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Food Protection Trends

Science and News from the International Association for Food Protection

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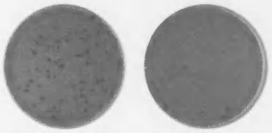

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FOOD PROTECTION TRENDS

VOLUME 28, NO. 11

ARTICLES

ASSOCIATION NEWS

DEPARTMENTS

EXTRAS

Erratum

In the September issue of FPT on page 659, Figure 2 was incorrect. We have placed the correct Figure 2 on page 770 of this issue. We apologoize to the author for any inconvenience this may have caused.

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

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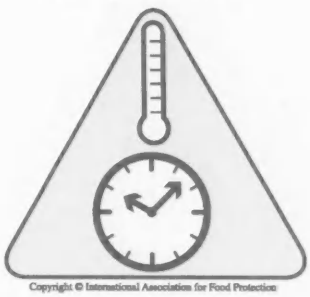

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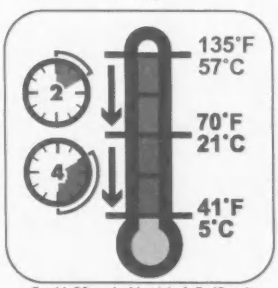

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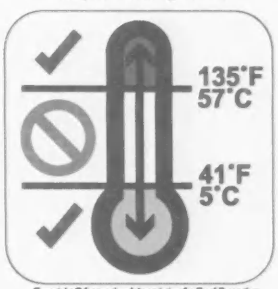

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"PERSPECTIVES" FROM YOUR PRESIDENT

By STAN BAILEY
PRESIDENT

"The global nature of our food supply requires that we not only pay attention to outbreaks in our country but also be concerned about imported foods and food ingredients"

Food safety is clearly an international issue. I have had the opportunity to visit numerous countries in the past year, and everywhere I go there seems to be new food safety challenges. The situations listed below are in no way meant to be a comprehensive list but are meant to be representative of the complexity of the global food safety issues we are facing.

As I write this column, I am in Korea helping to plan the Asian IAFP meeting for next year. The past year in Korea has seen a significant increase in viral infections associated with food. Later this week I will be attending the China International Food Safety and Quality meeting in Beijing where China is in the middle of a significant food safety event. At this time, China's Health Ministry has reported that four children have died and about 13,000 children have been hospitalized, while another 40,000 have undergone outpatient treatment for illnesses related to suspected melamine-tainted milk products. In the past year, there have been numerous outbreaks of *E. coli* O157:H7, *Salmonella*, *Vibrios*, and *Listeria monocytogenes* in the United States, Europe, and other countries.

No matter where they live, consumers and food safety professionals are concerned about these outbreaks. The global nature of our food supply requires that we not only pay attention to outbreaks in our country but also be concerned about imported foods and food ingredients. An example of the large-scale import/export of foods can be seen in the United States where sourcing of food ingredients and commodities from outside of the US has grown dramatically. In 2007, over $70 billion worth of foodstuffs were imported including large increases in imports from developing countries (Mexico/Central America – $13.2B, South America – $9.0B, China/Asia – $10.9B, Africa – $ 1.6B, Middle East – $ 0.8B). With the significant movement of food around the globe, a contamination event in any country has the potential to affect consumers in many other countries.

There are different concerns and considerations for developed and developing countries food safety programs. Most developed countries think their food safety systems and regulatory oversight are superior to that in other countries. There are also situations where food safety regulations or standards have been used, fairly or sometimes unfairly, as trade barriers. These divergent regulations and varied political considerations highlight the need for harmonious reconciliation of differences.

The challenge is to harmonize these numerous local regulations in a way that will allow efficient import/export, while still protecting the food supply for all consumers. How can harmonization of these regulations be achieved? First, the regulations must be scientifically valid and defensible. Second, where there are differences of opinion, the regulators in the different countries need to be able to communicate effectively and work together to resolve their differences. When there are impasses between countries, Codex Alimentarius may become involved in resolving disputes. The Codex Alimentarius Commission was created in 1963 by FAO (Food and Agriculture Organization) and WHO (World Health Organization) to develop food standards, guidelines, and related texts such as codes of practice

under the Joint FAO/WHO Food Standards Program. The main purposes of this Program are protecting health of the consumers and ensuring fair trade practices in the food trade, and promoting coordination of all food standards work undertaken by international governmental and non-governmental organizations.

An even greater challenge to global food safety is the production and processing of foods in developing countries where the food safety programs and regulatory oversight is not as well developed. Because of the large areas of farmable land and cheap labor in these developing countries, the production and importation of foods from these areas will likely continue to grow in the coming years. As the local governments and regulatory agencies in these developing countries work to improve their oversight, importing countries and global food companies will need to verify the safety of the production systems and the final food products. There will need to be increased onsite monitoring activities by regulators from the importing countries. Because there are so many different countries and locations exporting foods, this will also require the use of certified integrated third party companies or individuals to monitor the local production of foods.

Just as no single country has all the regulatory and oversight answers, no one country has all of the research and food safety production and processing technologies. Conducting research and developing new and effective technologies is not easy or cheap. There are many bright food safety researchers in universities, government agencies, and private industries in different countries of the world. Efficient use of limited research funds will best be achieved through effective communication of research initiatives, collaborative research projects, and timely sharing of research results. Clearly, to maximize the return on our food safety investments we must do a better job of communication. What better place to share this knowledge than IAFP.

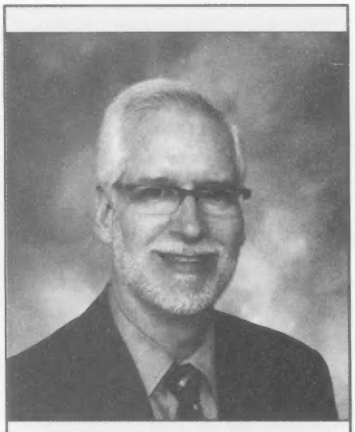
The International Association for Food Protection (IAFP) is dedicated to advancing food safety worldwide. I invite you to join me and other food safety professionals from around the world: in Lisbon, Portugal, November 19–21, 2008 for IAFP's Fourth Annual European Symposium on Food Safety; in Grapevine, Texas, July 12–15, 2009 for the 96th Annual Meeting of IAFP; and in Seoul, Korea, November 12–13, 2009 for IAFP's First Asian Symposium on Food Safety.

"COMMENTARY" FROM THE EXECUTIVE DIRECTOR

November's *Food Protection Trends* has extensive coverage of everything that happened at IAFP 2008 in Columbus, Ohio. For anyone who was unable to attend this year's Annual Meeting, the printed recap will fill you in on what you missed; for those who were in attendance, the review will bring back great memories of things learned, people met and new relationships established! Our coverage begins on page 771 with pictures and a conference overview.

Allow me to take just a moment to thank everyone who assisted in making IAFP 2008 a grand success. First off, the Ohio Association of Food and Environmental Sanitarians were outstanding in their efforts to welcome attendees and in assisting our staff with many details of conducting this Annual Meeting. We sincerely appreciate their efforts. For our speakers, convenors and organizers; we could not do it without your expertise. Each year the meeting content only gets better and this is due to your dedicated work. We recognize the amount of time and frankly, the expense that all of our speakers and session developers go to for the benefit of IAFP and our attendees. Without your efforts, we would not have the necessary content that attracts people to attend!

Now back to our review. There are a number of items that I look forward to reading in our Annual Meeting recap each year so I'll point them out to you. The first area of interest for me is from our Student Travel Scholarship Recipients. Each year, we ask those special students to write a short synopsis of their experience at IAFP's Annual Meeting and what the scholarship meant to them. Most of the time the students include high points and areas that held their particular interest during the conference. You can read their view on IAFP 2008 beginning on page 808. This year we had six students scheduled to attend IAFP 2008, but one encountered travel problems and was not able to attend. For Christopher Njoku, we will sponsor his travel to our European Symposium. We look forward to meeting Christopher in Lisbon at the end of November.



By DAVID W. THARP, CAE
EXECUTIVE DIRECTOR

"There are a number of items that I look forward to reading in our Annual Meeting recap each year"

The next section that catches my interest are the Committee minutes (see page 836) and the Board responses to the Committee recommendations (see page 858). If you really want to learn the inner workings of the Association, these two documents can fill you in on so many projects – whether they are in the planning phase, are well developed and in process, or if they are nearing completion or even completed. In addition, these reports can give insight into the work that each Committee or Professional Development Group (PDG) is performing. By reading those that might interest you, you could find that there are undertakings that you could become actively involved with. If you do find interest in a particular project, either contact the IAFP office or the Committee or PDG Chairperson directly.

Another area of interest in the Annual Meeting recap is the review of our Award recipients. This begins on page 776. Each year, IAFP Members put forth remarkable efforts to recognize their fellow colleagues. Knowing the active involvement of these selected Members makes it all the more interesting for me to read about their accomplishments. The majority of the time, IAFP Members who are so very active with IAFP are also active

in many other fine organizations, both professional and civic. It is fun for me to learn about their "lives outside of IAFP!" Maybe you too can learn something about a special colleague that you didn't know before.

In addition to these items, our review of IAFP 2008 also includes extended abstracts from the Ivan Parkin Lecture (by Russell Flowers) and the John H. Silliker Lecture (by Michael Doyle) along with a summary from each symposium and technical session. I should note that we owe a debt of gratitude to our Student PDG for coordinating this effort as they have done this now for about seven years. It is really nice to have a summary of what took place at each session from the Annual Meeting.

Other things that are incorporated in this issue include the Black Pearl Recipient's executive summary, Minutes from the Annual Business Meeting, and a list of this year's Exhibitors. Additionally, there is a list of our Special Contributors and Sponsors. This is a good time to thank each of our Exhibitors for their support and especially to thank our Special Contributors and Sponsors. The financial support derived from these sources helps to keep our registration fees most affordable.

Allow me to conclude with a few statistics from IAFP 2008. We had 1,843 attendees from 38 countries and 45 states. Eight-five percent were from North America (including 4% from Canada and 2% from Mexico) leaving 15% from outside of North America. The highest number of International attendees arrived from Korea. There were 105 exhibiting companies or organizations filling 134 booth spaces.

Plans are well underway for IAFP 2009 in Grapevine, Texas (Dallas–Fort Worth area). The meeting dates are July 12–15. We expect registration will open in early February with housing to open in December. Members will receive E-mail notification on both events. We look forward to seeing you next July in Texas!

ARTICLES

Food Protection Trends, Vol. 28, No. 11, Pages 760–764

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

International Association for Food Protection

Biofilm Formation of *Listeria monocytogenes* on Various Conveyor Belt Surfaces

SHANKAR PITCHIAH, CHRISTINE Z. ALVARADO* and MINDY M. BRASHEARS
Dept. of Animal and Food Sciences, Texas Tech University, Box 4214, Lubbock, TX 79409, USA

SUMMARY

Biofilm formation depends on many factors, including the number of bacteria and the amount of debris lodged on processing belts during production. This study compared different processing belts and mesh sizes (stainless steel single-loop 80% mesh, stainless steel balance-weave 70% mesh, polypropylene meshtop 24% mesh, polypropylene 48% mesh, acetal 3.2% mesh, and polyurethane with monoester polyethylene fabric-canvas < 1% mesh) with regard to their effects on the ability of *Listeria monocytogenes* to form biofilms. This important information can be used in selecting conveyor belts for environments in which ready-to-eat products are produced. Biofilms were formed on test surfaces of each belt over 2, 3 and 4 days in Trypticase Soy Broth at 10°C. Surface attached cells were removed by agitation and the numbers of attached cells were determined on Brain Heart Infusion Agar. Variation of belt size and mesh (%) were normalized to per-square-centimeter surface area. After 2 days, biofilm formation was least on the stainless steel single loop, followed by stainless steel balance weave, canvas, polypropylene, polypropylene-meshtop, and acetal. After 3 days, biofilm formation was greatest on both acetal and canvas belts compared with that on the stainless balance-weave. By day 4, the stainless steel single loop belt showed significantly less biofilm formation than the canvas belt, with no significant differences among the other belts. The results of this study indicate that biofilm accumulation differs with belt type.

INTRODUCTION

Listeria monocytogenes causes over 2,500 illnesses and 500 deaths in the United States each year *(10)*. Most symptoms are flu-like and occur within a few days to up to three weeks after infection *(11)*. Healthy adults may have very few symptoms when infected. However, in immunocompromised people, the risk of death is elevated. In pregnant women, *L. monocytogenes* can cross the placenta and infect the fetus. This fetal infection can cause miscarriages, stillbirths, or serious medical complications such as pneumonia, meningitis, or septicemia in newborns. The mortality rates can be as high as 80% for neonatal infections and 50%–70% for meningitis and septicemia patients *(11)*. The minimum infectious dose of *L. monocytogenes* is currently unknown because of the differing virulence among strains and extraneous factors such as age and health of the individual *(30)*.

L. monocytogenes is very widespread in nature. It has been known to survive extreme environmental temperatures such as refrigeration, freezing, heating, and drying. The optimum growth temperatures for *L. monocytogenes* is 30–37°C, but it can grow at temperatures as low as 1°C and as high as 45°C

A peer-reviewed article

*Author for correspondence: 806.742.2805 ext. 234; Fax: 806.742.4003
Email: christine.alvarado@ttu.edu

(12, 17). There are 16 serovars but not all of them appear to be pathogenic. Most diseases are caused by serotypes 4b, 1/2a, and 1/2b, with 90% of these isolates found in processing areas *(11)*. Because of its ubiquitous nature, *L. monocytogenes* is a difficult organism to control, especially in areas where ready-to-cook items are processed. *L. monocytogenes* can be inactivated in meat products heated to 70°C. However, because *L. monocytogenes* typically enters the food supply from the processing plant environment through cross contamination or environmental contamination after a heat treatment has been applied, it has become a major concern for the meat processing industry *(16, 31)*.

The attachment of bacteria and subsequent development of biofilms are a concern in food processing environments. Biofilms, which can lead to product contamination and spoilage *(34, 35)*, can be characterized as complex bacterial communities in which the number of organisms, the type of bacterial species, and their interactions depend upon where the biofilm develop *(23)*. Biofilms can form in a hydrated environment with the proper nutrients on a variety of hydrophobic and hydrophilic surfaces, including glass, metals, and plastics *(26, 27)*. Biofilms in ready-to-eat (RTE) meats have received increased interest recently because of potential cross contamination by *L. monocytogenes* embedded in the biofilms. This pathogen is of particular interest because it is commonly found in diverse environments, including soil, water, animal feed and animal feces *(33)*; it can be isolated from refrigerated conditions; and it is a frequent resident in food processing plants *(20)*.

