLE, University of Georgia, Griffin, GA, USA

9:30 Principles for Determining If a Product Requires Shelf-life Dating – RICHARD C. WHITING, FDA-CFSAN, College Park, MD, USA

10:00 Break

10:30 Protocols to Establish and Validate Safety-based Shelf-life Dating – MICHAEL G. ROMAN, Kraft Foods NA, Glenview, IL, USA

11:00 Alternatives to Safety-based Shelf-life Dating – TED LABUZA, University of Minnesota, St. Paul, MN, USA

11:30 European Perspectives on Shelf-life Dating – ROY P. BETTS, Campden and Chorleywood Food Research Association, Gloucestershire, UK

S19 All the Latest Jazz – Recent Foodborne Disease Outbreaks

Sponsored by the IAFP Foundation Fund
Organizer: Jeff Farrar
Convenors: Jeff Farrar and Jack Guzewich

8:30 Multistate Listeriosis Outbreak Associated with Turkey Deli Meat – United States, 2002 – Sami Gottlieb, CDC, Atlanta, GA, USA and David Goldman, USDA, Washington, D.C., USA

9:00 Tomatoes Sicken Hundreds; Multistate Outbreak of *Salmonella* Newport Infections – Eastern and Central United States, July–November 2002 – Katrina Kretsinger, CDC, Atlanta, GA, USA and J. Douglas Park, FDA, College Park, MD, USA

9:30 Behavior of *Salmonella* on and in Tomatoes – Larry Beuchat, University of Georgia, Griffin, GA, USA

10:00 Break

10:30 Hyperendemic Botulism – Republic of Georgia, 1980–2002 – Katrina Kretsinger, CDC, Atlanta, GA, USA

11:00 *Salmonella kottbus* in Sprouts – Kevin Winthrop, California Dept. of Health Services, Berkley, CA, USA and Mary Palumbo, California Dept. of Health Services, Sacramento, CA, USA

11:30 *Salmonella* Poona in Cantaloupes – What Have We Learned – Sherri McGarry, FDA, College Park, MD

S20 Food on the Move

Sponsored by the IAFP Foundation Fund
Organizer/Convenor: Thomas L. Schwarz

8:30 What FDA Does to Keep Travelers Safe and Healthy – DEAN DAVIDSON, FDA-CFSAN, College Park, MD, USA

9:00 Charting a Healthier Course: USPHS's Vessel Sanitation Program – DAVID L. FORNEY, CDC, Atlanta, GA, USA

9:30 USPHS, FDA Food Code Sets Sail: The Global Launching of the Highest Retail Food Safety Standards – CHARLES S. OTTO, CDC, Atlanta, GA, USA

10:00 Break

10:30 The New Worldwide Food Safety Standards for the Airline Industry – JULIE BUTNER, Compass Group, Fort Worth, TX, USA

11:00 Ship of Stools: Diarrheal Outbreaks on Cruise Ships – ELAINE H. CRAMER, CDC, Vancouver, BC, Canada

11:30 What's Cookin' in Space – TONY POMETTO, NASA Food Technology, Commercial Space Center, Ames, IA, USA

S21 Aquaculture: Safety and Quality Issues

Sponsored by the IAFP Foundation Fund
Organizers/Convenors: Linda Andrews and Brian Himelbloom

8:30 Good Aquaculture Practices and the Role of HACCP – JUAN SILVA, Mississippi State University, Mississippi State, MS, USA

9:00 Advances in Reducing the Off-flavors in Farm-raised Catfish – CASEY GRIMM, USDA-ARS-SRRC, New Orleans, LA, USA

9:30 Modified Atmosphere Packaging of Aquacultured Seafood Products – JUAN SILVA, Mississippi State University, Mississippi State, MS, USA

10:00 Break

10:30 Antibiotics in Aquaculture – To be announced

11:00 Pesticides and Environmental Organic Pollutants in Farmed Fish – CHARLES SANTERRE, Purdue University, West Lafayette, IN, USA

11:30 International Perspective on Aquaculture – PETER K. BEN EMBAREK, WHO, Geneva, Switzerland

T05 Foodborne Pathogens

Convenors: Douglas L. Marshall and Gregory R. Siragusa

8:30 T45 DSC Sensitivity of *Escherichia coli* O157:H7 to Industrial Alkaline Cleaners and Subsequent Exposure to Heat – MANAN SHARMA and Larry R. Beuchat, University of Georgia, Griffin, GA, USA

8:45 T46 DSC Antibiotic Susceptibility and Cross Contamination of Enteric Bacteria Isolated from Feedlot Cattle and Their Carcasses – WADE M. FLUCKEY, Guy H. Loneragan, and Mindy M. Brashears, Texas Tech University, Lubbock, TX, USA

9:00 T47 Determining the Prevalence of *Escherichia coli* O157 in Cattle and Beef from the Feedlot to the Cooler – J. R. RANSOM, J. N. Sofos, K. E. Belk, G. A. Dewell, K. S. McCurdy, G. C. Smith, and M. D. Salman, Colorado State University, Fort Collins, CO, USA

9:15 T48 DSC Evaluation of Cetylpyridinium Chloride for the Reduction of Bacterial Populations on Beef Hide Surfaces – J. R. RANSOM, J. N. Sofos, K. E. Belk, I. Geornaras, and G. C. Smith, Colorado State University, Fort Collins, CO, USA

9:30 T49 Trends of *Salmonella* Serotypes in the United States: FoodNet, 1996–2001 – STEPHANIE DELONG, Luenda Charles, Patricia Fields, Paul Cieslak, Nellie Dumas, Karen Gieseker, Timothy Jones, Ruthanne Marcus, Patricia Ryan, Suzanne Segler, and Ellen Swanson; Duc Vugia; Matthew Moore, CDC, Atlanta, GA, USA

9:45 T50 Persistence of *Salmonella* Enteritidis PT4 and *S.* Typhimurium DT104 on a Commercial Laying Farm – ROB DAVIES, Veterinary Laboratories Agency-Weybridge, Addlestone, Surrey, UK

10:00 Break

10:30 T51 Detection and Enumeration of *Salmonella* Enteritidis in Ice Cream Associated with an Outbreak: Comparison of Conventional and Rapid Methods – KUN-HO SEO, Iris E. Valentin-Bon, Robert E. Brackett, and Glen R. Henderson, FDA-CFSAN, College Park, MD, USA

10:45 T52 DSC Longitudinal Studies on *Listeria* in Smoked Fish Plants: Impact of Employee Training and Intervention Strategies on Contamination Patterns – VICTORIA LAPPI, Joanne Thimothe, Virginia N. Scott, Kenneth Gall, and Martin Wiedmann, Cornell University, Ithaca, NY, USA

11:00 T53 DSC The Effects of Soil and Surface-type on the Survival of *Listeria monocytogenes* in the Presence of Condensate – JOHN ALLAN and Jeffrey Kornacki, University of Georgia, Griffin, GA, USA

11:15 T54 Effect of Inoculum Size on the Growth/No Growth Boundary of *Listeria monocytogenes* – KONSTANTINO P. KOUTSOUMANIS, Patricia A. Kendall, and John N. Sofos, Colorado State University, Fort Collins, CO, USA

11:30 T55 DSC Effect of Intrinsic Factors on the Hemolytic Activity of *Listeria monocytogenes* – V. F. ALVES and E. C. P. De Martinis, Faculdade de Ciências Farmacêuticas de Ribeirão Preto-USP, Ribeirão Preto, São Pãulo, Brazil

11:45 T56 Withdrawn

P04 Jambalaya

9:00 a.m. – 12:00 p.m.
(Authors present 9:30 a.m. – 11:30 a.m.)

Risk/Modeling

P172 Safe Prediction Zone, a New Method for Validation of Predictive Models – T. P. OSCAR, USDA-ARS, Princess Anne, MD, USA

P173 Development and Evaluation of a Mathematical Model for the Effect of Temperature, pH, NaCl and Sodium Lactate on the Surface Growth Limits of *Listeria monocytogenes* – KONSTANTINOS P. KOUTSOUMANIS, Patricia A. Kendall, and John N. Sofos, Colorado State University, Fort Collins, CO, USA

P174 Enumeration of *Salmonella* with the Polymerase Chain Reaction BAX System and Simulation Modeling – T. P. OSCAR, USDA-ARS, Princess Anne, MD, USA

P175 Modeling the Effects of Food Handling Practices on the Incidence of Foodborne Illness – DAVID L. KENDALL and Angela Ritzert, RTI International, Abingdon, VA, USA

P176 A Quantitative Risk Assessment Model for *Salmonella* and Whole Chickens at Retail – T. P. OSCAR, USDA-ARS, Princess Anne, MD, USA

P177 Quantitative Microbial Risk Assessment of the Sprout Production Process – REBECCA MONTVILLE and Don Schaffner, Rutgers University, New Brunswick, NJ, USA

P178 Generalized Extreme Value Distributions for Risk Assessment: A Monte Carlo Study – Carlos L. Cintora and VALERIA J. DAVIDSON, University of Guelph, Guelph, ON, Canada

Sanitation/Hygiene

P179 *Lactobacillus casei* Viability after Impregnation into Apple Porous Structure – Patricia Ramírez-Morales, M. Teresa Jiménez-Munguia, Alvaro Argaiz, Jorge Welti-Chanes, Enrique Palou and AURELIO LÓPEZ-MALO, Universidad de las Américas-Puebla, Cholula, Puebla, Mexico

P180 Inhibitory Activity of *Bifidobacterium longum* HY8001 against *Salmonella enterica* serovar Typhimurium DT104 – S. H. KIM, N. H. Kwon, J. Y. Kim, J. Y. Lim, J. M. Kim, W. K. Bae, K. M. Noh, K. T. Park, W. K. Jung, Y. J. Baek, K. S. Lim, and Y. H. Park, Seoul National University, Seoul, Korea

P181 Characterization of *Listeria innocua* Biofilm Formation Using Tn917 Transposon Mutagenesis – W. K. SHAW, Jr. and L. A. McLandsborough, University of Massachusetts, Amherst, MA, USA

P182 Characterization of a Swarming Phenotype of *Listeria innocua* on Semi-solid Surfaces – EMMANOUIL APOSTILIDES and Lynne McLandsborough, University of Massachusetts, Amherst, MA, USA

P183 Withdrawn

P184 Comparing the Efficacy between Single and Double Pulse Pressure-assisted Thermal Processing on Inactivation of *Bacillus stearothermophilus* ATCC 10149 Spores – E. PATAZCA, V. M. Balasubramaniam, and V. Rasanayagam, National Center for Food Safety and Technology at Illinois Institute of Technology, Summit Argo, IL, USA

P185 DSC Starvation-induced Cross-protection of *Escherichia coli* O157:H7 against Electron-beam Irradiation in 0.85% Saline and in Apple Juice – SUJIN S. PAIK, Aubrey Mendonca, Bonita Glatz, and Mark Gleason, Iowa State University, Ames, IA, USA