A particular challenge in minimizing microbial accumulations on equipment surfaces is the ability of many bacteria to produce extracellular polysaccharides that anchor cells to product contact and non-contact surfaces, creating biofilms. Biofilms can be defined as matrix-enclosed bacterial populations adhering to a surface or to each other. Biofilms in nature can have various levels of organization, as they exist in single or multiple species communities, which may form single or three-dimensional structures, or they may form aggregates such as flocs and granules *(1, 5, 9)*. A natural biofilm community may function through collective behavior and coordinated activity, which assists survival of constituent cells in stressful environments. The majority of microorganisms in natural habitats are attached to surfaces *(14)*, indicating the extent of the selective advantage for biofilm growth.

Poor sanitation and hygienic conditions of food contact surfaces, equipment, and plant processing environments can contribute to foodborne disease outbreaks caused by pathogens such as *L. monocytogenes* and *Salmonella*. Improperly cleaned surfaces, plus the presence of water, contribute to the development of bacterial biofilms that may contain pathogenic microorganisms *(6)*. The danger associated with biofilm formation is that over time, the sheltered and anchored bacteria can become loosened and can contaminate product flowing over the biofilms. This action can result in product contamination over time and a potential for recalls. Another danger is that bacteria in biofilms are more resistant to heat and in general are more resistant to removal by cleaning agents and destruction by sanitizers *(18, 24, 26, 29, 32)*. Biofilms generally form in crevices and hard-to-reach places. Therefore, hygienically designed conveyor belts can minimize the risk associated with biofilms and can help reduce biofilm formation.

An especially important and often overlooked consideration in manufacture of sanitary equipment is the design of conveyor belts. The high usage and hard-to-clean areas of conveyor belts make them excellent environments for bacterial harborage and biofilm formation. Recently, an equipment manufacturer began to modify its belts by forming a one-piece integrated shaft / drive component assembly. Having the drive shafts and components machined from a single piece of metal improves cleanability, decreases water pooling that can harbor bacteria, and helps to eliminate the possibility of pathogens harboring between a shaft and gear or in other hard-to-clean areas of the drive system.

Another important design detail improving sanitation lies in the ease of disassembly and reassembly of equipment and conveyor belts. Equipment designs that facilitate rapid, easy disassembly without tools can promote proper cleaning and maintenance of equipment. For example, open mesh belts with 70% open structure do not need to be removed from the conveyor system for cleaning. Not only do these open mesh belts make the practice of removing belts prior to cleaning easy, but their open structures maximize product exposure, making these belts exceptionally suitable for drainage, convection air current and batter coating applications. Also, designs such as these open belt structures reduce or eliminate areas where product or debris can become lodged and improve product safety by decreasing the potential for biofilm formation.

In previous studies, a variety of experimental procedures were used to determine biofilm attachment, making it difficult to draw practical conclusions for application by processors. Many studies included biofilms that were developed between 8 to 14 days before being evaluated, although the clean-up period in the processing plant usually does not allow more than 18–48 hours for biofilm buildup *(8, 13)*. Generally, the clean-up and sanitation periods (or third shift) occur after two full production shifts totaling 16–18 h. Therefore, if clean-up and sanitation are performed properly, there should be only a 16–18 h time frame from clean-up to clean-up for biofilms to form. However, weekends can extend this time frame by adding an additional 24–28 hours between clean ups.

In this research, our objective was to determine the impact of various materials encountered in processing plant environments on the attachment of, and biofilm formation by, *L. monocytogenes*. In this project we standardized some of the variables reported in previous biofilm studies with *L. monocytogenes*. It can be assumed that bacterial attachment to all food surfaces does occur, and understanding the phenomenon of the design of processing belts would be advantageous to meat and poultry industries with respect to product qual-

TABLE 1. Different dimension of conveyor belts with their material composition and design*

Material	Design – % Open mesh	Dimension
Polyurethane with mono polyester fabric	Fabric sheet belt – 0%	5 cm × 4 cm
Acetal	3.2%	5 cm × 5.5 cm
Polypropylene	Mesh top – 24%	4.5 cm × 5 cm
Polypropylene	48%	6.5 cm × 5 cm
Stainless steel	Single loop – 80%	8.7 cm × 2.7 cm
Stainless steel	Balance weave – 70%	6 cm × 6 cm

*All belts were cut with a height dimension of 1 cm

ity and safety. Common food processing plant materials were used in the evaluation, including stainless steel single loop belts with 80% open mesh structure, stainless steel balance weave (70%), polypropylene meshtop (24%), polypropylene (48%), acetal (3.2%), and polyurethane with monoester polyethylene fabric-canvas (< 1%). The mesh percentages listed above, which represent percent open mesh in each of the belts tested, were obtained from belt manufacturers.

MATERIALS AND METHODS

Bacterial strains

The three strains of *L. monocytogenes* used as a cocktail in this study were Scott A, Brie 1, and ATCC 6744. The cultures were grown separately on Tryptic Soy Broth (TSB; Hardy Diagnostics) with 10% glycerol and maintained at -80°C. Working cultures were maintained on TSA slants at 4°C and cultures taken from these slants were used for this study. Cells were grown in TSB in sterile screw-cap test tubes at 37°C. Three consecutive loop transfers were made and a final transfer was made for overnight (14–16 h) growth. As standard practice, equal amounts (10 ml) of the three overnight cultures were pooled prior to being used as an inoculum.

Preparation of surfaces for biofilm growth

The design and material makeup of the conveyor belts were used as test surfaces. Test surfaces were cut from new materials into different dimensions to ensure uniformity of area across the different types of belts (Table 1). The dimensions were later standardized to per cm^2 surface area. All test chips included the interlocking part of the processing belts. The test surfaces were washed briefly in a disinfectant solution (1% Micro cleaning solution), rinsed in distilled water, and sonicated for 30 min as described by Arnold et al. *(3, 4)*.

Biofilm accumulation experiments

Test surfaces were placed in sterile beakers containing sterile TSB (sufficient to completely immerse the chip). Blackman et al. demonstrated that complex media (TSB) supported more growth on food-processing surfaces than chemically defined minimal media *(8)*. Therefore, TSB was chosen for this study to help ensure the growth of *L. monocytogenes* to form a good biofilm in the laboratory setting. The beakers were inoculated with pooled cultures, resulting in a final inoculum level of 5 log CFU/ml. Biofilms were developed at 10°C for 2–4 days with moderate agitation (100 rpm, Orbital shaker, Labline Instruments, Fisher Scientific). Test surfaces of each material were removed and analyzed at days 2, 3 and 4.

Enumeration methodology

The test surfaces were removed from the medium, rinsed twice with 10 ml of 0.01 mM phosphate-buffered saline (PBS), pH 7.2, with agitation by manually swirling the Petridish 10 times clockwise and 10 times counter clockwise. Test surfaces were placed in a glass beaker containing 5.0 g of glass beads (425 – 600 µm diameter, acid washed, 30–40 U.S. Sieve, Sigma Aldrich) and 25 ml of PBS. Biofilm bacteria were dislodged from the test surfaces by placing the beaker in a touch mixer (Fisher Scientific, Model 231) for 30 s. Samples were serially diluted and plated, by use of an Autoplater® (Spiral Biotech, 4000), on BHI agar for bacterial enumeration. The plates were incubated at 32°C for up to 3 days. Colonies were counted and recorded as log CFU/ cm^2. This method was shown to be an effective recovery procedure for biofilms by Anwar et al. and Denes et al. *(2, 15)*.

Data analysis

The biofilm experiments were replicated three times and the means were reported. The thickness and mesh size of the test materials varied, which affected the total surface area of the test surfaces. This variation was taken into account, and the results given are normalized to per-square-cm surface area (Table 1). The normalization to per-square-cm was intended to represent actual instances observed in RTE plants. Data were analyzed using a one–way analysis of variance (ANOVA) for treatments which showed an interaction between the test surface and time. Means were separated using Duncan's Multiple Range Test of the Statistical Analysis System (SAS Institute Inc, Cary, NC). A significance level of $P < 0.05$ was employed.

TABLE 2. Biofilm accumulation (log CFU/cm²) on different conveyor belts by *L. monocytogenes*

Belt type	2nd Day[a]	3rd Day[a]	4th Day[a]
Canvas	2.11[cd] ± 0.17	3.68[a] ± 0.06	3.84[a] ± 0.03
Acetal	2.76[a] ± 0.09	3.67[a] ± 0.17	3.79[ab] ± 0.16
Polypropylene – Meshtop	2.63[ab] ± 0.07	3.47[ab] ± 0.07	3.64[ab] ± 0.08
Polypropylene	2.37[bc] ± 0.12	3.42[ab] ± 0.04	3.64[ab] ± 0.08
Stainless steel – Single loop	1.76[e] ± 0.06	3.38[ab] ± 0.06	3.44[b] ± 0.14
Stainless steel – Balance weave	1.86[de] ± 0.06	3.22[b] ± 0.11	3.48[ab] ± 0.13

[a]Means of triplicate measurements ± standard deviations

[a, b, c, d, e]Within columns, figures that differ significantly ($P < 0.05$) have different superscripts

RESULTS AND DISCUSSION

An especially important and often overlooked consideration in sanitary equipment manufacturing is the design of conveyor belts. Results from this study demonstrate the ability of *L. monocytogenes* to develop as a biofilm over a 2-day to 4-day time period on food contact materials that are being used in food processing plants. These time points were selected to mimic a long weekend cleaning and sanitizing schedule in a processing plant. Even though 4 days is a long interval between processing and cleanup, improper cleaning and sanitizing can result in development of biofilms. The results from this study comparing different belt surfaces and open mesh structure are indicated in Table 2. Results from analyses of day two *L. monocytogenes* biofilms indicate that acetal supported a significant accumulation of *L. monocytogenes* biofilm compared with canvas, polypropylene, stainless steel single-loop and stainless steel–balance weave. The stainless steel single-loop had less biofilm accumulation but was not statistically less than the stainless steel–balance weave.

Day three results indicate that the polyurethane with mono polyester fabric (canvas) and the acetal belts had higher *L. monocytogenes* biofilm accumulation compared with the stainless steel balance-weave belt, which had significantly lower *L. monocytogenes* biofilm accumulation. By day 4, the polyurethane with mono polyester fabric (canvas) had significantly higher values than the stainless steel single-loop belt test surfaces with no differences among the other belt types. It is important to note that by day 4, even though there were significant differences, all belts supported biofilm growth and accumulation. Therefore, it is important to have a regular and proper cleaning and sanitation program to prevent *L. monocytogenes* biofilm formation in any belt type. Also, over time (day 2 to 4), *L. monocytogenes* biofilm accumulation increased in all belts by approximately 1–1.5 log CFU/cm²), indicating that an ineffective cleaning sanitation program will allow biofilms to accumulate on all belt types.

Biofilms can grow on both hydrophilic and hydrophobic surfaces, as has been demonstrated by previous research *(21, 22, 25, 28)*. These researchers demonstrated the ability of pathogen to adhere to various surfaces, including polypropylene, rubber, stainless steel, rubber and glass. *L. monocytogenes* was shown to attach to 17 food-use surfaces in diluted medium at 30°C after a short contact time and to increase in numbers on all surfaces *(7)*.

Generally, surfaces that have a greater amount of interconnecting material and have a lower mesh count can be more prone to bacterial attachment. In this study, the polyurethane with mono polyester fabric (canvas) belt that had the lowest mesh (< 1%) had a high *L. monocytogenes* biofilm attachment when compared to those of higher mesh percentage. The polypropylene belts, that ranged in mesh from 3.2% – 48%, generally showed higher *L. monocytogenes* numbers than stainless steel. This could be because the stainless steel had a higher mesh percentage that the other belts and therefore had a relatively small area for bacteria to attach. Also, the stainless steel belts have a smoother surface, which is more easily cleanable and which can prevent biofilms from forming. Even though surface area was standardized in this experiment to account for different mesh sizes, the plastic belts had more interlocking parts and smaller mesh sizes for the bacteria to accumulate and grow a *L. monocytogenes* biofilm.

Of significance is that growth of bacteria and development of biofilms will occur on all types of belts if they have not been cleaned and sanitized properly. General sanitation practices include a dry clean step, and use of detergent with hand scrubbing, followed by rinsing, sanitation and air drying. These sanitation steps are critical for prevention of biofilm formation on any surface areas. Therefore, in conclusion, stainless steel belts generally lead to a decrease in *L. monocytogenes* attachment and biofilm formation (day 2); however, all belts types can have biofilm accumulation over time if they are not properly cleaned and sanitized.

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Third-Party Certification of Agro-Products in China: A Study of Agro-Product Producers in Guangzhou, Shenzhen, Hangzhou and Qingdao

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SUMMARY

This paper reports a study of agro-product quality and safety, and third-party certification among food producers in four Chinese cities: Guangzhou, Shenzhen, Hangzhou, and Qingdao. Based on data and information from surveys and interviews, it analyzes the development and existing problems of third-party certification of agro-products in China. The article concludes by recognizing that the improvement of third party certification for agro-products needs concerted efforts toward management improvement and professional capacity building by certification bodies, increased scale, quality improvement, and cultivation of markets for certified products.

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INTRODUCTION

The development of Chinese agriculture has shifted emphasis from the quantity of agricultural products to both quality and quantity. Chinese food producers are endeavoring to improve the quality of their products and their competitive ability in order to meet the increasing demands for quality and safety of agricultural products for domestic and international markets. Third party certification (TPC) is one approach to enhancing their reputation and competitive ability. Although it is still too early to assess their effectiveness in improving safety and/or quality, various initiatives, such as GlobalGAP, SQF (Safe Quality Food), the Global Food Safety Initiative, and the ISO 22000 standards also employ this approach. Currently, in China safe agro-product, green food, and organic food are the three basic agro-product quality and safety certifications.

Safe agro-product certification was drafted by the Ministry of Agriculture (MOA) under the Safe Agricultural Products Action Plan and launched in 2003. Certified-safe agro-products must comply with a number of standards that ensure use of safe materials in production, compliance with approved production procedures and regulations, the safety of the production environment, and the quality and safety of the agro-products themselves. These requirements are specific to particular agro-products (e.g., eggs, leeks, tomatoes). Safe agro-product certification is applied primarily to edible agro-products, which then receive a special logo. The certification aims to ensure that basic requirements for food are met and to satisfy consumer demand. The introduction of safe agro-product certification introduces a government-driven mechanism, with the MOA in charge of enforcement. The standard is considered a Ministerial standard and is applied nationally. The safe agro-products standard is currently optional, but plans are to gradually make it mandatory for some products in some major cities, beginning in 2008. The Standardization Administration of the People's Republic of China audits the standard and accredits certifiers; third party certifiers do the actual certification work. However, most certifiers for safe agro-products (and for Green Food, as described below) are governmental or quasi-governmental bodies.

Green food certification, initiated by the MOA in 1990, is applied to processed edible agro-products. It requires that agro-products be grown in a favorable environment and that quality control and other compulsory requirements be implemented throughout the production process. In a word, green food is certified as safe, unpolluted, and of good quality. Green food certification is intended to satisfy higher quality consumption requirements, such that the certified products satisfy the safety and quality requirements of developed countries. Unlike safe agro-product certification, green food certification adopts a government-guided but market-driven mechanism.

Organic food is, in general, food from plants and animals that have been grown without the use of artificial, synthetic fertilizers or pesticides and without antibiotics, growth hormones, feed additives, or genetically modified organisms (GMOs). Organic food certification generally is for primary agro-products or primary-processed agro-products, and it is also market-driven. Unlike producers of safe agro-products or green food, for whom certification is handled by governmental units, producers of organic food may choose among the approximately 30 certification agencies operating in China.

By 2005, 16,704 agro-products had been certified as safe, with 10,583 certified producers involved and with a total output of 104 million tons and 21,627 production sites in China had been certified as safe agro-product production sites *(1)*. Green food and organic food had also developed rapidly; by the end of 2005, the total output of green food in China had amounted to 63 million tons per annum, with annual sales of US $12.747 billion (at the 2005 exchange rate) and exports of US $1.620 billion *(4)*. Organic food appeared on the Chinese market in 2000; its production value climbed to roughly US $371.29 million by the end of 2005 *(3)*.

Today, many primary agro-products and raw materials have been certified, and many exporters have also received quality system certifications or quality verifications by importers. The growth rate of green food exports increased by 40% from 2001 to 2005, and exports quadrupled in value, increasing from US $400 million in 2001 to US $1.62 billion in 2005. As a percentage of total exported food, green food increased from 6.5% to 13.1% *(2)*.

Procedures of third party certification

The procedure for safe agro-product certification includes the following:

1. The agricultural administrative authority at the provincial level is in charge of certifying the original production environment for a safe agro-product and issuing the certificate.
2. An applicant submits a safe agro-product certification application and relevant documents to the provincial operation agency, which is in charge of verifying the authenticity, veracity and integrity of the files and executing an on-site examination.
3. The appointed testing agency for safe agro-products takes charge of sampling and testing.
4. A specialized certification center, the Center for Agro-Food Quality and Safety (CAQS) of the MOA reviews the provincial operation agency's conclusions and the application files and examines the feasibility of control measures in the production process as well as the compliance shown in production documents and test reports of products.
5. CAQS holds a meeting for a final review based on the information from specialized certification centers.
6. If the review is passed, CAQS issues the certificate, approves the certification logo, and reports to the MOA and Certification and Accreditation Administration of the People's Republic of China (CACN) for a joint declaration.

China has also established a procedure for green food certification, which is similar to that of organic food certification. The Center for China Green Food Development is an important certification body, and the following steps are set up by it and available to domestic applicants:

1. An applicant submits relevant files to the green food administration agency at the provincial level; these files include an application, a survey form for the enterprise and production, an announcement of compliance with green food standards and requirements, documents related to production practices, and the quality control system, and other documents.
2. The provincial green food administration agency takes charge of reviewing all application documents within a given time, informs the applicant of the review results, and simultaneously reports to The Center for China Green Food Development. If the documents are incomplete, the applicant is requested to provide complementary documents within a given period of time. If the documents are inadequate, the applicant will be informed that the application will not be considered again within the same growth cycle.

TABLE 1. Producers by product type

Product type	Number of firms	% of firms
Animal products	11	28.2
Fresh vegetables and fruits	14	35.9
Seafood	3	7.7
Others[a]	11	28.2

[a]Includes peanut oil, tea, and other agro-products

3. If the application documents are eligible, the provincial green food agency so informs the applicants and arranges the site-examination plan.
4. The provincial green food agency assigns at least two inspectors to execute a site examination and provide a site review report. If the applicant passes the site examination, the provincial green food agency will arrange to test sample products. The samples will be sent to an appointed testing agency. If the applicant can provide a product quality testing report from an accredited green food testing agency that is less than one year old and the report has been validated by inspectors, then the provincial green food agency will not require sample testing.
5. Inspectors also investigate the original green food production environment when they execute the site examination. If the original production environment satisfies the requirements for exemption, the applicant can be exempted. If the applicant provides access to the production environment for inspection, the provincial green food agency will inform the appointed environmental inspection agency in writing, and report to the certification office of Center for China Green Food Development at the same time. The environmental inspection agency will execute the inspection and submit a report to the certification office of Center for China Green Food Development and the provincial green food agency within a given period of time.
6. Meanwhile, the product testing agency will test samples and submit a test report to the two agencies previously noted.
7. The provincial green food agency issues a review opinion after receiving the site examination and environmental quality inspection reports. It sends all the documents to the certification office at the Center for China Green Food Development.
8. The certification office audits the documents and verifies the audit. If there are any questions, the certification office will inform the applicant and assign inspectors to perform the site examination again. If the documents are incomplete, the applicant will be requested to provide complementary documents within a given period of time. The approval or rejection is then communicated to the green food review committee.
9. The committee provides a final opinion after reviewing the dossier. If an approval is issued, the secretariat of the committee will send relevant documents to the applicant and inform the provincial green food agency. After the applicant signs a contract with the Center for China Green Food Development, a certificate is issued by the director. If the application is rejected, the applicant is so informed and the application will not be reviewed again during the same growth cycle.

Compared with the development of agro-product TPC in China, theoretical and system-supportive research on TPC, especially research on users of agro-product quality and safety certification, is very scarce. This will restrain further development of agro-product quality and safety certification in China. Clearly, it is necessary and important for advancing the development of TPC in China.

RESEARCH PURPOSE AND DESIGN

In this research, four cities, Guangzhou, Shenzhen, Hangzhou and Qingdao, were selected as target cities. They were selected because: (1) the provinces in which Guangdong, Zhejiang, and Shandong are located are important agricultural provinces in China; (2) the four cities have a very active and significant agro-product export trade; and (3) agro-product certification in these cities started earlier than in other places and has performed effectively.

The research was conducted in October 2005. Group meetings and survey questionnaires were the major research approaches used. The research also included field visits and visits to several individual production sites. Information was collected on the following themes: basic information on the producers, the category of standards and certification, basic procedures of TPC, and producers' perceptions of TPC. Eighty questionnaires, of which 39 were returned, were mailed or faxed to interviewees. Four group meetings were held with producers, and three site visits were made to individual producers.

RESULTS

Agro-product producers

From group meetings and the statistical analysis of questionnaires, it was ascertained that most firms involved in certification focus on the fresh fruit and vegetable sector. Therefore, labor-intensive products predominated. Furthermore, many firms produced other agro-products, such as tea and peanuts (Table 1). Only a few firms were in the aquaculture sector.

As for the product market, nearly 47% of producers were engaged in inter-

TABLE 2. The adoption rate of various standards by firms surveyed

Types of standards	Number of firms	% of firms
National	39	100.0
Ministerial	19	48.7
Provincial	10	25.6
Enterprise	11	28.2
International	11	28.2

national business, and more than 50% of those firms work with domestic wholesalers. The information gathered in the group meetings, indicated that products from most certified firms were consumed by upper- or middle-income consumers.

Standards adoption among producers in the four cities

China's standards system includes four categories: national, ministerial, provincial, and enterprise standards. In the field of agriculture, national standards are developed by the Standardization Administration of China. If there are no existing technical requirements but there is a need to harmonize in certain industries, general standards are developed by the MOA. If there are no national and ministerial standards but there is a need to harmonize requirements at the provincial or municipal level, the provincial or municipal administrative agencies are in charge of developing standards and reporting them to the Standardization Administration and relevant ministries for recordkeeping. If no relevant standards exist for a certain agro-product, an enterprise may establish enterprise standards and follow them during the production process. Enterprise standards must be reported to local standardization and government agricultural agencies. Even if national or provincial standards exist, the government still encourages enterprises to develop more stringent standards.

Agro-product producers from the four cities reported that national and ministerial standards were used most frequently. Some producers also adopted some international or enterprise standards. Of course, some firms adopted all three types of standards at the same time. Table 2 displays the adoption rates of each type of standard among those surveyed. Many of these standards had been updated in the past five years, but some of them had not.

Third party certification

Certification is helpful for improving product reputation and is an important approach to enhancing competitiveness. More than 90% of the firms in this study chose to adopt TPC. A very small number of producers chose self-certification or second-party certification.

Firms chose TPC for several reasons. The main reasons cited were market demand and government regulations. In the study, 65.7% of firms explained the reason for their choice as market demand, and 21 firms (54.3%) claimed that TPC was chosen to meet government regulations. Some firms also thought that TPC would help them to address the challenges of increasing environmental protection requirements and market competition.

In the study, 32 firms answered the question as to whether their products had gone through TPC. More than 50% of producers reported that their products were verified by a third-party certifier.

At present, agro-product certification in China consists mainly of product certification, such as safe agro-product certification, green food certification, and organic food certification, as well as system certifications such as HACCP and ISO. The study revealed that safe agro-product certification was most common, while organic food certification was least common. The producers from the four cities argued that the main reason for this was that safe agro-product certification received a great deal of support from the government, whereas organic food certification was constrained by its unique requirements and high certification fees.

How certification agencies are selected

The research found that nationally accredited certification agencies were the most popular among producers. More than 2/3 of firms (67.6%) ranked the quality of certification (as they perceived it) as the most important factor in choice of certifier. The reputation of the agency was also an important factor, and the cost of certification and the specification of the certification agency could not be ignored. More than 50% of firms said their clients sometimes designated a particular certification agency. Most certification services were offered by government designated certifiers. Limited service was offered by foreign certifiers.

Cost of third party certification

To meet requirements set by certifiers, firms in the study usually needed to purchase new equipment and technology, and to increase the number of employees. Of the firms interviewed, 17.6% spent < US$12,380 for certification, 35.3% of firms invested US $12,380–61,900, 11.8% of firms invested US$61,900–123,800, and 35.3% of firms invested > US$123,800. Although 42.4% of firms reported that certification was a financial burden for the firm, most firms (76.5%) rated the effects of certification as positive. Some firms believed that certification helped to increase sales and to raise the price of their products.

Aoyang Feed Co. Ltd is an example of a case in which certification has increased product sales. Since 2003, the company had been certified for safe agro-products, HACCP, and ISO. Aoyang Feed Co. reported that per acre returns from fish farming were US$1,856 more than before certification was received. To differentiate the tilapia fed with their own feed from other tilapia, the company uses the label "Aoyang colorful snapper" which has been certified nationally as a safe agro-product. "Aoyang colorful snapper" is now purchased by hotels, special exhibition centers, and grocery chain stores in Guangzhou. Its sale price is three times that of ordinary tilapia.

Challenges of TPC

In the group meetings, firm representatives talked about their various experiences and opinions on TPC. Responses from questionnaires echoed

many of these perspectives. TPC has many benefits for firms, including improved company management and enhanced product acceptance by consumers, reinforcing the company's competitiveness and decreasing marketing risk. Although the findings are based on a small sample, the analysis of opinions of producers in the four cities indicates that several areas deserve further attention.

First, it is not easy to realize the benefits of the certifications in the domestic market. Respondents from 23.5% of firms noted that it was difficult for certified products to be sold at higher prices in the domestic market. Theoretically, third-party certification requires additional investment on the part of companies and, compared with uncertified products, the quality of certified products is assured; therefore, its price should be higher. But higher prices conflict with consumer preferences for high-quality, low-cost products. The overall income level in China is not very high, so the marketing environment for certified products is far from ideal.

Second, additional education and promotion are needed. Chinese consumers have little understanding of certified products, and the market is difficult to develop. As for safe agro-products, green food, and organic food, many consumers are not aware of the differences between them and other, non-certified foods, let alone the difference between the three kinds of certified foods.

Third, the coverage of TPC is still slight, and the variety of certified products is inadequate. The problem is due not only to inadequate development, but also to the unique characteristics of agricultural production *(5)*. In the case of fisheries, the quality of the fish is easily influenced by the natural environment; water pollution, for example, can make it difficult for fish to meet standards for certification. As another example, the "Good Field Pigeon" company in Guangzhou sold 70 to 80 million pigeons in Guangdong province annually and had applied to the Ministry of Agriculture for safe agro-product certification. But since the baby pigeon feed was purchased from other producers and the quality did not meet the standards for green food, the company had to continue to delay its application for green food certification.

Fourth, the costs of TPCs are high, especially given the small or nonexistent price differentials between certified and non-certified foods. The costs of certification are of two kinds: on the one hand, there is the cost incurred in preparing for certification, such as consulting fees, firm renovation costs, and certification fees; on the other hand, there are post-certification annual inspection fees. Many firms involved in the research paid more than US$10,000 annually and sometimes up to several hundred thousand US dollars for TPC. Considering their relatively small firm size, many firms said that the certification fee was too high for them, and created a financial burden. If certification fees are too high, the competitiveness of the certified firm's product will be undermined.

Fifth, more work needs to be done on post-certification monitoring and surveillance of firms. This applies both to the certification agencies and to the government. It is not difficult to find producers who continue to use certification logos, although they have violated regulations or have had their certifications expired. The regulatory offices and certification agencies devote most of their effort to the pre-certification process, such as inspection and the issuing of certification labels. Follow-up surveillance, inspection, and management are largely ignored.

POLICY RECOMMENDATION FOR TPC

Enhancing agro-product quality and safety through TPC development will be a significant and long-term strategic task for China's agro-product quality and safety management. Especially given China's accession to the WTO, certification for agro-product quality and safety is regarded as an important approach to realize international market access and to address global competition. The following require significant improvement if TPC for agro-product quality and safety is to develop successfully in China:

First, management systems and measures must be improved. As the scale of TPC expands and it becomes well known by more and more people, certification bodies and government agencies will need to enforce monitoring and management more stringently. Problems associated with certified products not only directly harm consumer rights and interests, but also harm the standing of certification itself. Although China's TPC is developing rapidly, the problem of ignoring the management of TPC exists, especially with respect to post-certification monitoring and supervision. Increasing the investment and strengthening follow-up monitoring and management of certification are regarded as an important approach. Certification bodies should inspect more carefully in the annual verification and should intensify the management of the certification logo in the future. Meanwhile, mass media, producers, and related agencies should popularize knowledge about good quality products and report counterfeit and shoddy products.

Second, capability building by certification bodies is needed. TPC bodies should not only insist on and guarantee impartiality, seriousness and authority, but also recognize its service characteristic, including professional advice, clear certification procedures and so on. There is a need for simplification and cost-reduction in the certification process. Many firms argued that high costs, lengthy delays, and complicated procedures had discouraged them from applying for certification. High certification cost is a particularly prevalent problem in the certification of green food and organic food. Certification agencies should adjust fees so as to encourage firms to apply for certification. Only when they provide high quality service can certification bodies attract more clients. More professional training should be carried on to improve professional competencies as well. Considering the complaints from many firms about overly long certification procedures, simplifying the whole certification process, providing timely information regarding day-to-day issues and annual inspections, and providing more efficient service to clients should be achieved as soon as possible.