P186 Inhibition of Selected Fungi by Psoralen – Long Wave Ultraviolet Light – Ivonne Audiffred, Victoria Pérez-Petrone, Fidel T. Vergara-Balderas, ENRIQUE PALOU, and Aurelio López-Malo, Universidad de las Américas-Puebla, Cholula, Puebla, Mexico

P187 Inhibitory Activity of *Lactobacillus reuteri* SD 2112 against Vero Cytotoxin of *Escherichia coli* O157:H7 – S. H. KIM, N. H. Kwon, J. Y. Kim, J. Y. Lim, J. M. Kim, W. K. Bae, K. M. Noh, K. T. Park, W. K. Jung, H. J. Kang, D. S. Lee, I. B. Kwon, and Y. H. Park, Seoul National University, Seoul, Korea

P188 Withdrawn

P189 Effect of Combined Protamine and Heat Treatments on Survival and Release of Surface Proteins of Wild-type and Protamine Resistant *Listeria monocytogenes* Scott A – Clarissa Schwab and LISBETH TRUELSTRUP HANSEN, Dalhousie University, Halifax, NS, Canada

P190 Inactivation of *Escherichia coli* O157:H7, *Salmonella* and *Listeria monocytogenes* in Frozen Ground Beef Patties by Electron Beam Irradiation – JAMES KENNEDY, Wafa Birbari, and William Brown, ABC Research Corporation, Gainesville, FL, USA

P191 DSC Fate of *Listeria monocytogenes* following Electron-beam Irradiation in Ready-to-Eat Turkey Roll Formulated with Pediocin Alone or Combined with Sodium Lactate and Sodium Diacetate – BLEDAR BISHA, Aubrey Mendonca, Joseph Sebranek, and Dong Ahn, Iowa State University, Ames, IA, USA

P192 Withdrawn

P193 Effects of Drying Methods, Gamma Irradiation and Storage on the Carotenoids of Paprika – AYHAN TOPUZ and Feramuz Ozdemir, University of Akdeniz, Antalya, Turkey

P194 Effect of Drying Methods, Gamma Irradiation and Storage on the Capsaicinoids of Paprika – Ayhan Topuz and FERAMUZ OZDEMIR, University of Akdeniz, Antalya, Turkey

P195 Evaluation of the VERIcleen™ Food Residue Surface Test as a Means to Monitor Surface Hygiene – GINNY MOORE and Chris Griffith, University of Wales Institute-Cardiff, Cardiff, UK

Consumer Education

P196 DSC Evaluation of Hygiene Training within the Vending Industry – JAYNE DRAKE and Adrian Peters, University of Wales Institute-Cardiff, Cardiff, UK

P197 From Reactive to Proactive – The Prevention of HACCP Parameters and Related Equipment Failure – GIDEON ZEIDLER, University of California, CA, USA

P198 The Co-relationship between High Technical Food Safety Standards and Operating Cost Effectiveness – GORDON W. HAYBURN and David Lloyd, University of Wales Institute-Cardiff, Cardiff, Wales, UK

P199 DSC The Comparison of HACCP Application and Non-application at Food Service Establishments in Korea by Microbiological Harzard Analysis – JE-MYUNG LEE, Won-Bo Shim, and Duck-Hwa Chung, Graduate School of Gyeongsang National University, Chinju, Gyeongnam, Korea

P200 Microbiological Quality Evaluation to the HACCP System of the Bakery Products at Bakeries – SUNG-HEE KWON, Duck-H Chung, Sang-Suk Oh, and Ae-Son Om, Hanyang University, Seoul, South Korea

P201 Verification of a Food Safety Auditing Tool for Foodservice Establishments Based on Microbiological Analysis – TONG-KYUNG KWAK YUM, Duck Hwa Chung, Young Jae Kang, Hye Ja Chang, and Kyung Mi Lee, Yonsei University, Seoul, Korea

P202 DSC Analysis of Critical Control Points through Field Assessment of Sanitation Management Practices in the Foodservice Establishments – Tong-Kyung Kwak Yum, KYUNG-MI LEE, Hye-Ja Chang, Wansoo-Hong, Hye-Kyung Moon, and Young-Jae Kang, Yonsei University, Seoul, Korea

P203 Usage Status Survey on Some Essential Facility, Equipment, and Documentary Records for HACCP Implementation in Contracted Foodservices – HYE-KYUNG MOON and Kyung Ryu, Changwon National University, Changwon, KyungNam, Republic of Korea

P204 Efficacy Quenching of Chlorine Dioxide and Quaternary Ammonium-containing Sanitizers by Organic Matter – M. E. Peta, D. Lindsay, V. S. Brozel, and A. VON HOLY, University of Witwatersrand, Johannesburg, South Africa

P205 DSC Sandia National Laboratories Decon Foam–100 as a Sanitizer against *Listeria monocytogenes* Mixed Culture Biofilms – J. M. BIEKER, R. K. Phebus, H. Thippareddi, D. Boyle, J. Marsden, and J. E. Boyer, Jr., Kansas State University, Manhattan, KS, USA

P206 Recovery of *Listeria monocytogenes* and *Pseudomonas putida* from Food Contact Surfaces after Ozone Exposure – ARTURO TANUS, Randall Phebus, Larry Franken, and Michelle Gordon, Kansas State University, Manhattan, KS, USA

P207 A Comparison of Attachment and Recovery Methods for Microorganisms Attached on Various Food Contact Surfaces – NICOLE MAKS, Claudia Rodriguez, Susanne Keller, and Sadhana Ravishankar, NCFST, Summit-Argo, IL, USA

P208 Comparison of Cell Attachment and Spore Formation by *Bacillus cereus* DL5 in Minimal Nutrient Growth Medium – D. Lindsay, V. S. Brozel, and A. VON HOLY, University of the Witwatersrand, Johannesburg, South Africa

P209 Bacterial Contamination of Commercial Yeast – S. S. O'Brien, B. A. Tessendorf, M. Brodie, D. Lindsay, and A. VON HOLY, University of the Witwatersrand, Johannesburg, South Africa

P210 Assessment of Bacterial Populations on Equipment Surfaces in a Processed Meat Slicing Operation by Different Techniques – M. A. Kotze, D. Lindsay, and A. VON HOLY, University of the Witwatersrand, Johannesburg, South Africa

P211 Inactivation of GFP-transformed *Escherichia coli* O157:H7 on Whole Apples following Immersion in Selected Chemical Sanitizers at 25°C and 55°C – TOSHIBA TRAYNHAM, Aubrey Mendonca, Bonita Glatz, and Mark Gleason, Iowa State University, Ames, IA, USA

P212 DSC Optimization of Chlorine Treatments and the Effects on Survival of *Salmonella* spp. on Tomato Surfaces – KELLY D. FELKEY, Keith R. Schneider, Douglas L. Archer, and Jerry A. Bartz, University of Florida, Richmond, VA, USA

P213 Meta-analysis of the Microbiological Quality of Food in Relation to HACCP and Food Hygiene Training in Food Premises in the United Kingdom, 1997–2002 – CHRISTINE L. LITTLE and Robert T. Mitchell, Communicable Disease Surveillance Centre, London, UK

P214 The Microbial Ecology of High Risk, Chilled Food Factories; Evidence for Persistent *Listeria* spp. and *Escherichia coli* Strains – JOHN HOLAH, Jon Bird, and Karen Hall, Campden & Chorleywood Food Research Association, UK

P215 Sanitary Standard Operation Procedures in a Tortilleria at Xalapa, Veracruz, México – PAOLA SABINA CONTRERAS ROMO, Laboratorio de Alta Tecnologia de Xalapa, SC Universidad Veracruzana, Xalapa, Veracruz, Mexico

P216 The Increased Effectiveness of Peracetic Acid with a Foaming Additive on Fungal and Bacterial Spores – CRYSTAL NESBITT and Mary Homan, FMC Corporation, Princeton, NJ, USA

P217 Altered Sensitivity of Acid and Cold Adapted *Listeria innocua* to the Quaternary Ammonium Compound Cetrimide – MARK A. MOORMAN and James J. Pestka, Michigan State University, Battle Creek, MI, USA

P218 Removal of *Pseudomonas putida* Biofilm and Associated Extracellular Polymeric Substances from Stainless Steel Using Alkali Cleaning – Katerina Antoniou and JOSEPH F. FRANK, University of Georgia, Athens, GA, USA

Epidemiology

P219 Outbreak Alert!: A Compilation and Analysis of Food-Poisoning Outbreaks – CAROLINE SMITH DEWAAL, Center for Science in the Public Interest, Washington, D.C., USA

P220 Factors That Influence the Efficacy of Risk Communication and Consumer Perceptions of Sources of Food Safety Education – E. C. REDMOND and C. J. Griffith, University of Wales Institute-Cardiff, Cardiff, South Wales, UK

P221 The Cost Effectiveness of a Targeted Disinfection Program in Household Kitchens to Prevent Foodborne Illnesses in the United States, Canada, and the United Kingdom – STEVEN B. DUFF, Elizabeth A. Scott, Michael S. Mafilios, Ewen C. Todd, Leonard R. Krilov, Alasdair M. Geddes, and Stacey J. Ackerman, Covance Health Economics and Outcomes Services Inc., San Diego, CA, USA

P222 Consumer Attitudes and Perceptions towards Food Safety in the Domestic Kitchen – E. C. REDMOND, C. J. Griffith, and A. C. Peters, University of Wales Institute-Cardiff, Cardiff, South Wales, UK

P223 Influence of Fingernail Length and Type on Removing Feline Calicivirus from the Nail Regions Using Different Hand Washing Interventions – C.-M. LIN, H.-K. Kim, E. H. Thurber, M. P. Doyle, and B. S. Michaels, University of Georgia, Griffin, GA, USA

P224 Quantification of Risks in Catering Establishments – PIRKKO TUOMINEN and Riitta Maijala, National Veterinary and Food Research Insitute, Helsinki, Finland

Residues

P225 DSC Molecule Cloning, Expressing, and Characterization of a Recombinant Antibody against Sulfamethazine – ZHENG-YOU YANG, Ji-Hun Kim, and Duck-Hwa Chung, Graduate School of Gyeongsang National University, Chinju, Gyeongnam, Korea

P226 Assessement of Mutagenicity and Carcinogenicity Effects of Plastic Bags and Disposable Food Containers in the *Salmonella*/Microsome Test – MARYAM TOHIDPOUR, Sedigheh Mehrabian, Mojgan Emtyazjoo, and Homa Assempour, Azad Islamic University, Tehran, Iran

P227 Using a Viral Symbiont to Evaluate Water Samples for the Presence of Viable *Cryptosporidium parvum* Oocysts – K. E. KNIEL, M. C. Jenkins, J. Higgins, J. Trout, and R. Fayer, USDA-ARS, Beltsville, MD, USA

Mycotoxins

P228 DSC Efficacy of Hydrogen Peroxide for Reducing Post-harvest Fusarium Infection in Malting Barley – BALASUBRHMANYAM KOTTAPALLI, C. E. Wolf-Hall, and P. B. Schwarz, North Dakota State University, Fargo, ND, USA

P229 Effects of Cooking and Processing on the Reduction of Aflatoxin Content in Corn – JONG-GYU KIM and Hyun-Jong Yeo, Keimyung University, Daegu, Korea

P230 Natural Occurrence of Aflatoxin and Fumonisin in Corn and Rice from Venezuela and Its Mycoflora – AMAURY MARTÍNEZ, Claudio Mazanni, Rosa Raybaudi, Odalis Luzón, and Rafael Alvarado, Universidad Central de Venezuela, Caracas, Venezuela

Antibiotic Resistance

P231 Identification and Polymorphism of SopE in Isolates of *Salmonella enterica* – A Factor That May Contribute to the Appearance of Multi-resistant Clones Associated with Cases of Food Poisoning in England and Wales – KATIE HOPKINS and E. John Threlfall, Central Public Health Laboratory, London, UK

P232 DSC Trends in Multiple Antibiotic Resistance of *Salmonella* Virchow – HADAS SOLNIK and Sima Yaron, Technion, Haifa, Israel

WEDNESDAY AFTERNOON – AUGUST 13, 2003
1:30 p.m. – 5:00 p.m.