Third, the scale and quantity of certified products must be expanded. The orientation of safe agro-products is to satisfy national compulsory requirements and consumer demand. Obviously, as a public good, certification should expand the supply of safe agro-products, shifting from a system of occasional examination and approval to a quality controlled

management system that is routine and traceable. As the principal part of product certification, green food certification requires that product quality should satisfy consumer demand in developed countries. In the future, more should be done to expand the scale and quantity of green food. As for organic food, it should be developed in areas having the necessary resources, in light of the realities of contemporary China.

Fourth, the market for certificated products should be cultivated. A key point is to clear the market and provide consumers with a healthy and transparent market. Transparency of agro-product quality and safety information is an important factor that affects agro-product quality and safety development. Government and media should do more to promote and publicize the certification of agricultural products and to disclose counterfeit and inferior products. It is helpful for establishing a new "higher-price, higher-quality" culture among consumers. The development of agro-product quality and safety certification can be improved by increasing communication of agro-product quality and safety information. The mass media can provide an effective approach. The safe agro-product certification program tarted only a few years ago; although the green food certification has a longer history, it still spans no more than twenty years. Thus, the promotion and monitoring role of the mass media should be fully exploited to improve the social status of agricultural product certification. It is important to work hard to make certification widely known, acknowledged by consumers, and seen as a useful method of solving food safety problems and improving food quality.

Fifth, the integrity of certification and related activities needs to be strengthened. To further develop TPC for agro-product quality and safety, certification it should be considered on the same plane as agro-industrial development and from the angle of global trading, it should be considered as part of the structural adjustment of China's agriculture. As an effective approach to agricultural structure adjustment, the development of TPC for agro-product quality and safety should be given greater priority as an efficient combination with the construction of regional industrial zones for major agro-products. In this manner, TPC can play a more effective role in the process of agricultural structural adjustment. It is also very important to focus on the nurture and maintenance of markets for TPC and certified brands. TPC is an effective means to strengthen market competitive capacity for enterprises, especially for industry leaders. A strong and efficient combination of TPC with leading companies will promote market competitiveness of China's agro-products.

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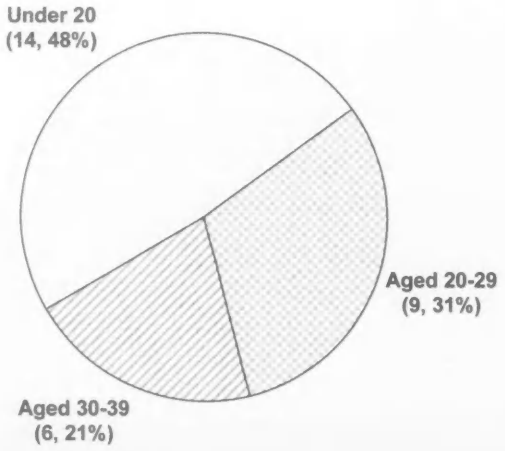
Corrected Figure 2 from page 659 of the Sept. 08 issue of FPT

FIGURE 2. Age of individuals (number, percentage) who experienced a fatal reaction to restaurant food



95th Annual Meeting

IAFP 2008

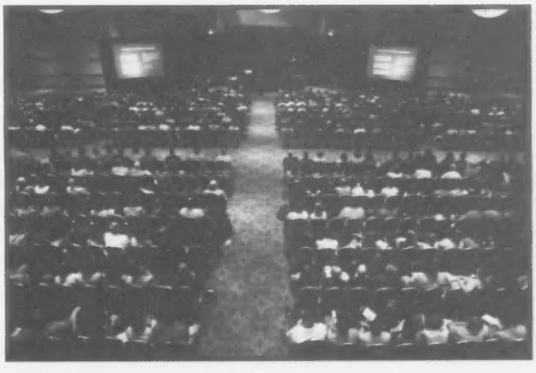
Columbus, Ohio • August 3–6

IAFP 2008 IN REVIEW

What's in a logo? For IAFP Annual Meetings, a logo is designed to capture the flavor of the city chosen to host its distinguished food safety conference. It's a good bet that those who joined us in Columbus, Ohio, for the Association's 95th Annual Meeting noticed the harmony between our meeting logo and the playful "Experience Columbus" logo splashed across billboards, buses, and entertainment venues. The city's logo, with its whimsical typeface and chain of colors that bring to mind a box of crayons or a row of preschool building blocks, suggests a place that's open to creative ideas and learning opportunities—and to those who make such opportunities happen, like IAFP.

In keeping with tradition, IAFP 2008 was fueled by prominent companies who generously contributed to and sponsored this time-honored Association event. With dedicated representatives from 105 exhibiting companies on hand in Hyatt Regency's Battelle Hall, the more than 1,840 attendees enjoyed a vibrant atmosphere in which to network over refreshments and absorb a phenomenal showcase of food safety innovations. Please join us in thanking these energetic exhibitors (page 866) and sponsors (page 871), for their dedication and hospitality.

Again this year, dozens of attendees enhanced their Annual Meeting experience by participating in the Friday and Saturday educational Workshop series presented by established industry professionals. *Better Process Cheese Control School – Processing Controls for Shelf-Stable Pasteurized Process Cheese Product Manufacture* served operators, supervisors, and management in process cheese manufacturing facilities, as well as food safety professionals and regulatory officials involved in LACF filing for process cheese products. *The Art of Fungal Characterization and Identification: A Hands-On Workshop* provided a unique opportunity to interact with and learn first-hand from a group of experts the best practice for isolation and the basics of classical identification methods, along with current molecular methods. For risk assessment and microbiological food safety management staff, the *Hands-On Workshop on Microbial Risk Assessment Modeling and Interpretation* helped create awareness of the principles of risk assessment and risk management, the skill requirements, and the utility and validity of MRA studies.



The Welcome Reception on Saturday evening was a relaxed venue for early arrivals to reconnect with colleagues, and where new Members and first-time attendees could meet and mingle with the Executive Board and active Members of the Association. New attendees and students especially appreciated this opportunity to connect faces to names before exploring Sunday's abundance of meetings for committee and professional development group (PDG) members. We encourage you to review the minutes from all of these meetings (page 836), and to call the IAFP office for assistance as you seek involvement in the groups that best fit your interests and goals.

At Opening Session on Sunday evening, IAFP President Gary Acuff was joined by Gloria Swick-Brown, the Local Arrangements Committee Chair, in welcoming IAFP 2008 attendees to Columbus. Ms. Swick-Brown, sporting buckeye earrings in honor of her home state, extended greetings on behalf of the Ohio Association of Food and Environmental Sanitarians (OAFES) and her entire team of volunteers. Year after year, the Association owes a round of applause to the numerous individuals who dedicate their time and talents behind the scenes long before and throughout Annual Meeting, providing indispensible planning and administrative support to the IAFP staff—and fun Welcome Bags for all attendees!

Dr. Acuff was pleased to announce that three IAFP Affiliates had been established since the last meeting: the Turkish Food Safety Association (TFSA), Spain Association for Food Protection (SAFP), and the United Arab Emirates Association for Food Protection (UAEAFP). After charters were presented to officers in attendance from these Affiliates, Dr. Acuff introduced IAFP Foundation

Chair Gale Prince, who refreshed the audience on the purpose and goals of the Foundation before enthusiastically announcing that he would, again this year, personally match the first $5,000 in pledged donations. In response, inspired givers pledged a total of $12,070 to support Foundation programs, which includes funding of the Student Travel Scholarship Award. Together with Dr. Acuff, Mr. Prince then introduced the six 2008 scholarship recipients to receive their plaques: Ji-Yeon Hyeon of Konkuk University, South Korea; Hudaa Neetoo of the University of Delaware, Newark, Delaware; Rolf Erik Nilsson of the University of Tasmania, Australia; Christopher Nnadozie Njoku of Linkoping University, Sweden; M. Elizabeth Palmer of Cornell University, Ithaca, New York; and Akafete Teklu Fite of Addis Ababa University, Ethiopia.

For their contributions to IAFP and its Affiliates with distinction over a period of time, three individuals were inducted as Fellows of the Association by Dr. Acuff and Past President Frank Yiannas: Warren S. Clark of Bloomingdale, Illinois; P. Michael Davidson of Knoxville, Tennessee; and Gloria I. Swick-Brown of Somerset, Ohio. We invite you to read the accomplishments of these IAFP Fellows on page 777. The program continued with David Golden of the University of Tennessee taking the stage to announce that a new award, the Larry Beuchat Young Researcher Award, had been established to recognize an active IAFP Member each year who has shown outstanding ability and professional promise as a researcher in food microbiology/food safety. Dr. Golden then welcomed

a surprised Larry Beuchat to the stage to thank him for his dedication to future researchers and to accept a special plaque.

The Opening Session culminated with President-Elect Stan Bailey introducing the year's prestigious Ivan Parkin Lecturer, Dr. Russell S. Flowers of Silliker, whose comprehensive *Utility of Microbiological Testing for Food Safety Assurance* was delivered with expert efficiency—and good-spirited awareness of the clock as the audience sat in anticipation of the delectable Cheese and Wine Reception soon to follow in the Exhibit Hall! An extended abstract of Dr. Flowers' lecture can be found on page 796.

The IAFP 2008 program emerged in full force on Monday morning, with attendees from all sectors of the food safety industry poised to embrace what they have come to expect from the leading food safety conference: three full days of insightful symposia, roundtable discussions and technical and poster sessions. Our gratitude and applause go out to our determined Program Committee, chaired this year by Emilio Esteban, for giving their time and energies to orchestrate another program unrivaled in quality and content. This year we were pleased to enhance the official program by hosting a special presentation on Monday by Scott Hurd, USDA Deputy Under Secretary for Food Safety; bioMérieux's seventh annual scientific symposium and the Leafy Greens Roundtable Session on Tuesday; and the timely Late Breaking Session on *Salmonella* Saintpaul on Wednesday.

With IAFP Student Membership steadily increasing, Annual Meeting provides excellent opportunities and exposure for the Student Professional Development Group. While hosting their informative booth just outside the Exhibit Hall, these committed students coordinated the Job Fair, provided resources for fellow student attendees, and raised money for their endeavors by selling T-shirts. The Sunday Student Luncheon attracted a record number of attendees, with Dr. Ethan Solomon of DuPont speaking on "What Do I Want to Be When I Grow Up?" and offering a recent graduate's view of experiences in the working world. The popular Student Mixer on Monday evening provided the perfect, casual outlet for winding down from the day's sessions and networking among students from a diversity of geographic and academic backgrounds.

At Tuesday's Annual Business Meeting, IAFP President Gary Acuff reviewed the Association's accomplishments and activities during the past year and presented several President's Recognition Awards. Recipients included IAFP Past Presidents Frank Yiannas and Jeffrey Farber, for their flexibility and shared service as Past Presidents while upholding Association Bylaws regarding a fellow Board member's unplanned job transition during the service term; and the spouse of Executive Director David Tharp, Connie Tharp, whom Dr. Acuff praised for her 15 consecutive years of support and faithful Annual Meeting attendance. David Tharp followed up with a report on the Association's financial

health for the fiscal year. The chairs of the standing committees delivered brief reports of their business, and Affiliate Council Chair Carl Custer shared the progress of IAFP's increasing number of Affiliate organizations. Mr. Custer's report was followed by enthusiastic Foundation contributions of $1,000 each from Brazil Association for Food Protection (BAFP) and the ever-creative cast of Florida Association for Food Protection (FAFP), whose check was presented in the final scene of "Veggie Tales from the Crypt," a gripping saga of fresh produce and the aftermath of outbreak.

contributors and spirited bidders, the auction succeeded in raising $6,500 to further the noble mission of the Foundation.

The three days of inspiring educational sessions culminated late Wednesday afternoon as attendees converged for the Closing Session's John H. Silliker Lecture, *From Wild Pigs and Spinach to Tilapia and Asia: The Challenges of the Food Safety Community,* delivered by Dr. Michael P. Doyle of the University of Georgia. A summary of Dr. Doyle's pivotal presentation appears on page 800. With gratitude we acknowledge the generosity of Silliker, Inc. for providing this exceptional lecture experience each year.

Silent Auction enthusiasts celebrated their annual occasion to "shop" table after table of gifts donated to benefit the programs of the IAFP Foundation. From cookbooks to sports paraphernalia to mammoth chocolate bars, every item appealed to the eyes, heart, or appetite of someone who values shopping for the sake of a good cause. In the end, thanks to the crowd of

Wednesday evening marked the grand finale of IAFP 2008, the Awards Banquet, as 25 individuals and organizations were recognized for their achievements and ongoing work in *Advancing Food Safety Worldwide.* Gary Acuff shared closing thoughts before passing the gavel to Incoming President Stan Bailey, who thanked Dr. Acuff for his outstanding service as IAFP President and welcomed the Association to a new year of certain progress.

IAFP Establishes the Larry Beuchat Young Researcher Award

Gary Acuff (left), David Golden and Rayden Rivett present Larry Beuchat with a plaque commemorating the establishment of the IAFP Larry Beuchat Young Researcher Award.

The International Association for Food Protection is pleased to announce the establishment of the Larry Beuchat Young Researcher Award, which recognizes an active IAFP Member who, within the first seven years of their career, has shown outstanding ability and professional promise as a researcher in food microbiology and food safety.

To launch this award, Dr. Larry Beuchat, professor at the Center for Food Safety at the University of Georgia was presented with a plaque in recognition of his career mentoring food microbiologists. The presentation took place at the Opening Session of IAFP 2008.

Nominees for the 2009 award must be non-student IAFP Members with a primary role as a researcher in the area of food microbiology or food safety. Nominees also must have received their M.S. or Ph.D. in a related field within the seven years prior to July 1, 2009.

95th Annual Meeting
IAFP 2008
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IAFP 2008 Award Winners

Each year, the International Association for Food Protection honors a single company with its most prestigious award, the Black Pearl, in recognition of that company's efforts in advancing food safety and quality through consumer programs, employee relations, educational activities, adherence to standards, and support of the goals and objectives of IAFP. The recipient of the 2008 IAFP Black Pearl Award is 3M Microbiology.

3M Microbiology receives the IAFP 2008 Black Pearl Award. Pictured back row (left to right) Kevin Habas, Alessandra Chiareli, Jim Rieth, DeAnn Benesh, David Velasquez, Rusty Gildner, Bob Koeritzer, Jim Farr, Jim Ingebrand and Ken Davenport; middle row (left to right) Akio Kitahara, Fred Palensky, Kevin McGoldrick, Karen Mullery, Wilbur Feagan and Frank Yiannas; Front, Nancy Eggink and Mike Yeager.

Black Pearl Award
3M Microbiology
St. Paul, Minnesota

3M Microbiology is a leading manufacturer and global supplier of solutions that help food processors maximize the quality and safety of their products. We began over 24 years ago with our 3M™ Petrifilm™ Plates. Since that time, 3M Petrifilm Plates and the 3M™ Petrifilm™ Plate Reader have changed the way food quality testing is done around the world. More than 200 evaluations have been completed from validating agencies and peer-review publications worldwide and they are recognized as *AOAC® International Official Methods of Analysis*. Their proven reliability, time and labor savings, and wide range of applications have made them the choice of 86 of the top 100 food companies worldwide.

Today, 3M Microbiology designs, manufactures and markets product lines that cover the spectrum of quality, pathogen and toxin testing and monitoring needs. Our acquisition of Biotrace International in late 2006 expanded our product line to include 3M™ Clean-Trace™ ATP Hygiene Monitoring Systems, 3M™ Tecra™ Pathogen Assays, and a wide range of sample handling products and specialty media including 3M™ Electronic Pipettors and 3M™ Flip Top Dilution Bottles.

In addition, the company is known for its well-trained and informed sales consultants that reach into more than 100 countries, as well as over 40 expert technical service representatives in key locations around the world. We consider this deep and wide-reaching support vital to our customers' success and an essential component of our business.

Sponsored by Wilbur Feagan and E&H FOOD EQUIPMENT COMPANY

Fellow Award

Fellows are professionals who have contributed to IAFP and its Affiliates with distinction over an extended period of time. Dr. Warren S. Clark, Jr., Dr. P. Michael Davidson and Ms. Gloria I. Swick-Brown received a distinguished plaque in recognition of this prestigious award.

Gary Acuff (left) presents Michael Davidson, Gloria Swick-Brown and Warren Clark with the IAFP Fellow Award.

Warren S. Clark, Jr.
Bloomingdale, Illinois

Dr. Warren S. Clark, Jr. is the recipient of the IAFP 2008 Fellow Award. Dr. Clark's dedication and knowledge rendered him an established resource among his dairy industry colleagues.

Dr. Clark received his BS with Honors and Distinction from the University of Connecticut, and his MS in Dairy Microbiology and Ph.D. in Dairy Microbiology and Human Nutrition from Iowa State University. His career has included collegiate teaching and research, industry quality assurance, and dairy foods. Dr. Clark retired from the American Dairy Products Institute in 2002 after serving 35 years, 28 years as its Chief Executive Officer.

Dr. Clark joined IAFP in 1959 and has been active in its Iowa and Illinois Affiliates. He served the *Journal of Food Protection* Editorial Board, and presently serves on the *Food Protection Trends* Editorial Board, Audiovisual Library Committee, and multiple Professional Development Groups. A regular participant in Annual Meetings and contributor to the IAFP Foundation, he was awarded an Honorary Life Membership in 2002.

Among numerous industry activities, Dr. Clark has been involved in the 3-A Sanitary Standards Program since 1967, chairing the 3-A Symbol Council from 1977 to 2007. He served the American Public Health Association's Committee to develop "Standard Methods for the Examination of Dairy Products." A former non-government advisor to the US Delegate to the FAO/WHO Codex Alimentarius Commission, Dr. Clark served on the US Agricultural Trade Advisory Committee and fulfilled assignments in Russia for the US Department of State, AID for International Development.

Dr. Clark's notable recognitions include the University of Connecticut Distinguished Alumnus Award; 3-A Bronze Plaque Award; USDA Honor Award for Excellence, European Union Certification Team; Honorary Lifetime Membership in USIDF; and an International Medal installing him in the Council of the French Society devoted to the development and promotion of whey products.

P. Michael Davidson
Knoxville, Tennessee

Dr. P. Michael Davidson has contributed to IAFP and its Affiliates with distinction over an extended period of time. Internationally recognized for his research and expertise with antimicrobial food additives. Dr. Davidson is further distinguished in the field by his dedicated committee service to IAFP and numerous other organizations.

Dr. Davidson received his BS in Microbiology from the University of Idaho (1973), an MS in Food Science from the University of Minnesota (1977), and a Ph.D. in Food Science from Washington State University (1979). He joined the Department of Food Science and Technology at the University of Tennessee – Knoxville in 1979 and achieved the rank of Professor of Food Microbiology in 1989.

From 1991 to 1998, Dr. Davidson was Professor of Food Microbiology in the Department of Food Science and Toxicology at the University of Idaho. He returned to the Department of Food Science and Technology at the University of Tennessee – Knoxville in 1999 and is currently Department Head. His research interests are characterization of regulatory-approved and naturally occurring food antimicrobials and determination of resistance characteristics of foodborne pathogens.

A Past Chair of the Food Microbiology Division of the American Society for Microbiology (1993) and of the Institute of Food Technologists (IFT) (1997), Dr. Davidson was presented the Distinguished Service Award from the IFT Food Microbiology Division in 2000, and is a Fellow of IFT and the American Academy of Microbiology. The author or co-author of over 110 refereed journal articles and book chapters, primarily in food safety and food antimicrobials, he is also co-editor of *Antimicrobials in Foods*, 3rd Edition and *Food Additives*.

Dr. Davidson served on the *Journal of Food Protection* Editorial Board from 1983 until 2001, when he became Scientific Co-Editor. In 2005, he received the IAFP President's Recognition Award.

Gloria I. Swick-Brown
Somerset, Ohio

Ms. Gloria I. Swick-Brown, MSA, RS is a true advocate and mentor of future sanitarians. She is dedicated to active recruiting and the expansion of curriculum in the field.

Currently employed by the Ohio Department of Health, Ms. Swick-Brown is a Sanitarian Program Specialist in the Food Safety Program, where she surveys the Food Service Operation Programs, evaluates the sanitarians, conducts State Baseline Food Service Inspections, and educates sanitarians in the field to correctly and thoroughly perform food service inspections in 29 local health departments in southeastern Ohio.

Ms. Swick-Brown holds a BS in Agriculture, with majors in Animal Science, Biological Science, and Agricultural Education, from The Ohio State University. She also earned an MS in Administration with a concentration in Health Services from Central Michigan University.

An active Member of the Ohio Association of Food and Environmental Sanitarians (OAFES) since 1985, Ms. Swick-Brown has progressed through its Board offices three times and routinely plans its meetings. She is a Member of the Ohio Environmental Health Association and the National Environmental Health Association, holding credentials as a Nationally Registered Environmental Health Specialist and Registered Sanitarian. Additionally, she is a Registered Veterinary Technician and regularly attends the Midwest Veterinary Conferences to remain current on agri-terrorism and zoonotic pathogens.

Since joining IAFP in 1991 to represent OAFES at the Affiliate Council Meeting, Ms. Swick-Brown has attended every Annual Meeting and presented at two. She has served on the Food Protection Trends Management Committee and the Awards Committee, and served on the Program and Local Arrangements committees for IAFP 2008. She also participates in the Food Hygiene and Sanitation and the Retail Food Safety and Quality PDGs.

PRESIDENT'S LIFETIME ACHIEVEMENT AWARD

Samuel A. Palumbo
Naperville, Illinois

Gary Acuff (left) presents Sam Palumbo with the President's Lifetime Achievement Award.

Dr. Samuel A. Palumbo was presented the President's Lifetime Achievement Award in January 2008. The Award is given at the discretion of the Association President, to recognize an individual who has made a lasting impact on "Advancing Food Safety Worldwide" through a lifetime of professional achievements in food protection. Dr. Palumbo has distinguished himself as a leader of public service through his contributions to the field of science.

Dr. Palumbo earned his BS from Loyola University and his Ph.D. from the University of Illinois, Urbana-Champaign. His career in food safety led him to the Agricultural Research Service of the US Department of Agriculture and later to the Illinois Institute of Technology (IIT), from which he retired as Research Professor of Biology in the Department of Biological, Chemical, and Physical Sciences.

Prominent research by Dr. Palumbo focuses on the microbiology of food processing operations; growth of foodborne pathogens at low temperatures; interventions to reduce or eliminate pathogens from red meats and meat products; and laboratory and pilot plant detection and enumeration of *Listeria monocytogenes*, *E. coli* O157:H7, *Salmonella*, *Campylobacter jejuni*, and various other pathogens.

Widely revered for his scientific accomplishments, Dr. Palumbo is further known for his tireless efforts in organizing numerous national and international conferences. He is an avid supporter of outreach programs, and dedicated his working years to the training of the microbiologists whose careers would follow his.

An IAFP Member since 1991, Dr. Palumbo served on the Nominating Committee (2001– 2004) and currently serves on the *JFP* Editorial Board.

HONORARY LIFE MEMBERSHIP AWARD

The recipients of the IAFP 2008 Honorary Life Membership Award are Ms. Helene Uhlman, Dr. John C. Bruhn and Mr. Gale Prince. This prestigious honor is awarded to long-time IAFP Members for their dedication to the high ideals and objectives of the International Association for Food Protection and for dedicated service to the Association.

Gary Acuff (left) presents Helene Uhlman, John Bruhn and Gale Prince with the 2008 Honorary Life Membership Award.

John C. Bruhn
Davis, California

Dr. John C. Bruhn is being honored for his dedication and service to the high ideals and objectives of the Association. An IAFP Member and advocate for nearly 40 years, Dr. Bruhn has achieved excellence in his research and outreach programs and been active in the California, Southern California, and Washington Affiliates of the Association.

Dr. Bruhn retired from the University of California–Davis (UC Davis) after 37 years on the extension faculty in dairy foods in the Department of Food Science and Technology. As founder and Director of the UC Davis Dairy Research and Information Center, an administrative program aiding the funding of dairy foods research and a focal point for those seeking information on milk and dairy foods, Dr. Bruhn conducted applied research and educational programs that emphasized factors affecting the quality and safety of raw milk and processed milk, and dairy foods.

In recognition for the excellence of his research and outreach programs, Dr. Bruhn has received the Sanitarian Award from the California Association of Dairy and Milk Sanitarians; Honorary Member Award from the California Dairy Industries Association; Outstanding Alumnus Award from Michigan State University; the Extension Award from the American Dairy Science Association, of which he is Past President; and elected Fellowships in IAFP; the Institute of Food Technologists; the Institute of Food Science and Technology (United Kingdom); and the American Dairy Science Association. A past recipient of IAFP Educator and Citation Awards, he has served on the *FPT* Editorial Board and Management Committee, and the Awards and Program Committees; and continues service to the Affiliate Council, Membership Committee, and the Dairy Quality and Safety PDG.

Dr. Bruhn was recently honored for his educational efforts to improve raw milk quality by counties in California's South San Joaquin Valley. While retired, he continues working with students and various organizations in the food and dairy food industries.

Gale Prince
Cincinnati, Ohio

Mr. Gale Prince is a food safety pioneer and an IAFP Member since 1968. Mr. Prince has mentored and inspired countless food safety professionals for 40 years while impacting the culture of US food safety programs.

Mr. Prince began his career at the Eisner Food Store division of the Jewel Companies, joining The Kroger Co. in 1979 as Corporate Director of Regulatory Affairs. There, his commitment to excellence through the application of technical expertise in consumer safety helped establish a company-wide food safety culture. He has been called the "Dean of Product Recalls" for managing thousands of consumer product recalls throughout his career. Retired from The Kroger Co. since 2007, Mr. Prince is regarded a visionary and master in developing preventive food safety programs.

A frequent speaker at industry meetings, Mr. Prince has served on the Food Protection Committee of the Food Marketing Institute; the Food Technical and Regulatory Affairs Committee of the American Bakers Association; and various committees of the International Dairy Foods Association. He was on the Board of Directors of the United Fresh Fruit and Vegetable Association, and has chaired councils for the National Conference of Interstate Milk Shippers and the Conference for Food Protection. He has also served on the US Department of Justice Drug Enforcement Agency–Suspicious Orders Task Force, and on the Institute of Food Technology Task Group evaluating the parameters for the definition of potentially hazardous foods. In 1979, Mr. Prince conducted the first retail store manager food safety certification program, and was later the driving force behind the development of the FightBAC!® program on consumer food safety training.

Past President of IAFP and current Chair of the IAFP Foundation, Mr. Prince is a frequent speaker at Annual Meetings and has served on numerous committees. In his retirement, he remains dedicated to IAFP and other industry, government, and technical food safety organizations.

Helene Uhlman
Hobart, Indiana

Ms. Helene Uhlman has been an IAFP Member since 1969. It was during that decade that Ms. Uhlman became the first female certified milk inspector in the US Grade "A" Milk Program. She later became the first female Grade "A" Milk Plant Inspector.

Ms. Uhlman's 40-year career in the industry has encompassed appointments as Project Director for the tri-city Northwest Indiana Grade "A" Milk Cooperation, which evolved into a seven-county Indiana State Department of Health (ISDH) contractual agreement; Director of Sanitation and first female Administrator for the City of Gary Health Department; Project Director for a stop-smoking program initiated by ISDH with the American Cancer Society; and her current position as Administrator for the City of Hammond Health Department.

Ms. Uhlman has served the IAFP Affiliate Council as Delegate of the Indiana Environmental Health Association since 1969, chairing the council for three different terms. She has been active on the Dairy Quality and Safety PDG since 1997, chairing its predecessor groups; served as Food Protection Chairperson for five terms; and was active in the former Bridge Committee between IAFP and the National Environmental Health Association, of which she is also a longtime active member.

A devoted advocate and mentor for female industry professionals, Ms. Uhlman has been instrumental in encouraging women to become more active in IAFP. By reviewing the Association's Membership rosters, Annual Meeting attendance and presenter lists, and various leadership roles over the years, the success of her efforts is apparent.

HARRY HAVERLAND CITATION AWARD

This award is presented to an individual who is recognized for their years of dedication and devotion to the Association and its ideals and objectives.

Joan Menke-Schaenzer, ConAgra Foods (left) and Gary Acuff (right) present John Sofos with the 2008 Harry Haverland Citation Award.

John N. Sofos
Fort Collins, Colorado

Dr. John N. Sofos holds a BS degree from the Aristotle University of Thessaloniki, Greece, and MS and Ph.D. degrees from the University of Minnesota. His current title is University Distinguished Professor at Colorado State University, where he teaches courses in meat and food safety. Dr. Sofos's research deals with the ecology, detection, stress-resistance, and control of bacterial pathogens in foods. He has authored, or co-authored with his students and collaborators, over 240 refereed journal papers; 54 book chapters; 6 books; 350 abstracts and numerous other publications; and has presented more than 160 invited lectures both nationally and internationally. Under Dr. Sofos's guidance, graduate students commence their own food safety careers with remarkable training and knowledge.

Included on the list of Highly Cited Scientists of Thomson Scientific, Dr. Sofos is also a Fellow of the American Academy of Microbiology, the Institute of Food Technologists, the American Society of Animal Science, and IAFP. His numerous awards include the Distinguished Research Awards from the American Meat Science Association and the American Society of Animal Science; the IAFP Educator Award, President's Recognition Award, and GMA–FPA Food Safety Award; and the USDA Secretary's Honor Award for Superior Service. He is currently a member of the US National Advisory Committee on Microbiological Criteria for Foods, and serves as a Scientific Editor for the *Journal of Food Protection*.