S22 The Evolution of Foodborne Pathogens

Sponsored by ILSI, N.A.
Organizer: Catherine Nnoka
Convenors: Marguerite Neill and Martin Wiedmann

1:30 Understanding the Evolution of Foodborne Pathogens – Challenges and Promise – TOM CEBULA, FDA-CFSAN, College Park, MD, USA

2:00 Evolution of *Escherichia coli* O157:H7 and other *E. coli* – TOM WHITTAM, Michigan State University, East Lansing, MI, USA

2:30 Evolution of *Samonella* Virulence and Host Adaptation – ANDREAS BAEUMLER, Texas A&M University, College Station, TX, USA

3:00 Break

3:30 MLST (Multilocus Sequence Typing) for Evolutionary Analyses and Outbreak Tracking – MARTIN MAIDEN, University of Oxford, Oxford, UK

4:00 Molecular Evolution of *Listeria monocytogenes* – MARTIN WIEDMANN, Cornell University, Ithaca, NY, USA

4:30 Panel Discussion

S23 Natural Antimicrobials – Current Trends and Future Perspectives

Organizers/Convenors: Vijay K. Juneja and Sadhana Ravishankar

1:30 Natural Antimicrobials: Back to Our Roots – P. MICHAEL DAVIDSON, University of Tennesse, Knoxville, TN, USA

2:00 Animal-derived Antimicrobials – ERIC A. JOHNSON, University of Wisconsin-Madison, Wisconsin, WI, USA

2:30 Plant and Microbial-derived Antimicrobials – SADHANA RAVISHANKAR, NCFST, Summit-Argo, IL, USA

3:00 Break

3:30 Effectiveness of Antimicrobial Food Packaging Materials – KAY D. COOKSEY, Clemson University, Clemson, SC, USA

4:00 Industrial Perspectives on Natural Antimicrobials – JOSEPH D. MEYER, Kraft Foods, East Hanover, NJ, USA

4:30 International Regulatory Perspectives for Natural Antimicrobials – BARBARA J. PETERSEN, Novigen Sciences, Inc., Washington, D.C., USA

S24 Risk Communication – Putting Food Safety in Perspective

Organizer: Tony Flood
Convenor: Dave Schmidt

1:30 Understanding Risk Communication – DAVID ROPEIK, Harvard Center for Risk Analysis, Boston, MA, USA

2:15 Messages Heard: The Role of Media in Food Safety Coverage – To be announced

3:00 Break

3:30 Debunking the Myths, Speaking with Science – CARY FRYE, International Dairy Foods Association, Washington, D.C., USA

4:00 Risk: A Physician's Perspective – DANIEL H. JOHNSON, JR., Clearview Medical Imaging, Metairie, LA, USA

4:30 Applying Principles of Risk Communication to Food Issues – DAVE SCHMIDT, International Food Information Council, Washington, D.C., USA

S25 Emerging Issues in Water Quality for the Food Industry

Sponsored by Environmental Health Laboratories (EHL) a Division of Underwriters Laboratories, IAFP Foundation Fund, Quality Flow Inc., and Underwriters Laboratories Environmental and Public Health

Organizer: Susan K. McKnight
Convenors: Susan K. McKnight and Kathleen Rajkowski

1:30 Overview – SUSAN K. MC KNIGHT, Quality Flow, Inc., Northbrook, IL, USA

1:40 Microbial Contaminants in Drinking Water – KELLY A. REYNOLDS, University of Arizona, Tucson, AZ, USA

2:10 Impact of Animal Agriculture on Microbial Water Quality – JEANETTE THURSTON-ENRIQUEZ, USDA-ARS, Lincoln, NE, USA

2:40 Issues Concerning the Quality and Safety of Water Used in the Food Industry – JIM VAN VOOREN, Environmental Health Laboratories, Underwriters Laboratories, South Bend, IN, USA

3:00 Break

3:30 Biofilm in the Food Industry: Affect on Water Quality and Product Safety – ADRIAN PETERS, University of Wales Institute, Cardiff, UK

4:00 Food Quality and Foodborne Disease: What is Water's Role? – KRISTINA D. MENA, University of Texas Health Science Center at Houston, School of Publich Health, El Paso, TX, USA

4:30 Water Treatment Technologies for the Food Industry – PETER M. KENNEDY, Quality Flow Inc., Northbrook, IL, USA

T06 Risk Modeling

Convenors: Donald W. Schaffner and Aamir Fazil

1:30 T57 FSIS *Listeria* Risk Assessment: Dynamic In-plant Model to Evaluate the Effectiveness of Testing Food Contact Surfaces – JANELL KAUSE, Daniel Gallagher, and Eric Ebel, USDA-FSIS-OPHS-RAD, Washington, D.C., USA

1:45 T58 Risk Assessment and Risk Communication for *Listeria monocytogenes* in Ready-to-Eat Foods with a Focus on Food Handling at Home – HONG YANG, Sheryl Cates, Toby Ten Eyk, Sumeet Patil, Roberta Morales, Lee-Ann Jaykus, and Peter Cowen, North Carolina State University, Raleigh, NC, USA

2:00 T59 Application of a Safety Monitoring and Assurance System for Minimizing the Risk of Listeriosis of Cooked Ham – K. KOUTSOUMANIS, P. S. Taoukis, and G. J. E. Nychas, Aristotle University of Thessaloniki, Thessaloniki, Greece

2:15 T60 Predictive Modeling of Spoilage of Fresh Meat: The Effect of Temperature and Modified Atmosphere Packaging – P. N. SKANDAMIS, V. Iliopoulos, N. Tsigarida Chorianopoulos, and G. J. E. Nychas, Agricultural University of Athens, Athens, Votanikos, Greece

2:30 T61 Quantifying Robustness of Microbial Growth Model – DANILO T. CAMPOS, Bradley P. Marks, Mark L. Tamplin, and Mark R. Powell, Michigan State University, East Lansing, MI, USA

2:45 T62 Bayesian Synthesis of a Pathogen Growth Model – MARK POWELL, Mark Tamplin, and Bradley Marks, USDA, Washington, D.C., USA

3:00 Break

3:30 T63 Fuzzy and Statistical Techniques for Food Safety Risk Assessment – V. J. DAVIDSON and J. Ryks, University of Guelph, Guelph, ON, Canada

3:45 T64 Risk Assessment in Pork Production: Modeling Porkborne *Salmonella* Risk from Farm to Pork – XAUNLI LIU, Gay Miller, and Paul McNamara, University of Illinois at Urbana-Champaign, Urbana, IL, USA

4:00 T65 Quantitative Risk Assessment of *Vibrio parahaemolyticus* in Bloody Clams in Southern Thailand – FUMIKO KASUGA, Akio Yamamoto, Jun-fichiro Iwahori, Varaporn Vuddhakul, Wilawan Jaroenjiratrakul, Sineenart Kalnawakul, Ashrafuzzaman Chowdhury, Mika Shigematsu, Ken Osaka, Hajime Toyofuku, Shigeki Yamamoto, and Mitsuaki Nishibuchi, National Institute of Health Sciences, Setagaya-ku, Tokyo, Japan

4:15 T66 Quantitative Risk Assessment for Transmission of *Cryptosporidium* or *Giardia* in Norway by Consumption of Contaminated Mung Bean Seed Sprouts – Lucy Robertson, JUDY D. GREIG, Bjørn Gjerde, and Aamir Fazil, Health Canada, Guelph, ON, Canada

4:30 T67 Biogenic Amines Production by Bacteria Isolated from Herring (*Clupea harengus*) – FAITH OZOGUL T67 and Abdurrahman Polat, University of Cukurova, Adana, Turkey

4:45 T68 Mechanistic Dose-response Modeling for Microbial Risk Assessment – Robert L. Buchanan, Margaret E. Coleman, Darcy Hanes, Arie Havelaar, Mark D. Sobsey, Phillip I. Tarr, ISABEL WALLS, and H. Kirk Ziegler, ILSI Risk Science Institute, Washington, D.C., USA

P05 Produce and Seafood Microbiology

2:00 p.m. – 5:00 p.m.
(Authors present 2:30 p.m. – 4:30 p.m.)

P233 Comparison of Several RNA Extraction Methods for the Recovery of Hepatitis A Virus from Fresh and Frozen Raspberries – JULIE BRASSARD, Yvon-Louis Trottier, Alain Houde, and Carole Simard, Canadian Food Inspection Agency, Saint-Hyacinthe, QC, Canada

P234 Survival of *Shigella sonnei* during Desiccation on Surfaces is Dependent Upon Density of Inoculum and Inoculum Carrier – Stephan Flessa, Rudi F. Vogel, and LINDA J. HARRIS, University of California-Davis, Davis, CA, USA

P235 Attachment of *Shigella sonnei* Suspended in Irrigation Water to the Surfaces of Parsley and Cilantro Leaves – GLORIA TETTEH and Trevor Suslow, University of California-Davis, Davis, CA, USA

P236 DSC Metabiotic Interactions of Plant Pathogenic Molds and *Salmonella* Poona on Intact and Wounded Cantaloupe Rind – GLENNER M. RICHARDS and Larry R. Beuchat, University of Georgia, Griffin, GA, USA

P237 Effect of Irrigation Methods and Environmental Conditions on the Contamination and Survival of Enteric Microorganisms on Cantaloupe – SCOTT W. STINE, Inhong Song, Christopher Y. Choi, and Charles P. Gerba, University of Arizona, Tucson, AZ, USA

P238 DSC Effect of Electron Beam Irradiation on the Microbiological and Sensory Characteristics of Fresh-cut Cantaloupe Packed in Modified Atmosphere Packages – MANGESH P. PALEKAR, Gabriel Rodriguez, Elisa Cabrera, Ahmad Kalbasi, Alejandro Castillo, Texas A&M University, College Station, TX, USA

P239 Incidence of *Listeria* spp. and *Salmonella* spp. on the Surface of Fresh Melons, Watermelons and Papayas, Using the Tecra Visual Immunoassay and Cultural Procedures for Their Detection – ANA LUCIA PENTEADO and Mauro F. F. Leitao, Universidade Estadual de Campinas, Campinas, São Pãulo, Brazil

P240 DSC Physical and Chemical Treatments for Control of *Salmonella* on Cantaloupe Rinds – VIVIAN ANN RASH and David A. Golden, University of Tennessee, Knoxville, TN, USA

P241 Fine Scale Measurement of Fruit Surface Area – JOSEPH EIFERT, Torbjorn Bergstrom, Christopher Brown, and Fletcher Arritt, Virginia Tech, Blacksburg, VA, USA

P242 Microflorae of Orange Surfaces and Juice from Fruit for Processing – Renée Goodrich and MICKEY PARISH, University of Florida, Lake Alfred, FL, USA

P243 Survival of Pathogenic and Spoilage Microorganisms in Orange Juice as Influenced by Calcium Supplements – JINRU CHEN, Jui-Yueh Yeh, and Joy Adams, University of Georgia, Griffin, GA, USA

P244 DSC Effects of Apple Development Stages on the Internalization of *Escherichia coli* O157:H7 as Observed under Field and Laboratory Conditions – M. L. HEREFORD, S. S. Sumner, R. C. Williams, M. Pierson, R. Marini, R. Worboro, and D. Kang, Virginia Tech, Blacksburg, VA, USA

P245 Modeling of *Escherichia coli* O157:H7 Inactivation by UV Irradiation and Different pHs in Apple Cider – ARMANDO QUINTERO-RAMOS, John Churey, Phil Hartman, John Barnard, and Randy W. Worobo, Cornell University, Geneva, NY, USA

P246 DSC The Efficacy of Antimicrobial Treatments for the Inhibition of *Alicyclobacillus acidoterrestris* in Apple and Tomato Juices – ANGELA D. HARTMAN, Robert C. Williams, Susan S. Sumner, and Bruce W. Zoecklein, Virginia Tech, Blacksburg, VA, USA

P247 DSC Survival of *Listeria monocytogenes* in Fruit Juices during Refrigeration and Temperature-abusive Storage – CHRISTINE L. PIOTROWSKI, Robert C. Williams, Susan S. Sumner, and Joseph E. Marcy, Virginia Tech, Blacksburg, VA, USA

P248 Simultaneous Determination of Multi-pesticide Residues in Vegetables – MIN HUANG, Sharon L. Melton, and F. Ann Draughon, University of Tennessee-Knoxville, Knoxville, TN, USA

P249 Reduction of Cyanide Contents of Grains, Beans and Vegetables by Thermal Treatment – KIHWAN PARK, Young Jo, Eun Kim, Sang Oh, and Kwang-Ro Yoon, Chung-Ang University, Ansung, Kyonggi, South Korea

P250 Microbial Quality of Parsley and Welsh Onion Mixture Minimally Processed Commercialized at the Supermarkets in Campinas/SP, Brazil – SILVANA SREBERNICH and Neliane Silveira, Pontifícia Universidade Católica de Campinas, Campinas, São Pãulo, Brazil

P251 Genetic Diversity and Antibiotic Resistance Profiling of *Salmonella* Isolated from Irrigation Water, Packing Shed Equipment, and Fresh Produce in Texas – E. A. DUFFY, S. D. Pillai, G. R. Acuff, A. Castillo, L. Cisneros-Zevallos, P. Van Laanen, and L. M. Lucia, Texas A & M University, College Station, TX, USA

P252 Metabiosis of Proteolytic Molds and *Salmonella* in Raw, Ripe Tomatoes – Wendy N. Wade and LARRY R. BEUCHAT, University of Georgia, Griffin, GA, USA

P253 Ionizing Radiation Sensitivity of *Listeria monocytogenes* and *L. innocua* inoculated on Endive (*Cichorium endiva*) – BRENDAN A. NIEMIRA, Xuetong Fan, Kimberley J. B. Sokorai, and Christopher H. Sommers, USDA-ARS-ERRC, Wyndmoor, PA, USA

P254 DSC Inactivation of Ozone Alone or Combined with Organic Acids against *Escherichia coli* O157:H7 and *Listeria monocytogenes* Inoculated into Ready-to-Use Vegetables – M. Y. YOO, J. W Yun, B. K. Park, and D. H. Oh, Kangwon National University, Chunchon, Kangwon, Korea

P255 Cetylpyridinium Chloride and Ethanol Disinfection of Ready-to-Eat Vegetables Artificially Contaminated with *Campylobacter jejuni* and Stored at 5°C – TONY T. TRAN, Sharon Vanzego, Jason Gordon, and Alberta Nyarko, USDA, College Park, MD, USA

P256 DSC Evaluating the Efficacy of a Commercial Produce Wash on Lettuce in a Foodservice Setting – SARAH SMITH, Mila Dunbar, Diana Tucker, and Don Schaffner, Rutgers University, New Brunswick, NJ, USA

P257 Ingestion of *Salmonella* Poona by a Free-living Nematode, *Caenorhabditis elegans*, and Protection against Inactivation by Sanitizers – Krishaun N. Caldwell, Barbara B. Adler, Gary L. Anderson, Phillip L. Williams, and LARRY R. BEUCHAT, University of Georgia, Griffin, GA, USA

P258 Colonization of *Salmonella* Montevideo on Tomatoes as Affected by Relative Humidity and Storage Temperature – MONTSERRAT H. ITURRIAGA and Eduardo F. Escartín, Universidad Autónoma de Querétaro, Querétaro, Mexico

P259 Survival of an Acid-resistant *Escherichia coli* Small Colony Variant in Orange Juice and Apple Cider – IRVIN N. HIRSHFIELD, Meropi Aravantinou, Kelly Dong, Laura Krowtowsky, Panagiota Rizos, and Daniel Siegerman, St. John's University, Jamaica, NY, USA

P260 Influence of Inoculation Method and Spot Inoculation Site on the Efficacy of Acidic Electrolyzed Water against *Salmonella* spp. on Lettuce – SHIGENOBU KOSEKI, Kyoihiro Yoshida, Yoshinori Kamitani, Kazuhiko Itoh, Hokkaido University, Sapporo, Hokkaido, Japan

P261 Interaction of Foodborne Pathogens with Plant Tissue: An Active or Passive Process? – Ethan Solomon, Yassaman Shafaie, and KARL R. MATTHEWS, Rutgers University, New Brunswick, NJ, USA

P262 Fate of Avirulent *Salmonella enterica* serovar Typhimurium on Selected Vegetables Grown in Fields Treated with Contaminated Manure Composts or Irrigation Water – MAHBUB ISLAM, Jennie Morgan, Michael P. Doyle, Sharad Phatak, Patricia Millner, and Xiuping Jiang, University of Georgia, Griffin, GA, USA

P263 Fate of *Escherichia coli* O157:H7 in Manure Compost Applied to Soil to Grow Vegetables in a Growth Chamber – MAHBUB ISLAM, Jennie Morgan, Michael P. Doyle, and Xuiping Jiang, University of Georgia, Griffin, GA, USA

P264 A Dynamic Model for Inactivation of *Listeria monocytogenes* during Fermentation of Green Table Olives – P. M. SKANDAMIS, N. Chorianopoulos, and G. J. E. Nychas, Agricultural University of Athens, Athens, WI, USA

P265 Reduction of *Escherichia coli* O157:H7 in Cilantro by Chlorination and Gamma Irradiation – Megan Euper, Fredric Caporaso, Anuradha Prakash, DENISE FOLEY, Chapman University, Orange, CA, USA

P266 DSC Development of Fluorescence Polarization Immunoassay for the Detection of Ochratoxin A in Korean Barley – HYE-JUNG KIM, Yun-Jung Kim, Jin-Sun Kang, and Duck-Hwa Chung, Graduate School of Gyeongsang National University, Chinju, Gyeongnam, Korea

P267 Chemical and Irradiation Treatments in Killing *Escherichia coli* O157:H7 on Alfalfa, Radish and Mung Bean Seeds – M. L. BARI, S. Kawasaki, E. Nazuka, S.Todoriki, and K. Isshiki, National Food Research Institute, Tsukuba-shi, Ibaraki, Japan

P268 Growth of *Salmonella* during Sprouting of Naturally Contaminated Alfalfa Seeds as Affected by Sprouting Conditions – TONG-JEN FU, Olif M. VanPelt, and Karl F. Reineke, FDA, NCFST, Summit-Argo, IL, USA

P269 Growth and Survival of *Salmonella enterica* and Enterohemorrhagic *Escherichia coli* O157:H7 on the Model Plant *Arabidopsis thaliana* – MICHAEL B. COOLEY, G. William, and Robert E. Mandrell, USDA-ARS-WRRC, Albany, CA, USA

P270 Contamination of Prawn Flesh by *Listeria* spp. during Peeling of Cooked Prawns – GARY DYKES, Mark Vegar, and Paul Vanderlinde, Food Science Australia and University of Queensland, Tingalpa DC, Qld, Australia

P271 Hydrated Lime Treatment of Raw Salmon Inactivates External Contamination by *Listeria innocua* – BRIAN HIMELBLOOM, Susan Vitt, and Chuck Crapo, University of Alaska-Fairbanks, Kodiak, AK, USA

P272 Use of PFGE (Pulsed Field Gel Electrophoresis) to Trace the Dissemination of *Listeria monocytogenes* in a Gravlax Salmon Processing Line – C. D. Cruz, B. D. G. M. Franco, M. Landgraf, and M. T. DESTRO, Universidade de São Pãulo, São Pãulo, Brazil

P273 Monitoring of Levels and Tracking of *Listeria monocytogenes* Strains in a Seafood Processing Environment Using Enrichment MPN and RAPD – C. CRONIN, M. Clarke, R. Witkowsky, H. Lu, A. Sayedahmed, R. E. Levin, and L. A. McLandsborough, University of Massachusetts, Amherst, MA, USA

P274 Tracking Viruses in the Food Chain – GAIL E. GREENING and Joanne Hewitt, Institute of Environmental Science & Research Ltd., Porirua, Wellington, New Zealand

P275 Mitigation of Hepatitis A Virus in Shucked Oysters Using High Hydrostatic Pressure Treatment – KEVIN R. CALCI, David H. Kingsley, and Rukma N. Reddy, FDA, Dauphin Island, AL, USA

P276 Prevalence of Enterovirus, NLV, and Microbial Indicators in Oysters Relocated to Gulf Coast Water Impacted by Municipal Sewage – JACQUELINA W. WOODS, Kevin R. Calci, and Y. Carol Shieh, FDA-CFSAN, Gulf Coast Seafood Laboratory, Dauphin Island, AL, USA