FOOD SAFETY INNOVATION AWARD

This award is presented to an individual or organization for creating a new idea, practice, or product that has improved public health and quality of life by making a positive impact on food safety. Dr. Bruce J. Bradley is being recognized for his efforts toward improving product sampling sensitivity.

Karen Mullery, 3M Microbiology, (left) and Stan Bailey (right) present Jared Bradley with the 2008 Food Safety Innovation Award. (Dr. Bruce J. Bradley was unavailable to attend.)

Bruce J. Bradley
Jerome, Idaho

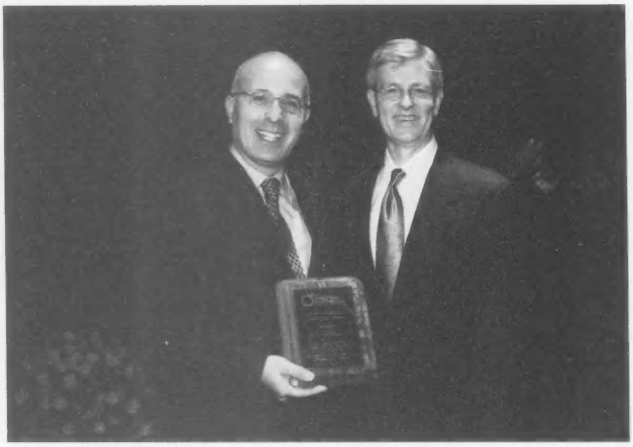
Dr. Bruce J. Bradley received his Ph.D. in Nutrition and Biochemistry from Washington State University. Following post-doctoral studies in the pathology of human lung diseases at the University of Vermont Medical Center, he formed a partnership with a colleague in 1979 and founded a multi-faceted laboratory and research business in southern Idaho. In 1995, he purchased the microbiology division of that business and expanded research efforts on improved surface pathogen sampling technologies.

Since 1997, Dr. Bradley has received multiple SBIR grants and contracts through NIH and the US Army to support the development and commercialization of a unique surface rinse, wet-vacuum pathogen collection system, the Microbial-Vac System (M-Vac™). His company, Microbial-Vac Systems® Inc., has been issued multiple US and international patents on his novel sampling technology and has recently begun marketing the M-Vac™ system nationally to food safety industries; biosecurity and first response companies; and military, forensic, pharmaceutical, and clean room assembly industries.

While his rapidly growing company has moved into production phases of the technology's hardware and sterile solution packaging, Dr. Bradley continues to conduct additional research on further improved aspects of bacterial collection, concentration, and related sample processing technologies.

INTERNATIONAL LEADERSHIP AWARD

The International Leadership Award is presented to an individual for their dedication to the high ideals and objectives of IAFP and for promotion of the mission of the Association in countries outside the United States and Canada.



Gary Acuff (right) presents F. Xavier Malcata with the 2008 International Leadership Award.

F. Xavier Malcata
Porto, Portugal

Dr. F. Xavier Malcata is being honored for devoting 20 years to various aspects of food safety and protection, demonstrating leadership in scientific research, advanced education, professional training, technology transfer and international collaboration.

Dr. Malcata earned his Ph.D. in Biotechnology (1998) and his Aggregrate Professorship degree in Food Science and Engineering (2004) from the Portuguese Catholic University, developing part of his doctoral work at the University of Wisconsin. His research has primarily focused on both traditional and novel food products.

The co-author of "Portuguese National Food Plan: security, nutrition and safety," Professor Malcata's published work includes 244 refereed papers; 11 monographic books; four books and 36 chapters in edited books; 29 journal papers; and 50 technical publications. Along with research project leadership and collaboration, he has served the editorial boards of five international journals; participated in numerous peer-reviewed research committees; and delivered 132 lectures and 452 volunteer presentations.

Dr. Malcata is presently Chairman of the College of Biotechnology, the collaboration of Portuguese Catholic University and Food Science professors from several US universities. Complementary activities include fundamental and applied research on food risk assessment and communication, under direct appointment to the Portuguese government. An elected member of the Scientific Advisory Board of the Portuguese Agency for Economic and Food Safety, he also serves the EFSA Additives, Colorants, Processing Aids and Materials in Contact with Foods Panel.

Dr. Malcata has received numerous international awards and distinctions, including the Ralph H. Potts Memorial Award (1991) and Young Scientist Research Award (2001) from the American Oil Chemists' Society; the Foundation Scholar Award–Dairy Foods Division (1998); Danisco International Dairy Science Award (2007) from the American Dairy Science Association; and the Scientist of the Year Award (2008) from the European Federation of Food Science and Technology.

GMA FOOD SAFETY AWARD

This award is presented to an individual or organization in recognition of a long history of outstanding contributions to food safety research and education.

International Commission on Microbiological Specifications for Food (ICMSF) receives the 2008 GMA Food Safety Award. Pictured back row (left to right), Jeffrey Farber, Michael Doyle, Leon Gorris, Tom Ross, Frank Busta, Anna Lammerding, Bruce Tompkin and Robert Deibel. Front row (left to right) Robert Buchanan, Fumiko Kasuga, Craig Henry, John Silliker, Katie Swanson, Martin Cole and Jenny Scott.

International Commission on Microbiological Specifications for Foods (ICMSF)
Summit-Argo, Illinois

Since 1962, ICMSF has served as a global authoritative advisory body whose expertise has helped reduce foodborne illness and food spoilage and facilitated international trade.

ICMSF is one of eight independent international commissions within the International Union of Microbiological Societies (IUMS), dedicated to promoting the study of microbiological sciences through the open exchange of scientific information for advancement of the health and welfare of human kind and the environment.

ICMSF's history of making timely contributions on current and emerging microbiological food safety and spoilage concerns has produced an extensive, highly respected body of work. Through publication of its widely recognized "Microorganisms in Foods" book series and numerous peer-reviewed scientific publications, its participation in international symposia and workshops, and its active contribution to global discussions through Codex Alimentarius committees and other forums, ICMSF consistently provides timely, science-based guidance to government and industry on appraising and controlling the microbiological safety of foods. The Commission has performed in-depth studies on various essential aspects relating to microbiological specifications for foods such as methods of analysis, ecology of microorganisms, food safety management systems, and microbiological criteria. In recent years, ICMSF has worked on microbiological risk assessment and epidemiology in relation to public health goals.

ICMSF membership currently consists of 18 food microbiologists from 13 countries. In addition to global diversity, its members' professional food safety expertise widely encompasses research, product and process development, public health, agriculture, food technology, quality control, and education. In the development of its work, ICMSF collaborates with a range of experts in various areas of food microbiology and public health, and has established three regional Subcommissions—Latin American, South-East Asian and China/North-East Asian—that all follow the operating principles of ICMSF while addressing microbiological problems specific to those regions.

Sponsored by GMA

MAURICE WEBER LABORATORIAN AWARD

This award is presented to an IAFP Member for dedicated and exceptional contributions in the laboratory. It recognizes a commitment to the development and/or application of innovative and practical analytical approaches in support of food safety.

Stan Bailey (left) and Freb Weber, Weber Scientific, (right) present John Luchansky with the 2008 Maurice Weber Laboratorian Award.

John B. Luchansky
Wyndmoor, Pennsylvania

Dr. John B. Luchansky is the recipient of the IAFP 2008 Maurice Weber Laboratorian Award. Dr. Luchansky is a "hands-on" laboratory investigator whose techniques continuously improve the science of applied food microbiology.

After earning his BS from The Pennsylvania State University (1980) and MSc (1983) and Ph.D. (1987) in Microbiology from Iowa State University, Dr. Luchansky accomplished post-doctoral studies at North Carolina State University before joining the faculty of the University of Wisconsin – Madison. In 1999, he advanced to his present appointment with the Microbial Food Safety Research Unit (MFSRU) of the USDA/ARS.

An Adjunct Professor at Purdue University, University of Maryland Eastern Shore, Delaware State University, and Drexel University, Dr. Luchansky has five US patents, and has authored over 100 peer-reviewed manuscripts and over 60 published symposia, reports, and book chapters. He has given more than 250 national and international presentations, authored over 150 abstracts at scientific meetings, mentored some 30 graduate students and 24 undergraduate students, and hosted 17 international/visiting scientists.

Dr. Luchansky's honors and awards include the Research and Development (2000) and Myron Solberg (2007) Awards from the Institute of Food Technologists. He and his collaborators have generated a series of ground-breaking publications and technologies used by industry to enhance the safety of their products, and by regulators to make science-based policy decisions that benefit the overall health and well being of consumers worldwide. Together with his team, Dr. Luchansky received the 2003 USDA Honor Award; the IAFP 2006 FPA Food Safety Award; and, in 2008, Technology Transfer Awards from both the USDA/ARS and the Federal Laboratory Consortium.

SANITARIAN AWARD

This award honors an IAFP Member for dedication and exceptional service to the profession of sanitarian, serving the public and the food industry.

Jeffrey Farber (left) and Katie Swanson, Ecolab, (right) present Don Wilding with the 2008 Sanitarian Award.

Don Wilding
Springfield, Illinois

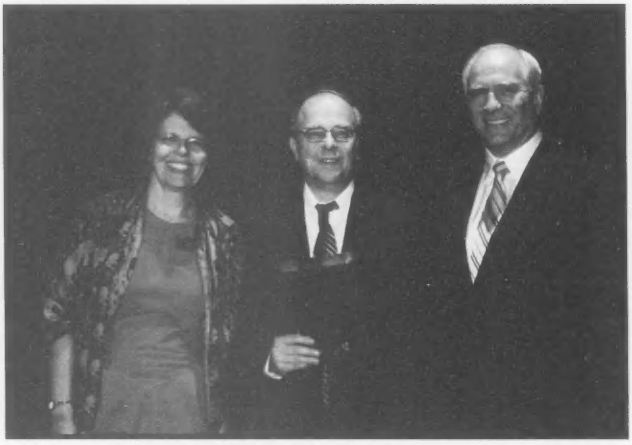
Mr. Don Wilding is the recipient of this year's Sanitarian Award. Regarded as the "quintessential state regulatory professional," Mr. Wilding's industry background gives him a practical approach to food sanitation with an understanding of compliance limitations and awareness of where problems and production shortcuts may circumvent regulation.

Mr. Wilding earned his BS degree and an MS degree in Food Science from the University of Missouri, where he was active on the national champion dairy judging team. He joined Carnation Company in 1975, working three years as a Packaging Supervisor before his 12-year supervisory appointment in Plant Quality Control. Since 1990, he has been employed as a Dairy Equipment Specialist in the Division of Food, Drugs and Dairies of the Illinois Department of Public Health, where his work encompasses equipment inspection and evaluation, and pipeline system review and label evaluation.

Active in several organizations that promote public health through education, Mr. Wilding has attended every annual meeting of the IAFP-sponsored 3-A Sanitary Standards, Inc. (3-A SSI) since 1990, currently serving in eight work groups, the Variance Review and Steering Committees, and chairing the Committee for Sanitary Procedures. He has written and published on food equipment standards and practices development for 3-A, and has authored many proposals for change to the Pasteurized Milk Ordinance through the National Conference for Interstate Milk Shipments (NCIMS). A past president, former program chair, and current advisor of the Associated Illinois Milk, Food and Environmental Sanitarians (AIMFES), Mr. Wilding is also a founding member of the Atlantic Midwest Dairy Equipment Review Committee (AMDERC), credited for writing its bylaws and constitution and attracting new members.

ELMER MARTH EDUCATOR AWARD

This award recognizes an IAFP Member for dedicated and exceptional contributions to the profession of educator.



Lee-Ann Jaykus (left) and Fritz Buss, Nelson-Jameson, (right) present Joseph Frank with the 2008 Elmer Marth Educator Award.

Joseph Frank
Athens, Georgia

Dr. Joseph Frank is known for instilling in his students a passion for research and food safety along with critical review skills and a solid understanding of experimental design, logistics, and analysis.

As a high school student and throughout college, Dr. Frank gained an appreciation of good sanitation practices by working in his father's cheese and butter manufacturing business and in local restaurants. He earned his BS in Bacteriology from the University of Wisconsin – Madison, and later his MS and Ph.D. degrees in Food Science with specialization in Food Microbiology, under the direction of Elmer Marth. Dr. Frank's post-doctoral study was completed at the Eastern Regional Research Center.

Currently a professor in the Department of Food Science and Technology at the University of Georgia, where he teaches food microbiology and fermentations, Dr. Frank has advised 41 graduate students to the completion of their degrees, with 20 of those students securing doctoral degrees. His research interests include the control of *Listeria monocytogenes* in food processing environments, attachment and growth of pathogens on food tissues, and control of pathogens on fresh cut produce. He has co-authored 123 peer-reviewed research papers, 6 review papers, and 19 book chapters.

Dr. Frank is a charter member of the Georgia Association for Food Protection and an IAFP Fellow. He is currently scientific editor for the *Journal of Food Protection*.

HAROLD BARNUM INDUSTRY AWARD

This award recognizes an IAFP Member for their dedication and exceptional service to IAFP, the public and the food industry.

Vickie Lewandowski presents Robert H. Deibel with the 2008 Harold Barnum Industry Award.

Robert H. Deibel
Sarasota, Florida

Dr. Robert H. Deibel has devoted more than 50 years to the field of food microbiology as a scientist and educator, and is regarded a prominent authority on spoilage and food safety issues.

Shortly after earning his Ph.D. in Bacteriology from the University of Chicago in 1962, Dr. Deibel worked as Division Chief of Bacteriology at the American Meat Institute Foundation until its closure in 1964. He spent the next two years as an Associate Professor of Research in the Department of Bacteriology at Cornell University before moving on to the University of Wisconsin–Madison Department of Bacteriology, where he devoted 22 years to research and teaching, served as Department Chair from 1976 to 1979, and remains an Adjunct Professor.

During Dr. Deibel's time at UW–Madison, he held a position in the Food Research Institute; edited the Food and Toxicology section of the *Journal of Applied Microbiology* (1972–1982); served the Bacteriology and Mycology Study Section for the National Institutes of Health (1971–1975); and chaired the Food Division of the American Society for Microbiology (1974–1975). Later activities included the founding of nine testing laboratories in North America (Deibel Laboratories, Inc.); a small laboratory supply company (Summit Laboratory Supplies); and Toxin Technology, Inc., which produces microbial toxins for research. Dr. Deibel is further associated with American Life Lines, Inc., a firm that produces probiotics.

STUDENT TRAVEL SCHOLARSHIP AWARD

Student Travel Scholarships are awarded to full-time students enrolled in a college or university food-safety related program. These students have demonstrated an interest in and commitment to food safety and quality. The IAFP Foundation provides funding for these scholarships, which were developed to encourage students to participate in Association activities.