P277 Survival and Persistence of Hepatitis A Virus and Norwalk-like Virus in Marinated Mussels – GAIL E. GREENING and Joanne Hewitt, Institute of Environmental Science and Research Ltd., Porirua, Wellington, New Zealand

P278 A Comparison of *Vibrio* Species Associated with Regional Oyster Harvest Sites – CYNTHIA STOVER, Colleen Crowe, Paul Mead, and John Painter, CDC, Atlanta, GA, USA

P279 Selectivity and Specificity of a Chromogenic Medium for Detecting *Vibrio parahaemolyticus* – JINGYUN DUAN and Yi-Cheng Su, Oregon State University, Astoria, OR, USA

P280 Rapid Identification of *Vibrio vulnificus* by Real-time TaqMan PCR from Seawater – Hey-young Wang and JOON-SEOK CHAE, Chonbuk National University, Jeonju, Jeonbuk, South Korea

P281 Use of an Acid Phosphatase Assay to Detect Deviations in Thermal Processing of Seafood – CATHERINE N. CUTTER and Barbara J. Miller, Pennsylvania State University, University Park, PA, USA

P282 Application of a Fluorescent Probe to the Direct Detection and Enumeration of *Escherichia coli* in Shellfish – MANUELA OLIVERIA and Fernando Bernardo, CIISA/Laboratório de Inspecção Sanitária, Lisboa, Portugal

P283 Histamine-related Hygienic Qualities and Bacteria Found in Popular Commercial Scombroid Fish Fillets in Taiwan – YUNG-HSIANG TSAI, Ahsien-Feng Kung, Atsong-Ming Lee, Aguo-Tai Lin, and Deng-Fwu Hwang, Tajen Institute of Technology, Pingtung, Taiwan, R.O.C.

P284 Monitoring of Total Volatil Basic Nitrogen, Trimethylamine Nitrogen and Biogenic Amines in Salted and Dried Chub Mackerel – M. J. PERIAGO, J. Rodrigo, G. Ros, M. C. Martínez, and G. López, Murcia University, Espinardo, Murcia, Spai

P285 Withdrawn

P286 Baseline Risk Study of Chemical Contaminants in Ontario Farm-raised Rainbow Trout – GAVIN DOWNING, Ana Matu, Martha Fabri, and Mike Cassidy, Ontario Ministry of Agriculture and Food, Guelph, ON, Canada

P287 Effects of E-Beam Irridation on the Presence and Health Significance of *Cryptosporidium parvum* in Eastern Oysters (*Crassostrea virginica*) – MARINA V. COLLINS, George J. Flick, David S. Lindsay, Stephen A. Smith, and Ronald Fayer, Virginia Tech, Troutville, VA, USA

P288 Effect of Peroxyacetic Acid and Its Mixture to Eliminate Significant Foodborne Pathogens in Shrimp Processing – WARAPA MAHAKARNCHANAKUL, Sasikarn Ungnipakul, and Preeya Vibulsresth, Kasetsart University, Jatukjak, Bangkok, Thailand

Event Information

EVENING TOURS

MONDAY NIGHT SOCIAL AT MARDI GRAS WORLD – *Sponsored by IGEN International, Inc.*

Monday, August 11, 2003 • 6:30 p.m. – 10:00 p.m.

Fred Flinstone awaits. So do Rhett Butler, Wonder Woman, King Kong, Hulk Hogan and Marilyn Monroe. They're standing around a wondrous warehouse filled with Mardi Gras floats, giant disembodied heads and larger-than-life creatures such as Medusa and Poseidon.

Coming upon them at Blaine Kern's Mardi Gras World is like walking into a giant toy box of doll parts. What visitors are actually seeing are bits and pieces of Mardi Gras floats (and some complete ones), movie-set pieces and sculpted characters made for Walt Disney World attractions and other festive occasions.

Blaine Kern, known in New Orleans as "Mr. Mardi Gras," started the company Blaine Kern Artists in 1947 and opened Mardi Gras World to the public in 1984. Now, 150,000 people tour the studio every year.

Even those who never plan to go to the real Mardi Gras would probably like visiting Mardi Gras World. After all, how often do you get to see Spiderman, Marilyn, Scarlett and Rhett all in the same room? The night will be filled with food, entertainment, and fun! This is a Monday Night Social you will not want to miss.

CREOLE QUEEN DINNER & JAZZ CRUISE

Tuesday, August 12, 2003
7:00 p.m. – 8:00 p.m. Boarding
8:00 p.m. – 10:00 p.m. Cruising with Dinner

Constructed at Moss Point, Mississippi, the Paddle-wheeler Creole Queen took her maiden voyage on October 1, 1983. She is an authentic paddle-wheeler powered by a 24-foot diameter paddlewheel. You will experience the finest in Southern hospitality as you board the Creole Queen for a leisurely and fun trip down the Mississippi. The sounds of Dixieland fill the air as you step aboard for an adventure back in time. Relive the era when cotton was king while enjoying a lavish Creole buffet. A cruise on the Mississippi is pure New Orleans and pure pleasure! Your ticket purchase benefits the IAFP Foundation Fund.

IAFP FUNCTIONS

NEW MEMBER RECEPTION

Saturday, August 9, 2003 • 4:30 p.m. – 5:30 p.m.

If you recently joined the Association or if this is your first time attending an IAFP Annual Meeting, welcome! Attend this informal reception to learn how to get the most out of attending the Meeting and meet some of today's leaders.

AFFILIATE RECEPTION

Saturday, August 9, 2003 • 5:30 p.m. – 7:00 p.m.

Affiliate officers and delegates plan to arrive in time to participate in this educational reception. Watch your mail for additional details.

COMMITTEE MEETINGS

Sunday, August 10, 2003 • 7:00 a.m. – 5:00 p.m.

Committees and Professional Development Groups (PDGs) plan, develop and institute many of the Association's projects, including workshops, publications, and educational sessions. Share your expertise by volunteering to serve on any number of committees or PDGs.

STUDENT LUNCHEON

Sunday, August 10, 2003 • 12:00 p.m. – 1:30 p.m.

The mission of the Student PDG is to provide students of food safety with a platform to enrich their experience as Members of IAFP. Sign up for the luncheon to help start building your professional network.

OPENING SESSION

Sunday, August 10, 2003 • 7:00 p.m. – 8:00 p.m.

Join us to kick off IAFP 2003 at the Opening Session. Listen to the prestigous Ivan Parkin Lecture delivered by Donald L. Zink, Ph.D., Lead Scientist, Food Processing, FDA, CFSAN, OPDFB, College Park, Maryland. The presentation will be "On the Trail of Food Safety — From the Early Days to the Future."

CHEESE AND WINE RECEPTION

Sunday, August 10, 2003 • 8:00 p.m. – 10:00 p.m.

An IAFP tradition for attendees and guests. The reception begins immediately following the Ivan Parkin Lecture on Sunday evening in the Exhibit Hall.

IAFP JOB FAIR

Sunday, August 10 through Wednesday, August 13, 2003

Employers, take advantage of recruiting the top food scientists in the world! Post your job announcements and interview candidates. Watch for additional information at www.foodprotection.org.

DAYTIME TOURS

NEW ORLEANS SUPER CITY TOUR

Sunday, August 10, 2003 • 9:00 a.m. – 2:00 p.m.

See the landmarks and architecture and listen to the legends and charm that make New Orleans famous! Three hundred years of entertaining history about "America's Most Interesting City" make this tour a visitor's favorite. The tour will begin with Jackson Square, continue along Esplanade Avenue with its splendid architecture, and then on to the "Cities of the Dead" where you'll learn about a most unusual burial system. City Park, Lake Pontchartrain, the New Orleans Yacht Club, the oldest in the US and the Causeway, the longest bridge in the world are next on the agenda. Traveling along the line of the famous St. Charles Avenue Streetcar, the tour will pass Tulane and Loyola Universities and Audubon Park. Better known as "Millionaire's Row", St. Charles Avenue boasts stately mansions and lush tropical gardens. While uptown, enjoy a traditional New Orleans jazz brunch at Dominique's. The tour will brush the edges of the warehouse and business districts enroute back to the Hilton New Orleans Riverside. When this tour draws to an end, guests will have a much deeper understanding of New Orleans and its fascinating history.

SWAMP & BAYOU TOUR

Monday, August 11, 2003 • 9:00 a.m. – 1:00 p.m.

Along with the wondrous alligator, visit a few other Louisiana swamp friends. How about a beautiful ivory white egret (related to the crane) perched on a moss-draped cypress tree searching for an ill-fated catfish? Or a curious raccoon along the bayou's edge gathering his lunch of crawfish while a Louisiana snapping turtle watches him from atop a fallen willow tree? Or a Cajun hunter's cabin with an alligator sunbathing on his weather-beaten wharf? All this and much more will accompany your adventure into the pristine bayous and swamps of Southern Louisiana. Your guide will entertain you with Cajun folklore and Cajun Zydeco music as he skillfully guides your climate-controlled swamp boat beneath the beautiful foliage draped mysteriously across your path. He will bring you into hidden coves which you probably only thought existed on the Discovery Channel. Enjoy lunch in the Gator Den Cafe before leaving Cajun country.

RIVER ROAD PLANTATION TOUR

Tuesday, August 12, 2003 • 9:00 a.m. – 4:00 p.m.

Sit back, relax and enjoy a delightful journey along the River Road, back in time to an era when sugar was king and a massive plantation was a sugar planter's kingdom! A native tour guide will point out sites and tell tales of the bygone antebellum period on the excursion to two magnificent plantations, Oak Alley and San Francisco. Oak Alley is named for the dramatic double row of live oaks interlaced to form a beautiful canopy leading three hundred yards from River Road to the mansion. It is considered to be one of the finest remaining examples of adaptive restoration. Nowhere else in the Mississippi Valley is there such a spectacular setting! Enjoy a luncheon buffet on the grounds before continuing along River Road to bright and colorful San Francisco Plantation. Originally named for its builder, Marmillion, it was renamed as a derivation of the French Slang "sans fruscins" — "without a penny in my pocket," in reference to its high cost to build. Gingerbread galleries and extensive ornamentation mark the exterior while San Francisco's interior is ornate, boasting handcarved woodwork, ceiling paintings, frescos and beveled glass. A tour you will be sure to remember.

NEW ORLEANS SCHOOL OF COOKING

Wednesday, August 13, 2003 • 9:30 a.m. – 1:00 p.m.

Join in the fun in the comfortable atmosphere of a Louisiana homestyle kitchen to learn the secrets of authentic Creole cooking. The City That Care Forgot never forgets about its food, and you will never forget it either. In just three hours, you'll learn to recreate the magic of New Orleans in your own kitchen. Founded in 1980, the cooks at The New Orleans School of Cooking demonstrate basic Creole recipes and share their favorite tips while the rich, spicy aromas float through the air.

HOSPITALITY ROOM

SPOUSE/COMPANION ROOM

Register your spouse/companion and they will have access to the hospitality room where a continental breakfast and afternoon snacks are provided Sunday through Wednesday.

IMPORTANT! Please read this information before completing your registration form.

MEETING INFORMATION

Register to attend the world's leading food safety conference.

Registration includes:

- Technical Sessions
- Symposia
- Poster Presentations
- Ivan Parkin Lecture
- Exhibit Hall Admittance
- Cheese and Wine Reception
- Exhibit Hall Reception
- Program and Abstract Book

4 EASY WAYS TO REGISTER

Complete the Attendee Registration Form and submit it to the International Association for Food Protection by:

Online: www.foodprotection.org

Fax: 515.276.8655

Mail: 6200 Aurora Avenue, Suite 200W, Des Moines, IA 50322-2864, USA

Phone: 800.369.6337; 515.276.3344

The early registration deadline is July 9, 2003. After this date, late registration fees are in effect.

International Association for Food Protection®

REFUND/CANCELLATION POLICY

Registration fees, less a $50 administration fee and any applicable bank charges, will be refunded for written cancellations received by July 25, 2003. No refunds will be made after July 25, 2003; however, the registration may be transferred to a colleague with written notification. Refunds will be processed after August 18, 2003. Event and tour tickets purchased are nonrefundable.

EXHIBIT HOURS

Sunday, August 10, 2003	8:00 p.m. – 10:00 p.m.
Monday, August 11, 2003	9:30 a.m. – 1:30 p.m. 3:00 p.m. – 6:30 p.m.
Tuesday, August 12, 2003	9:30 a.m. – 1:30 p.m.

DAYTIME TOURS

(Lunch included in all daytime tours)

Sunday, August 10, 2003	
New Orleans Super City Tour	9:00 a.m. – 2:00 p.m.
Monday, August 11, 2003	
A Swamp Tour Experience	9:00 a.m. – 1:00 p.m.
Tuesday, August 12, 2003	
River Road Plantation Tour	9:00 a.m. – 4:00 p.m.
Wednesday, August 13, 2003	
New Orleans School of Cooking	9:30 a.m. – 1:00 p.m.

EVENING EVENTS

Sunday, August 10, 2003	
Opening Session	7:00 p.m. – 8:00 p.m.
Cheese and Wine Reception *Sponsored by Kraft Foods North America*	8:00 p.m. – 10:00 p.m.
Monday, August 11, 2003	
Exhibit Hall Reception *Sponsored by Qualicon Inc.*	5:00 p.m. – 6:30 p.m.
Monday Night Social at Mardi Gras World *Sponsored by IGEN International, Inc.*	6:30 p.m. – 10:00 p.m.
Tuesday, August 12, 2003	
Creole Queen Dinner and Jazz Tour Ticket sales will benefit the IAFP Foundation Fund	7:00 p.m. – 10:00 p.m.
Wednesday, August 13, 2003	
Awards Banquet Reception	6:00 p.m. – 7:00 p.m.
Awards Banquet	7:00 p.m. – 9:30 p.m.

HOTEL INFORMATION

For reservations, contact the hotel directly and identify yourself as an International Association for Food Protection Annual Meeting attendee to receive a special rate of $145/$165 per night, single/double. Make your reservations as soon as possible; this special rate is available only until July 9, 2003.

Hilton New Orleans Riverside
Two Poydras St.
New Orleans, Louisiana 70140
800.HILTONS
504.561.0500

International Association for
Food Protection®
6200 Aurora Avenue, Suite 200W
Des Moines, IA 50322-2864, USA
Phone: 800.369.6337 • 515.276.3344
Fax: 515.276.8655
E-mail: info@foodprotection.org
Web site: www.foodprotection.org

Attendee Registration Form

Name (Print or type your name as you wish it to appear on name badge) _____ Member Number: _____

Employer _____ Title _____

Mailing Address (Please specify: ❒ Home ❒ Work) _____

City _____ State/Province _____ Country _____ Postal/Zip Code _____

Telephone _____ Fax _____ E-mail _____

❒ Regarding the ADA, please attach a brief description of special requirements you may have. Member since: _____

❒ IAFP occasionally provides Attendees' addresses (excluding phone and E-mail) to vendors and exhibitors supplying products and services for the food safety industry. If you prefer NOT to be included in these lists, please check the box.

PAYMENT MUST BE RECEIVED BY JULY 9, 2003 TO AVOID LATE REGISTRATION FEES

REGISTRATION FEES:	MEMBERS	NONMEMBERS	TOTAL
Registration (Awards Banquet included)	$ 305 ($355 late)	$ 475 ($525 late)	_____
Association Student Member (Awards Banquet included)	$ 52 ($ 62 late)	Not Available	_____
Retired Association Member (Awards Banquet included)	$ 52 ($ 62 late)	Not Available	_____
One Day Registration:* ❒ Mon. ❒ Tues. ❒ Wed.	$ 170 ($195 late)	$ 235 ($260 late)	_____
Spouse/Companion* (Name): _____	$ 50 ($ 50 late)	$ 50 ($ 50 late)	_____
Children 15 & Over* (Names): _____	$ 25 ($ 25 late)	$ 25 ($ 25 late)	_____
Children 14 & Under* (Names): _____	FREE	FREE	_____
*Awards Banquet not included			

EVENTS:		# OF TICKETS	
Student Luncheon (Sunday, 8/10)	$ 5 ($ 10 late)	_____	_____
Monday Night Social at Mardi Gras World (Monday, 8/11)	$ 39 ($ 44 late)	_____	_____
Children 14 and under	$ 34 ($ 39 late)	_____	_____
Creole Queen Dinner and Jazz Tour (Tuesday, 8/12)	$ 70 ($ 75 late)	_____	_____
Awards Banquet (Wednesday, 8/13)	$ 50 ($ 55 late)	_____	_____

DAYTIME TOURS: (Lunch included in all daytime tours)			
New Orleans Super City Tour (Sunday, 8/10)	$ 69 ($ 74 late)	_____	_____
A Swamp Tour Experience (Monday, 8/11)	$ 68 ($ 73 late)	_____	_____
River Road Plantation Tour (Tuesday, 8/12)	$ 70 ($ 75 late)	_____	_____
New Orleans School of Cooking (Wednesday, 8/13)	$ 48 ($ 53 late)	_____	_____

PAYMENT OPTIONS:

❒ Check Enclosed ❒ VISA ❒ MasterCard ❒ Discover

TOTAL AMOUNT ENCLOSED $ _____
US FUNDS on US BANK

Account Number _____ Expiration Date _____

Name on Card _____

Signature _____

JOIN TODAY AND SAVE!!!
(Attach a completed Membership application)

EXHIBITORS DO NOT USE THIS FORM

Workshops

Sponsored by
International Association for Food Protection®

Workshop 1
Assuring Confidence in Laboratory Data

This workshop will present principals for understanding and implementing microbial control in a food production environment by providing skills to address limitations in your current laboratory testing and documentation. You will learn, in an interactive environment, how to perform effectively sound food and environmental sampling and microbial testing that can be implemented into your standard operating procedures and will conform to today's QA and ISO requirements. Workshop participants will review and discuss material from practical case studies and present their findings to the group in an informal presentation that will facilitate open discussion. Workshop includes a binder of tools and references to reinforce the practical experience gained from the workshop.

Workshop Topics

- Outsourcing/Auditing: What should you expect from an outside food-testing laboratory relative to quality systems and capabilities
- Laboratory quality assurance and preparing your laboratory to address ISO 17025
- Microbial control: where and how raw ingredient and finished product testing fit into the big picture
- Microbial control: where and how environmental/investigational sampling fit into the big picture
- Practical approaches to incorporating rapid methods into the laboratory
- IQ, OQ, PQ: what food companies can learn from pharmaceutical validation principals
- Using data management and trend analysis techniques to drive continuous improvement

Instructors

Robert Behling, Independent Consultant, Madison, WI

Jay Ellingson, Marshfield Laboratories, Marshfield, WI

Robert Ferer, Vectech Pharmaceutical Consultants, Inc. Farmington Hills, MI

W. Payton Pruett, Jr., Ph.D., ConAgra Refrigerated Prepared Foods, Downers Grove, IL

Cindy Ryan, Nestlé USA, Dublin, OH

Michael Sole, Canadian Food Inspection Agency, Ottawa, Ontario, Canada

Organizers and Instructors

Patricia Rule, bioMérieux, Inc., Hazelwood, MO

Jeff Kornacki, Ph.D., University of Georgia, Griffin, GA

Who Should Attend?

Laboratory managers, supervisors, scientists and technicians responsible for product sampling, as well as performing and documenting microbial tests in a food production environment.

Hours for Workshop

Friday August 8, 2003	Saturday August 9, 2003
Registration – 7:30 a.m. Continental Breakfast	7:30 a.m. Continental Breakfast
Workshop – 8:00 a.m. – 5:00 p.m. (Lunch Provided)	**Workshop –** 8:00 a.m. – 4:00 p.m. (Lunch Provided)

Workshop II
A Hands-on Course in Quantitative Microbial Risk Assessment

This workshop will cover fitting data to statistical distributions, creating and using predictive models in risk assessment, developing a process risk model, using sensitivity analysis, and testing proposed mitigations to reduce risk. Over the course of the workshop, the participants will build an actual working quantitative microbial risk assessment in Excel (Microsoft Corporation) using BestFit and @Risk software (Palisades Corporation).

Participants will build, run, interpret, and determine the impact of various changes to the model. Two-way risk model will be run to show the value of separating variability and uncertainty in quantitative risk assessment. Students will learn to determine whether additional data, better process control or a redesigned process will produce the greatest reduction in risk.

You are encouraged to bring actual data and real world problems to the workshop, but a fictitious example will also be developed during the workshop. Each participant is also strongly encouraged to bring his or her own laptop (with CD drive) and have a working copy of Excel (Microsoft Corp.). Thirty-day demonstration copies of BestFit and @Risk software (Palisades Corporation) will be provided.

Workshop Topics

- Overview of QRA
- Fitting data to distributions
- Use of predictive modeling in QRA
- Building a process risk model in Excel
- Conducting a sensitivity analysis
- Separating variability and uncertainty in QRA
- Hands on exercise:
  - Distributions
  - Modeling
  - Process Risk Model
  - Sensitivity Analysis
  - Variability and Uncertainty

Organizers and Instructors

Don Schaffner, Ph.D., Rutgers University, New Brunswick, NJ

Richard Whiting, Ph.D., Food and Drug Administration, Center for Food Safety and Applied Nutrition, College Park, MD

Who Should Attend?

This workshop will serve as an "advanced introduction" intended for anyone interested in gaining direct hands-on experience with tools and techniques used in quantitative microbial risk assessment.