Gale Prince (left) presents Ji-Yeon Hyeon, Rolf Erik Nilsson, M. Elizabeth Palmer, Akafete Teklu Fite and Hudaa Neetoo with the IAFP 2008 Student Travel Scholarship Award. Christopher Nnadozie Njoku was not present.

Ji-Yeon Hyeon
Konkuk University
Seoul, South Korea

Ji-Yeon Hyeon is working toward her Ph.D. at the Department of Public Health in the College of Veterinary Medicine at Konkuk University in South Korea, and earned numerous scholarships there while pursuing her DVM (2007).

As a teaching and research assistant, Ms. Hyeon has been guiding undergraduate students in their laboratory courses and working on many research projects funded from various national agencies under Dr. Kun-ho Seo. Most of her projects are related to development and validation of various rapid detection methods, rapid kit assay, automated ELISA, and real-time PCR for detection of foodborne bacteria and viruses. She has contributed to establishing guidelines for application of rapid detection methods to field investigation, and to revising the Korean Bacteriological Analytical Manual for the Korean Food and Drug Administration.

With her interest in bacterial and viral foodborne zoonoses, Ms. Hyeon desires a career in veterinary science and food safety in the public health sector. After achieving her Ph.D., she plans to pursue post-doctoral research opportunities at universities or government institutes in the US.

Ms. Hyeon is co-author of two posters and two oral presentations at IAFP 2008.

Hudaa Neetoo
University of Delaware
Newark, Delaware

Hudaa Neetoo is currently pursuing her Ph.D. at the Department of Animal and Food Sciences at the University of Delaware in Newark, where she received her MS in Food Science in 2007. Her BA in Biochemistry was achieved in 2004 at Imperial College London.

Under Dr. Haiqiang Chen, Ms. Neetoo's research area concentrates on enhancing the microbial safety of sprouts commonly consumed in sandwiches and salads using high pressure processing technology. She is active in various extracurricular and extramural activities, particularly through the local Food Science Club, which provides opportunities to participate in numerous promotional, recruitment, fundraising and intell-ectual endeavors.

Since joining IAFP in 2006, Ms. Neetoo has been an active member of the Student PDG, which she presently serves as Vice Chair with the goal to serve as Chair in 2008–2009. She is also a member of the Institute of Food Technologists (IFT), American Association for the Advancement of Science (AAAS), and Sigma Xi. Ms. Neetoo makes it a priority to expand her professional membership in several scientific organizations, believing that attendance at scientific meetings and conferences are of paramount importance in the development of a career in academia.

Rolf Erik Nilsson
University of Tasmania
Australia

After training and working as a chef for eight years, Rolf Erik Nilsson pursued clinical microbiology studies at James Cook University in Queensland, Australia, graduating with honors in 2006. Mr. Nilsson's undergraduate honors project—investigating the biogeography and ecology of *Burkholderia pseudomallei*, the causative agent of melioidosis, throughout Papua, New Guinea and Northern Australia—focused on the environmental distribution of the organism and investigated the rhizosphere of wild *Oryza* species (rice) as a potential reservoir.

On completion of his honors project, Mr. Nilsson sought higher studies in food safety research and was accepted as a Ph.D. candidate at the Australian Food Safety Centre of the Tasmanian Institute of Agricultural Research in Hobart, Australia. Under Professors John Bowman and Tom Ross, Mr. Nilsson's research aims at developing an

understanding of the molecular biology of persistent *Listeria monocytogenes* strains, a multi-faceted study focused on biofilm formation, quorum sensing, and the organism's response to physiological stresses. These factors influence the ability of *L. monocytogenes* strains to persist within a given environment. Defining persistent *L. monocytogenes* strains and the molecular mechanisms underpinning persistence could enhance risk management and prevention and control strategies by aiding in the identification, distribution and prevalence of high-risk *L. monocytogenes* populations. This would be of benefit to all food industry, particularly those producing minimally processed, "ready-to-eat" and other high risk food products.

Mr. Nilsson hopes to direct his research towards defined industry applications, with an ultimate goal of reducing the economic risks faced by food industry and contributing to improved public health.

Christopher Nnadozie Njoku
Linkoping University
Sweden

Christopher Nnadozie Njoku is currently an international master's student in the Department of Sustainable Development at Linkoping University, Sweden, specializing in Water and Food Security.

A native of Ezuhu Nguru in the Aboh Mbaise L.G.A. Imo State Nigeria, Mr. Njoku passed his first school leaving certificate in 1990 and the West African school certificate (WASC) in 1996. He earned his BSc (Hons) in Food Science and Technology in 2002 at Imo State University, Owerri. As an undergraduate, he served as President of the National Association of Food Science and Technology, Imo State University student chapter.

In 2004, Mr. Njoku enlisted in the National Youth Service Corp (NYSC), where he observed the one year compulsory NYSC program to serve his father's land. During that time, he taught students at one of the secondary schools in Ogun State Nigeria. He has also worked as a quality control officer, as an industrial attachment student in a wine-, water- and spirit-producing industry known as Canon Distilleries.

Mr. Njoku presented a series of papers and seminars as an undergraduate and is currently at work on an intensive research thesis. He joined IAFP to be among those working to advance food safety throughout the world.

M. Elizabeth Palmer
Cornell University
Ithaca, New York

M. Elizabeth Palmer is a Ph.D. student in Food Science with a focus on Food Safety and Microbiology, and minors in Microbiology and Comparative Biomedical Sciences. She received her BS in Biology (2004) from the University of Virginia, where her research under Dr. Tyvin Rich involved evaluating circadian modulation of tumor-produced growth factors. Later, as a research support specialist at the Center for Molecular Medicine at State University of New York at Stony Brook, she studied *Yersinia pseudotuberculosis* and *Helicobacter pylori*.

Ms. Palmer currently works in the Food Safety Laboratory at Cornell University under the guidance of Dr. Kathryn Boor. Her current research is centered on alleviation and mitigation of food safety and public health concerns by understanding *Listeria monocytogenes'* mechanisms of stress survival and developing methods for inhibition of this foodborne pathogen. Specifically, Ms. Palmer is evaluating potential novel and natural antagonists of *L. monocytogenes* transcriptional regulators using a chemical biology platform in concert with molecular microbiological techniques. In doing so, she hopes to develop practical methods and solutions for successful inhibition of pathogens in food systems and/or in humans.

Upon completion of her Ph.D., Ms. Palmer plans to continue studies as a post-doctoral associate with a continued focus on foodborne pathogens. Ultimately, she hopes to work as a food microbiologist/food safety scientist in a research or regulatory setting.

Akafete Teklu Fite
Addis Ababa University
Ethiopia

Born and raised in Addis Ababa, Ethiopia, Akafete Teklu Fite entered Addis Ababa University's Faculty of Natural Science in 1998, completing her freshman course the following year. Ms. Teklu then attended the university's Faculty of Veterinary Medicine, receiving her DVM in 2004.

From 2005 to 2007, Ms. Teklu worked in Alagae ATVET (Agricultural Technical Vocational and Educational training) College as an instructor in the Animal Health Department, teaching the courses of Anatomy and Physiology of Domestic Animals, Pharmacology, Non-infectious Diseases and Microbiology. In addition, she counseled female students in different socioeconomic and academic issues.

Ms. Teklu began her MSc program in the department of Tropical Veterinary Public Health in 2007 as a self sponsored student. After completing the first year, she competed for and won scholarships from both DAAD and the USAID SPS LMM project, which granted financial support for her research work. The primary focus of Ms. Teklu's research is the prevalence, distribution and antimicrobial susceptibility patterns of *Salmonella* serovars in apparently healthy slaughtered sheep and goats and abattoir environments in export abattoir, Ethiopia.

In addition to IAFP, Ms. Teklu is a member of the Ethiopian Veterinary Association (EVA) and Ethiopian Animal Welfare Association. She has also trained in teaching methodology and presented several seminars.

DEVELOPING SCIENTIST AWARDS

The Developing Scientist Awards Program encourages and recognizes the work of students and recent graduates in the field of food safety research. The program was established in 1986 to foster professionalism in students through contact with peers and professional Members of the Association. It also encourages student participation in the Association and the Annual Meeting.

IAFP Developing Scientist Chairperson, Indaue Mello-Hall (middle) with the Developing Scientist Award Winners (left to right) Stephanie Drake, Gabriela Lopez-Velasco, Jie Wei and Arena Richardson.

ORAL

1st Place – Stephanie Drake

2nd Place – Jie Wei

3rd Place – Kristina Carter

POSTER

1st Place – Gabriela Lopez-Velasco

2nd Place – Anika Singla

3rd Place – Arena Richardson

Sponsored by IAFP FOUNDATION

AFFILIATE AWARDS

Carl Custer, Affiliate Council Chairperson (left to right) presents Affiliate Award Winners Joseph Odumeru, Ontario Food Protection Association; Terry Peters, British Columbia Food Protection Association; Mayra Marquez Gonzales, Texas Association for Food Protection; and Todd Roscow, Florida Association for Food Protection.

C.B. SHOGREN MEMORIAL

British Columbia Food Protection Association

AFFILIATE MEMBERSHIP ACHIEVEMENT

Florida Association for Food Protection

BEST AFFILIATE COMMUNICATION MATERIALS

Ontario Food Protection Association

BEST AFFILIATE EDUCATIONAL

Texas Association for Food Protection

BEST AFFILIATE OVERALL MEETING

Turkish Food Safety Association

IAFP 2008 Black Pearl Award Winner

3M Microbiology

St. Paul, Minnesota

Executive summary

For 23 years, 3M Microbiology has been making an impact on maximizing the global food supply.

It started with innovative thinking in response to critical challenges in food safety testing. 3M™ Petrifilm™ Plates were born. Now, 23 years later, 3M Microbiology has changed the way much food quality testing is done around the globe. 3M Petrifilm Plates are used worldwide for their proven reliability, time and labor savings, and wide range of applications. This kind of global impact took—and continues to take—more than a great product. It takes a strong, worldwide team of individuals with a commitment to the promise of innovation.

Today, around the globe, the people and products of 3M Microbiology are just as committed as ever to responding to the dynamic challenges faced by the food safety industry with truly innovative solutions. 3M Microbiology designs, manufactures and markets product lines that cover the spectrum of quality, pathogen, toxin and allergen testing and monitoring needs. 3M Microbiology continues to invest in new technologies, reflecting a corporate commitment and reputation for ingenuity, integrity and quality, as part of 3M.

Comprehensive global support

More than 200 evaluations have been completed from validating agencies and peer review publications worldwide on the precise, consistent results delivered by 3M Petrifilm Plates. These extensive global regulatory approvals received by 3M Microbiology enable customers around the world to use our products with confidence. Every year, over 100 million 3M Petrifilm Plate assays are conducted across six continents. Quality Assurance teams experience better consistency, reliability and confidence in the data and resulting decision-making. The time savings and productivity improvements enable them to spend more time proactively implementing systems to improve food quality and safety.

In addition, the company is known for its well-trained and informed field consultants that reach into more than 100 countries, as well as over 40 expert technical service representatives in key locations around the world. They provide an uncommon depth of support to help customers around the globe meet their goals. 3M Microbiology considers this deep and wide-reaching support vital to their customers' success and therefore an essential component of our business.

Commitment to new technologies

3M Microbiology acquired Biotrace International in late 2006. With this acquisition, the company has taken another big step to broaden its scope of products and technologies in order to meet new challenges and increasingly rigorous standards faced by the food safety industry. The expanded 3M Microbiology product line includes 3M™ Clean-Trace™ ATP Hygiene Monitoring Systems, 3M™ Tecra™ Pathogen Assays, and unique sample handling solutions. Combining these tools with the 3M network of customer service and technical support enhances the company's ability to help its customers.

Contributions to public health

3M Microbiology personnel are aligned with the goals of the International Association for Food Protection (IAFP). One of these goals is to have a continuing involvement in public health initiatives. Examples of such involvement are many and varied at 3M Microbiology. For instance, 3M staff members worked with the National Conference on Interstate Milk Shipments (NCIMS) lab committee to help standardize test results in labs conducting Grade A testing.

3M Microbiology personnel have been involved in the establishment of the FSIS Pathogen Reduction Act for meat and poultry processors located in the US or importing food into the US. They have served on the advisory Board of the Dairy Foods Research Center of the University of Minnesota. They have supported AFNOR standardization activities, as well as participated in food safety workshops and education development programs. And as a member of the Food and

Agriculture Organization (FAO) of the United Nations, the company helps develop and support food safety and microbiology risk information.

Another concrete example of 3M Microbiology's worldwide contribution to public health can be found in its support, through product donation, of the work of California State University Microbiologist Robert Metcalf. Although the company makes no claims for the use of 3M Petrifilm Plates for water testing, Dr. Metcalf has trained representatives in local municipalities throughout Kenya to use the plates to test water before and after treatment.

Focus on improving education

3M Microbiology is generating excitement about microbiology learning that is grounded in real-life applications in middle schools, high schools, colleges and universities in Europe, Canada and the United States. The goal is to advance teacher and student research and understanding of the world of microorganisms and to encourage future innovations in food microbiology.

On average, over 100 community colleges, state colleges and universities in the United States participate in the 3M Microbiology University Program every year. Program participants receive boxes of 3M Petrifilm Plates, at no charge, for use in teaching students. Institutions receive, at a minimum, 3M™ Petrifilm™ Aerobic Count Plates and 3M™ Petrifilm™ *E. coli*/Coliform Count Plates. Some of the institutions are receiving up to eight different types of 3M Petrifilm Plates (e.g., *Listeria*, *Staph*, Rapid Coliform, etc.). Donations are made to educational institutions in other countries as well, including Mexico, Canada and Thailand.

3M Microbiology's professional education efforts in Mexico and Thailand illustrate a worldwide commitment to providing ongoing learning to those within the food industry. In 2007, 20 food safety education seminars and 30 workshops were conducted, with over 1,000 people in attendance in Mexico. In Thailand, more than 100 educational programs were conducted including in-house training, trade seminars, and university programs.

3M also offers sabbaticals to university professors to enrich their understanding of the food industry from an applied perspective. Participants have included Dr. Frank Busta, University of Minnesota, Food Science Department Chair (1999) and Dr. Purnendu C. Vasavada, University of Wisconsin-River Falls, Professor Food Science (2008).

Through its activities and involvements, products and people, 3M Microbiology serves as a leader in food safety innovation and change… change that is making a difference in the global food chain every day.

Ivan Parkin Lecture

Utility of Microbiological Testing for Food Safety Assurance

Presented by: Russell S. Flowers, Ph.D.
Silliker Group Corporation
Homewood, Illinois

Microbiological testing is an important component in assuring food safety. It is used to establish baseline information for microorganisms in ingredients, in-process samples, the process environment, and validate the efficacy of lethal and preservation processes. Microbiological testing also is useful for verification of critical ingredients, the processing environment, critical control points (CCPs), and the overall HACCP plan. Microbiological testing may be required as part of trade agreements between countries, or part of purchase specifications between buyer and supplier. In addition, regulatory programs have incorporated microbiological guidelines, requiring routine process control testing. Some food producers perform routine finished product testing as due diligence to minimize liability in the event of litigation. These different applications of microbiological testing require varying levels of accuracy, precision, sensitivity, specificity, time, and cost constraints. The confidence or uncertainty associated with microbiological data can be affected by various steps in the process, including the sampling plan, sampling procedure, method of analysis, and laboratory performance.