Hours for Workshop

Friday August 8, 2003	Saturday August 9, 2003
Registration – 12:30 p.m.	7:30 a.m. Continental Breakfast
Workshop – 1:00 p.m. – 5:00 p.m.	**Workshop –** 8:00 a.m. – 5:00 p.m. (Lunch Provided)

Workshop I
Assuring Confidence in Laboratory Data

	Early Rate	Late Rate
IAFP Member	$525.00	$600.00
Non-Member	$625.00	$700.00

Workshop II
A Hands-on Course in Quantitative Microbial Risk Assessment

	Early Rate	Late Rate
IAFP Member	$315.00	$390.00
Non-Member	$415.00	$490.00

Continued on next page

Workshop Registration Form

Friday–Saturday, August 8-9, 2003

Workshop I: Assuring Confidence in Laboratory Data

Workshop II: A Hands-on Course in Quantitative Microbial Risk Assessment

First Name (will appear on badge)

Last Name

Company | Job Title

Address | City

State/Province | Country | Postal Code/Zip + 4

Area Code & Telephone | Fax

E-mail | Member #

❒ Check Enclosed ❒ VISA ❒ ❒ MasterCard

Total Amount Enclosed (US Funds on US Bank) $ _____

Credit Card # _____

Signature _____ **Expiration date** _____

Register by July 18, 2003 to avoid late registration fees

Registration

WORKSHOP I: Assuring Confidence in Laboratory Data	Early Rate	Late Rate
IAFP Member	$525.00	$600.00
NonMember	$625.00	$700.00

WORKSHOP II: A Hands-on Course in Quantitative Microbial Risk Assessment	Early Rate	Late Rate
IAFP Member	$315.00	$390.00
NonMember	$415.00	$490.00

GROUP DISCOUNT:
Register 3 or more people from your company and receive a 15% discount. Registrations must be received as a group.

Refund/Cancellation Policy

Registration fees, less a $50 administrative charge, will be refunded for written cancellations received by July 25, 2003. No refunds will be made after that date; however, the registration may be transferred to a colleague with written notification. Refunds will be processed after August 18, 2003. The workshop may be cancelled if sufficient enrollment is not received by July 18, 2003.

For further information, please contact the Association office at 800.369.6337; 515.276.3344; Fax: 515.276.8655; E-mail: jcattanach@foodprotection.org.

4 Easy Ways to Register

To register, complete the Workshop Registration Form and submit it to the International Association for Food Protection by:

Online: www.foodprotection.org

Phone: 800.369.6337; 515.276.3344

Fax: 515.276.8655

Mail: 6200 Aurora Avenue, Suite 200W, Des Moines, IA 50322-2864

IAFP Student Professional Development Group T-shirts

Back center of T-shirt.

The IAFP Student Professional Development Group (SPDG) will be selling T-shirts at the Annual Meeting in New Orleans in August. Pre-ordered shirts are $13 and will be available for pick up from the SPDG booth throughout IAFP 2003. All order forms are due by June 15th. If you have any questions, please contact Renee Raiden (rraiden@vt.edu) or Megan Hereford (mherefor@vt.edu).

IAFP SPDG T-Shirt Order Form

Please return order form to the following address:

Renee Raiden
Virginia Tech
22 FST Building
Blacksburg, VA 24061

If you choose to pay by credit card, please make sure you include the amount to be charged. If you are paying by check, please make checks payable to IAFP and remember to enclose the check with your order form! Please mail order forms and checks by June 15, 2003 for pre-orders!

Name _____ Title _____

Address _____

City _____ State or Province _____

Country _____ Postal/Zip Code _____

Telephone _____ E-mail _____

Quantity _____ **T-shirts** S ❑ M ❑ L ❑ XL ❑ **Total** _____

US FUNDS on US BANK

METHOD OF PAYMENT:

❑ Check or Money Order Enclosed ❑ VISA ❑ MasterCard ❑

Credit Card # _____

Exp. Date _____ Signature _____

All checks payable to IAFP. Credit card orders will be paid to the International Association for Food Protection and will not be charged until June 15, 2003.

Contribute to the Sixth Annual Foundation Fund Silent Auction Today!

The Foundation of the International Association for Food Protection will hold its Annual Silent Auction during IAFP 2003, the Association's 90th Annual Meeting in New Orleans, Louisiana, August 10 –13, 2003. The Foundation Fund supports the:

* Ivan Parkin Lecture
* Travel support for exceptional speakers at the Annual Meeting
* Audiovisual Library
* Developing Scientist Competition
* Shipment of volumes of surplus *JFP* and *FPT* journals to developing countries through FAO in Rome

Support the Foundation by donating an item today. A sample of items donated last year included:

* Black Tahitian Pearl Necklace
* Food Safety Information Handbook
* Hand Crocheted Table Coverings
* Stadium Blanket with IAFP Logo
* Zoo Wall Hanging
* Oscar Mayer Remote Controlled Wiener Mobile
* 2001 United States Congressional Ornament
* Wine
* Cougar Gold Cheese
* Missouri Ham

Complete the form and send it in today.

Description of Auction Items _____

Estimated Value _____

Name of Donor _____

Company (if relevant) _____

Mailing Address _____
(Please specify: ❒ Home ❒ Work)

City _____ State or Province _____

Postal Code/Zip + 4 _____ Country _____

Telephone # _____ Fax # _____

E-mail _____

Return to:

Donna Gronstal
International Association for Food Protection
6200 Aurora Avenue, Suite 200W
Des Moines, IA 50322-2864, USA
800.369.6337; 515.276.3344
Fax: 515.276.8655
E-mail: dgronstal@foodprotection.org

International Association for Food Protection®

Promotional Opportunities

Advertising and sponsorship opportunities are available to enhance the promotion of your organization.

Sponsorships

We invite you to participate as a sponsor for IAFP 2003. Sponsorship participation provides an excellent opportunity to position your company or organization as a supporter of the Association.

Please review the event listing to select the one that will best position your organization. Reservations will be taken in order received for any open sponsorship events. A waiting list for events with a right of first option will be established.

Sponsorship Event List

Amount	Event
$16,000	Monday Evening Social
$15,000	Opening Reception (Sunday)
$14,000	Exhibit Hall Reception (Monday)
$10,000	President's Reception (Tuesday)
$7,500	Badge Holders w/Lanyards
$5,000	Exhibit Hall Pastries and Coffee (Monday Morning)
$3,000	Exhibit Hall Coffee Break (Monday Afternoon)
$5,000	Exhibit Hall Pastries and Coffee (Tuesday Morning)
$3,000	Coffee Break (Tuesday Afternoon)
$3,000	Coffee Break (Wednesday Morning)
$2,500	Coffee Break (Wednesday Afternoon)
$3,500	Notepads with Sponsor's Logo
$3,500	Spouse/Companion Hospitality Room
$3,500	Student PDG Luncheon (Sunday)
$2,500	IAFP New Member Orientation (Saturday)
$3,000	Affiliate Reception (Saturday)
$2,000	Awards Banquet Flowers (Wednesday)
$1,750	Committee Day Refreshments (Sunday)
$1,500	Exhibitor Move-in Refreshments (Sunday)
$1,000	Speaker Travel Support

Partial sponsorship for the above events is available.

Contact David Larson for details.
Phone: 515.440.2810
Fax: 515.440.2809
E-mail: larson6@earthlink.net

Sponsorship Participant

Name _____

Company _____

Address _____

City _____ State or Province _____

Country _____ Postal Code/Zip + 4 _____

Phone _____ Fax _____

E-mail _____

Desired Event to Sponsor _____

Amount Paid $ _____
U.S. Funds on U.S. Bank

Return form to:
IAFP
6200 Aurora Ave., Suite 200W
Des Moines, IA 50322-2864
Phone: 515.276.3344
Fax: 515.276.8655
E-mail: info@foodprotection.org

Payment: ❑ Check ❑ Mastercard ❑ VISA ❑ American Express

Account Number _____

Expiration Date _____

Cardholder Signature _____

COMING EVENTS

JULY

- **6-9, Home Economics International Consumer Science Conference,** University of Wales Institute, Cardiff, Wales. For more information, contact Ms. Zoe Fearn at 44.29.2041. 6306; E-mail: zfearne@uwic. ac.uk.
- **9-10, 2003 Hawaii Lodging, Hospitality and Foodservice Expo 2003,** Honolulu, HI. For more information, contact Ken Kanter at 800.525.5275; E-mail: kanter@lava.net.
- **12-16, IFT Annual Meeting,** McCormick Place South, Chicago, IL. For more information, contact James N. Klapthor at 312.782.8424 Ext. 231; E-mail: jnklapthor@ift.org.
- **14-15, HACCP I: Documenting HACCP Prerequisites,** Guelph Food Technology Centre, Guelph, Ontario, Canada. For more information, contact Marlene Inglis at 519.821.1246; E-mail: minglis@gftc.ca.
- **16-18, HACCP II: Developing your HACCP Plan,** Guelph Food Technology Centre, Guelph, Ontario, Canada. For more information, contact Marlene Inglis at 519.821.1246; E-mail: minglis@gftc.ca.
- **16-20, 12th World Congress of Food Science and Technology,** Chicago, IL. For more information, visit the Congress site at www.world congress.org.
- **20-23, 6th Annual Foodborne Pathogen Analysis,** TradeWinds Island Grand Resort, St. Pete Beach, FL. For more information, contact Peggy Melton at 850.414.0408; E-mail: meltonp@doacs.state.fl.us.
- **22-23, Practical Biosecurity Workshop,** Randolph Associates, Inc., Birmingham, AL. For more information, call 205.595.6455; E-mail: us@randolphconsulting.com.
- **31-Aug. 1, FSIS Verification of HACCP Plans: A Meat and Poultry Industry Workshop,** Washington, D.C. For more information, call 202.393.0890; E-mail: fpi@nfpa-food.org.
- **31-Aug. 3, American Cheese Society National Conference,** San Francisco, CA. For more information, call 502.583.3783; Web site: acs@hqtrs.com.

AUGUST

- **8-9, IAFP 2003 Workshops,** Hilton New Orleans Riverside, New Orleans, LA.
  Workshop I – Assuring Confidence in Laboratory Data.
  Workshop II – A Hands-on Course in Quantitative Microbial Risk Assessment.
  See page 528 of this issue for additional workshop information.
- **10-13, IAFP 2003, the Association's 90th Annual Meeting,** Hilton New Orleans Riverside. For more information, contact Julie Cattanach at 515.276.3344; E-mail: jcattanach@foodprotection.org.
- **24-27, International Dairy Federation 2nd World Symposium of Dairy Products in Human Health and Nutrition,** Melbourne, Australia. For more information, contact Pamela Tyers at 61.3.9731.3484; E-mail: Pamela.tyers@foodscience.afisc.csiro.au.
- **26, Microbiology II: Sanitation,** Guelph Food Technology Centre, Guelph, Ontario, Canada. For more information, contact Marlene Inglis at 519.821.1246; E-mail: minglis@gftc.ca.

SEPTEMBER

- **4, HACCP: A Management Summary,** GFTC, Guelph, Ontario, Canada. For more information, call 519.821.1246; E-mail: gftc@gftc.ca.
- **7-12, International Meeting on Radiation Processing (IMRP) 2003,** Chicago, IL. For more information, contact Patty Brewer at 814.870.8483.
- **10-14, International Food, Drink and Technology Exhibition,** National Expocenter of Ukraine, Kiev. For more information, contact Ken Cardelle at 203.357.1400; E-mail: Kcardelle@iegexpo.com.
- **15-16, HACCP I: Documenting Your HACCP Prerequisites,** GFTC, Guelph, Ontario, Canada. For more information, call 519.821.1246; E-mail: gftc@gftc.ca.
- **16-17, Upper Midwest Dairy Industry Association Annual Meeting,** Holiday Inn, St. Cloud, MN. For more information, contact Paul Nierman at 763.785.0484.
- **17-18, Wisconsin Association for Food Protection Joint Education Conference,** Holiday Inn, Fond du Lac, WI. For more information, contact Randy Daggs at 608.837.2087.
- **17-19, HACCP II: Developing Your HACCP Plan,** GFTC, Guelph, Ontario, Canada. For more information, call 519.821.1246; E-mail: gftc@gftc.ca.
- **24, Wyoming Environmental Health Association Annual Fall Meeting,** Holiday Inn, Cheyenne, WY. For more information, contact Bryan Grapes at 307.532.4208.
- **29-Oct. 1, Canadian Institute of Public Health Inspectors (CIPHI) Ontario Branch 64th Annual Educational Conference,** Waterloo Inn and Conference Centre, Waterloo, Ontario, Canada. For more information, contact Ken Diplock at 519. 883.2008 ext. 5435; E-mail: dken@region.waterloo.on.ca.

OCTOBER

- **1-4, The 5th International Symposium on the Epidemiology and Control of Foodborne Pathogens in Pork,** Creta Maris Hotel, Hersonissos, Heraklion, Crete, Greece. For more information, call 30.210.749.93.00; E-mail: congress@triaenatours.gr.

IAFP UPCOMING MEETINGS

AUGUST 10-13, 2003
New Orleans, Louisiana

AUGUST 8-11, 2004
Phoenix, Arizona

AUGUST 14-17, 2005
Baltimore, Maryland

AUGUST 13-16, 2006
Calgary, Alberta, Canada

COMING EVENTS

- **6-10, Dairy Technology Workshop** Randolph Associates, Inc., Nashville, TN. For more information, call 205.595.6455; E-mail: us@randolphconsulting.com.
- **7-8, Associated Illinois Milk, Food and Environmental Sanitarians Annual Fall Meeting,** Stoney Creek Hotel, Peoria, IL. For more information, contact John Ellingson at 815.490.5523.
- **8-11, Second International Symposium on Sourdough,** Brussels, Belgium. For more information, call 32.16.204035; E-mail: aacc@scisoc-europe.org.
- **14, SQF Systems Awareness Training,** GFTC, Guelph, Ontario, Canada. For more information, call 519.821.1246; E-mail: gftc@gftc.ca.
- **19-22, University of Wisconsin-River Falls 23rd Annual Food Microbiology Symposium,** (Current Concepts in Foodborne Pathogens and Rapid and Automated Methods in Food Microbology), University of Wisconsin-River Falls. For more information, contact the University of Wisconsin-River Falls Animal and Food Science Dept. at 715.425.3704; E-mail: foodmicro@uwrf. edu.
- **27-28, HACCP IV: Validation and Verification of Your HACCP Plan,** GFTC, Guelph, Ontario, Canada. For more information, call 519.821.1246; E-mail: gftc@gftc.ca.
- **28-30, North Dakota Environmental Health Association Annual Fall Meeting,** Spirit Lake Resort, Devil's Lake, ND. For more information, contact Debra Larson at 701.328.6150.
- **29-30, HACCP V: Effective Auditing of Your HACCP Plan,** GFTC, Guelph, Ontario, Canada. For more information, call 519.821.1246; E-mail: gftc@gftc.ca.
- **29-30, Iowa Association for Food Protection Annual Fall Meeting,** Ames, IA. For more information, contact Phyllis Borer at 712.754.2511, ext. 33.
- **29-Nov. 1, Worldwide Food Expo,** McCormick Place, Chicago, IL. For general information, contact Pamela Morrison at 202.220.3532 or go to www. wwfe@idfa.org.

NOVEMBER

- **24-25, HACCP III: Train the Trainer,** GFTC, Guelph, Ontario, Canada. For more information, call 519.821.1246; E-mail: gftc@gftc.ca.
- **24-26, HACCP Principles: Guidelines for Implementation & Use,** GFTC, Guelph, Ontario, Canada. For more information, call 519.821.1246; E-mail: gftc@gftc.ca.
- **27-28, SQF 1000/2000^{CM} Systems Training,** GFTC, Guelph, Ontario, Canada. For more information, call 519.821.1246; E-mail: gftc@gftc.ca.

CAREER SERVICES SECTION

3-A Sanitary Standards Seeking Director of Technical Affairs

3-A Sanitary Standards, Inc. is seeking a Director of Technical Affairs for this new national association representing food equipment manufacturers, sanitarians and food processing organizations. Candidates must have a technical degree, preferably in food science or engineering; experience with ANSI or other major standards development protocols; a successful track record in association or business with a focus on innovative, technology-based approaches to new systems, procedures and value-added services; strong leadership and project management skills; and excellent technical writing/editing skills. Experience in business, publishing and marketing aspects of standards and technical products also desirable. Salary range: mid-50s.

Send cover letter and resume by June 15 to:

3-A Sanitary Standards Inc.
1451 Dolley Madison Boulevard, Suite 210
McLean, Virginia 22101-3850
www.3-a.org
E-mail: trugh@3-a.org

CAREER SERVICES SECTION

List your open positions in *Food Protection Trends*. Special rates for this section provide a cost-effective means for you to reach the leading professionals in the industry. Call today for rate information.

Ads appearing in *FPT* will be posted on the Association Web site at www.foodprotection.org at no additional cost.

Send your job ads to Donna Bahun at dbahun@foodprotection.org or to the Association office: 6200 Aurora Ave., Suite 200W, Des Moines, IA 50322-2864; Phone: 800.369.6337; 515.276.3344; Fax: 515.276.8655.

International Association for Food Protection®

ADVERTISING INDEX

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Reg. U.S. Pat. Off.

Vol. 66 **June 2003** **No. 6**

* Asterisk indicates author for correspondence.

AUDIOVISUAL LIBRARY ORDER FORM

The use of the Audiovisual Library is a benefit for **Association Members only.** Limit your requests to five videos. Material from the Audiovisual Library can be checked out for 2 weeks only so that all Members can benefit from its use.

International Association for Food Protection®
6200 Aurora Avenue, Suite 200W
Des Moines, IA 50322-2864, USA
Phone: 800.369.6337; 515.276.3344;
Fax: 515.276.8655
E-Mail: info@foodprotection.org
Web Site: www.foodprotection.org

Member # _____

First Name _____ M.I. _____ Last Name _____

Company _____ Job Title _____

Mailing Address _____

Please specify: ❒ Home ❒ Work

City _____ State or Province _____

Postal Code/Zip + 4 _____ Country _____

Telephone # _____ Fax # _____

E-Mail _____ Date Needed _____

PLEASE CHECK BOX NEXT TO YOUR VIDEO CHOICE

(Allow 4 weeks minimum from date of request.)

DAIRY

- ❒ D1180 10 Points to Dairy Quality
- ❒ D1010 The Bulk Milk Hauler: Protocol & Procedures
- ❒ D1030 Cold Hard Facts
- ❒ D1040 Ether Extraction Method for Determination of Raw Milk
- ❒ D1060 Frozen Dairy Products
- ❒ D1070 The Gerber Butterfat Test
- ❒ D1080 High-Temperature, Short-Time Pasteurizer
- ❒ D1090 Managing Milking Quality
- ❒ D1100 Mastitis Prevention and Control
- ❒ D1110 Milk Plant Sanitation: Chemical Solution
- ❒ D1120 Milk Processing Plant Inspection Procedures
- ❒ D1130 Pasteurizer – Design and Regulation
- ❒ D1140 Pasteurizer – Operation
- ❒ D1150 Processing Fluid Milk (slides)

ENVIRONMENTAL

- ❒ E3010 The ABCs of Clean – A Handwashing & Cleanliness Program for Early Childhood Programs
- ❒ E3020 Acceptable Risks²
- ❒ E3030 Air Pollution: Indoor
- ❒ E3040 Asbestos Awareness
- ❒ E3055 Effective Handwashing–Preventing Cross-Contamination in the Food Service Industry
- ❒ E3060 EPA Test Methods for Freshwater Effluent Toxicity Tests (Using Ceriodaphnia)
- ❒ E3070 EPA Test Methods for Freshwater Effluent Toxicity Tests (Using Fathead Minnow Larva)
- ❒ E3075 EPA: This is Superfund
- ❒ E3080 Fit to Drink
- ❒ E3110 Garbage: The Movie
- ❒ E3120 Global Warming: Hot Times Ahead
- ❒ E3130 Kentucky Public Swimming Pool & Bathing Facilities
- ❒ E3135 Plastic Recycling Today: A Growing Resource
- ❒ E3140 Putting Aside Pesticides
- ❒ E3150 Radon
- ❒ E3160 RCRA – Hazardous Waste
- ❒ E3161 Sanitation Video
- ❒ E3170 The New Superfund: What It is & How It Works–(1) Changes in the Remedial Process: Clean-up Standards & State Involvement Requirements
- ❒ E3180 The New Superfund: What It is & How It Works–(2) Changes in the Removal Process: Removal & Additional Program Requirements
- ❒ E3190 The New Superfund: What It is & How It Works – (5) Enforcement and Federal Facilities
- ❒ E3210 The New Superfund: What It is & How It Works – (4) Emergency Preparedness & Community Right-to-Know
- ❒ E3220 The New Superfund: What It is & How It Works – (5) Underground Storage Tank Trust Fund & Response Program
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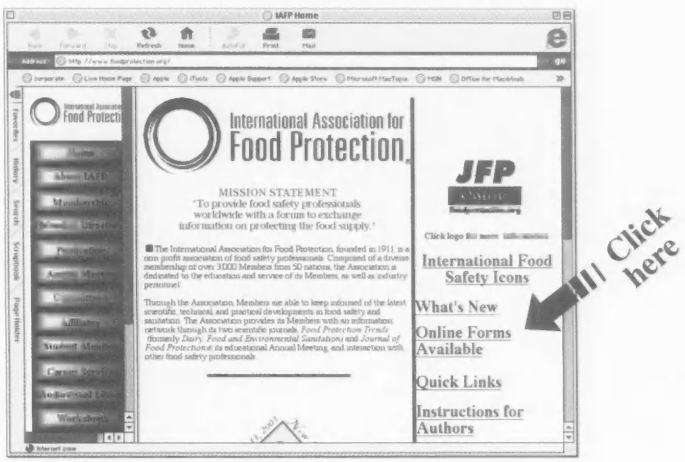

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