Methodological considerations

Over the past 25 years, tremendous innovations in microbiological food testing have occurred. For example, methods for the detection and identification of microorganisms, especially pathogens, that utilize enzyme immunoassays, immuno-capture, genetic hybridization, and gene amplification have been developed and commercialized. These techniques can also be used for quantification and identification of spoilage and indicator organisms. However, even with theses new technologies, the basic principles of microbiological testing of foods remains essentially the same as it has been for almost 100 years.

A sample must be collected from the food, homogenized and analyzed for the presence of the organism(s) of interest. With few exceptions, e.g., direct microscopic techniques, detection and quantification of microorganisms in foods requires that the organism(s) of interest be cultivated in growth media, solid or liquid, to a level that can be observed visually or detected by various secondary screening methods. Historically, evidence of growth resulted from turbidity in liquid media or visible colonies on agar plates. Quantification was facilitated by serial dilution of the homogenates before cultivation. The basic principles were made more specific by the inclusion of selective and differential agents in the growth media to suppress the growth of competitive (non-target organisms) and provide visible changes in the media to differentiate the target organisms(s) from competitors. In order to observe visible changes in the media, high numbers of cells are required. Therefore, the methods generally required days to complete. Today, sampling, homogenization, and incubation is still required, but technological advancements have facilitated the detection of the target organism in the growth medium, leading to improvements in sensitivity, specificity, and the time required for specific detection; 8–24 hours.

Quantitative methods have theoretical limits of detection of 1–10 cells per gram for MPN procedures, and 10–100 cells per gram for plate count procedures. Even direct enrichment methods are limited to the detection of 1 organism per amount of food tested, assuming that the one organism is able to grow and reach a detectable level, as described above. The limits of detection can be improved by analyzing larger samples and multiple sub-samples. However, even if 100 samples of a lot of food are tested, lots with 2% contaminated samples would be accepted ~18% of the time *(1)*.

Furthermore, the accuracy and precision of microbiological methods are often not considered. For a sample containing 100 cells/g of a specific or group of organism(s), the 95% confidence limits for a plate count and an MPN method would be +/- 20% and 30–300%, respectively *(2)*. An enrichment method utilizing sixty 25 g samples, a total of 1500 g, would provide 95% confidence that there is <1 cell/500 g

of food tested *(3)*. These confidence limits assume random distribution of the organisms within the food and that there is no variance related to analytical methods or analysis. In reality, microorganisms are not always randomly distributed and there is always some variance related to methods, laboratories and analysts. The total variance related to analytical result is defined as uncertainty *(4)*.

Applications of microbiological testing

Despite the limitations and uncertainty of sampling and testing for microorganisms, microbiological testing is almost always an important component of any program to assure the safety and quality of foods at all levels of government and industry. Microbiological testing is performed to establish background information, verify control, or to reach a decision or judgment. Examples of decisions or judgments related to microbiological testing include: verification of the safety of a product, assessing adherence to good manufacturing/hygiene practices (GMP/GHP), determining the utility of a food or ingredient for a particular purpose, predicting shelf life of a product, and verification of compliance to established microbiological criteria; e.g., regulations, purchase specifications, internal guidelines, etc.

Microbiological testing plays an essential role in HACCP plans and pre-requisite programs. Data may be utilized to validate processes and to verify control. Products that are to be used by at-risk groups or which contain no lethal step may require microbiological testing to monitor the safety of ingredients and/or finished products. Testing can be used to verify the efficacy of cleaning and sanitizing procedures and determine the presence of pathogens in the processing environment. Understanding the prevalence and distribution of microorganisms in the processing environment is essential to prevent contamination of products that do not receive a lethal process in their end-use packaging. This is exemplified by the number of products recalled in recent years that included a validated lethal process prior to packing. Considering the number of outbreaks and recalls associated with plants operating with HACCP plans, it is prudent to consider ongoing microbiological testing as verification that the plan is effective and the process is under control.

Microbiological testing of ingredients and finished products to demonstrate compliance with microbiological criteria, such as regulatory standards, internal company specifications and purchase specifications, constitutes a large percentage of microbiological tests conducted by industry. Moreover, concerns about the potential for litigation encourages companies to develop test data as documentation of due diligence, even when they have a high level of confidence in their processes and systems to deliver safe and high quality product.

Although it has been many years since the International Commission on Microbiological Specifications for Foods (ICMSF) provided guidance on development of microbiological criteria, many microbial limits set by industry and government fail to include necessary components that determine the reliability of the data for the purpose intended. Even when these components have been defined, they are often set without a clear understanding of the uncertainty associated with the distribution and state of the target organism(s) in the food, and the methods of sampling and testing. For example:

- Application of sampling statistics based on random distribution to when the distribution is non-random or unknown
- Insufficient number of samples to draw valid conclusions about the acceptability of a product, such that, negative results have little value, and data is only meaningful if the tests indicate non-compliance
- Re-testing of product that failed initial testing and accepting a desirable re-test result without considering that such results might be related to distribution rather than a laboratory error on the first test
- Establish of zero-tolerance criteria, even though no practical sampling plan and testing protocol can assure the absence of a pathogen
- Often microbiological data exist that is only examined relative to pass/fail criteria on a given unit of production or moment in time for environmental tests. Trend analysis of this data may identify potential problems or can add confidence that the process is under control

The future

Despite the limitations and inappropriate applications of microbiological testing today, there is hope for the future. Risk-based Food Safety Objectives (FSO) which translate public health risks into definable goals; i.e., "the maximum frequency and/or concentration of a hazard in a food at the time of consumption, that provides or contributes to the appropriate level of protection (ICMSF, 2002). This approach enables the food industry to meet a specific goal by application of GMP/GHP, validated HACCP systems, performance criteria, process/product criteria, and acceptance criteria.

FSOs provide industry with a scientific basis to select and implement control measures from farm-to-fork. Performance Objectives (PO) may

be established along the farm-to-fork chain that define microbiological limits at certain steps that are necessary to comply with a FSO at the end of the chain. Microbiological criteria may be useful to assure the acceptability of product along the chain, but in many cases the acceptable limit will be too low for it to be practical to collect and test a sufficient number or samples to assure compliance of any given production batch of lot. However, cumulative data collected across numerous batches or lots can verify that the food safety system or process designed to meet a PO or FSO is under control and functioning as intended.

Finally, technological improvements in microbiological sampling and testing will allow more sensitive and faster detection. Improvements and more emphasis on method validation and laboratory quality programs will provide a better understanding of the uncertainty of analytical data. The combined effect of these developments should greatly enhance the value of microbiological testing for food safety assurance.

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Everyone Benefits When You Support **The IAFP Foundation**

We live in a global economy and the way food is grown, processed, and handled can impact people around the world. Combine these issues with the complexity of protecting the food supply from food security threats and the challenges to food safety professionals seem overwhelming. However, with your support the IAFP Foundation can make an impact on these issues.

Funds from the Foundation help to sponsor travel for deserving scientists from developing countries to our Annual Meeting, sponsor international workshops, distribute *JFP* and *FPT* journals to developing countries through FAO in Rome, and supports the future of food scientists through scholarships for students or funding for students to attend IAFP Annual Meetings.

It is the goal of the Association to grow the IAFP Foundation to a self-sustaining level of greater than $1.0 million by 2010. With your generous support we can achieve that goal and provide additional programs in pursuit of our goal of *Advancing Food Safety Worldwide*®.

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The John H. Silliker Lecture

From Wild Pigs and Spinach to Tilapia and Asia: The Challenges of the Food Safety Community

Presented by: Dr. Michael P. Doyle
Center for Food Safety
University of Georgia
Griffin, Georgia

It is a special honor for this opportunity to present the IAFP John Silliker Lecture. John Silliker has been a pioneer in helping the food industry to control *Salmonella* in processing facilities and testing finished products to improve safety. His leadership in identifying critical locations of *Salmonella* contamination in food processing facilities and developing methods for compositing samples for detecting *Salmonella* in foods are just a few of the important contributions that underscore his impressive legacy.

The dynamics of the food industry have changed dramatically during the past decade as has the ability of the Centers for Disease Control and Prevention and state health departments to detect outbreaks of foodborne illness. The "progress" made by food processors and public health agencies has led to new and greater challenges for the food safety community in ensuring greater public health protection through safe foods.

Two of the most dramatic changes within the industry that increase the risks to foods are the production of fresh-cut, ready-to-eat produce and the increased importation of foods from countries that use insanitary hygienic practices in food production, harvesting, and/or processing. These risky food safety practices are countered by major advances in foodborne disease outbreak detection systems such as PulseNet and SalmNet that have led to the identification of many recent outbreaks that would have likely been undetected a decade ago. Riskier food production practices combined with increasingly advanced foodborne outbreak surveillance and detection methods are opposing forces that will likely raise to unprecedented heights the level of the challenges to both the food industry and public health community in ensuring safe foods. As a reminder, it is the food industry's responsibility through production, harvesting, processing, distribution and retailing to provide safe foods, the regulatory agencies' responsibility to verify that the industry is providing safe foods, and the academy's role to assist both parties in providing and verifying safe foods.

Many factors are driving the food industry to riskier practices ranging from driving down costs to consumer preferences for more fresh-like products. Consumer preference for ready-to-eat, fresh-cut vegetables and fruits have provided the fresh-cut produce industry a multibillion dollar per year opportunity within a decade. However, as this industry grows and adopts cost-cutting measures, the food safety aspects of production, harvesting and processing must not be overlooked. Between 1998 and 2006, 18 confirmed foodborne disease outbreaks have been associated with fresh-cut produce of which half were attributed to contaminated lettuce. Analysis of foodborne outbreaks that occurred during the past decade have revealed that produce and plant-associated products are leading vehicles of foodborne illnesses in the USA, being responsible for more illnesses associated with reported foodborne outbreaks between 1998 and 2004 than any other food group. Leafy greens and noroviruses; tomatoes, melons and peppers and *Salmonella*; and fruits and leafy greens and *E. coli* O157:H7 are the food vehicle-pathogen combinations frequently being reported. The large outbreak of 205 *E. coli* O157:H7 infections, 31 cases of hemolytic uremic syndrome, and 3

deaths associated with eating bagged fresh spinach in the fall of 2006 brought consumer awareness to the vulnerability the fresh-cut produce industry has in ensuring safe bagged, ready-to-eat products.

Food safety researchers have during the past decade obtained a wealth of information regarding the increased risks associated with produce that has been cut, shredded, diced or peeled. Among their findings is that fresh-cut produce is essentially wounded plant tissue, and that microbes attach more easily to cut or bruised vegetable and fruit surfaces than on intact produce. Furthermore, cut surfaces of produce release large amounts of liquid containing nutrients that are readily utilized by attached microbes, including foodborne pathogens, and these leaking juices interfere with the bactericidal activity of many disinfectants during the initial and subsequent wash steps. For example, treating cut lettuce with chlorine at concentrations of up to 200 ppm for 5 min only reduces *E. coli* O157:H7 populations by about 1 log CFU or less. Additionally, fresh-cut produce is known to be temperature abused during retail display and in the home, which are conditions that can allow substantial growth of pathogens like salmonellae or enterohemorrhagic *E. coli*. Most bagged fresh-cut produce is intended to be ready-to-eat, i.e., simply opened and consumed without an additional antimicrobial treatment such as cooking, hence there is no subsequent protective measure to ensure safety should the product be contaminated with microbial pathogens.

Neither processors nor consumers presently have a treatment available that assures the microbiological safety of fresh, especially fresh-cut, produce contaminated with large populations of foodborne pathogens. Electron beam, gamma or x-ray irradiation may be a partial solution; however, many present-day consumers are unlikely to purchase produce that carries a label indicating it has been irradiated. In addition, there are still lingering questions regarding acceptable packaging for irradiated produce and product quality, especially of irradiation-sensitive leafy greens.

In summary, we now know that fresh produce is increasingly responsible for outbreaks of foodborne illness and that some foodborne pathogens such as *Salmonella* can contaminate produce-growing areas and produce for weeks to months, depending on conditions. Furthermore, current production and processing practices cannot be relied upon to ensure pathogen-free fresh and fresh-cut produce. Hence is the challenge for the food safety community, i.e., to develop and implement more effective food safety interventions, ideally effective critical control points in a HACCP system, throughout production, processing, and distribution that will ensure the safety of fresh and fresh-cut produce.

A second major weakness in the United States' food safety net is the microbiological issues associated with many of its imported foods. Unbeknownst to many, 2004 was the first year on record that the USA imported more food than it exported. In 2006, approximately 15% of food consumed in the US was imported. The greatest surge in US imports has been from horticultural products, with approximately 45% of fruits and 16% of vegetables imported in 2005. In 2001, about 85% of fresh and frozen fish and seafood, 49% of tree nuts, 40% of lamb, and 12% of beef were imported. Reasons for the growth in food imports includes reduced labor costs, climatic and seasonal conditions for production, water availability for crop irrigation, and land availability and costs. Mexico is the major US supplier of imported vegetables, Costa Rica, Guatemala, Mexico and Ecuador of fruit, India, Vietnam, Brazil, and Mexico of tree nuts, China, Thailand, and Ecuador of shrimp and tilapia. Countries with the greatest rates of growth in agricultural products supplied to the United States are China and Brazil.

A range of microbiological safety issues is associated with many foods imported into the United States but they largely revolve around inadequate sanitation practices used for food production, harvesting or processing. Improper processing conditions such as unsuitable canning equipment or inadequate canning temperatures and times are additional concerns. Pathogen contamination of produce, such as *Salmonella* Saintpaul on jalapeño and serrano peppers and hepatitis A viruses on green onions all grown in Mexico, are examples of which the American public is well aware.

Pathogens can contaminate produce through a variety of sources. The origin of most enteric foodborne pathogens is untreated manure or sewage from asymptomatic or symptomatic animal or human intestinal carriers. Such contaminated feces may be used as a soil amendment to fertilize crops, may contaminate irrigation water used for watering crops, may be present in processing water used to wash and clean vegetables and fruits, or may contaminate vegetables and fruits during harvesting by infected food handlers who have poor hygienic practices. Specific examples of improper food safety practices associated with imported produce include: (i) the widespread practice in east Asia, of using untreated human excreta on farmland, (ii) the use in Mexico of irrigation water from rivers that contain untreated human sewage (about 90% of the sewage from Mexico City's more than 25

million people is directed untreated into rivers), and (iii) insanitary harvesting practices used for picking vegetables and fruits such as children infected with norovirus or hepatitis A virus accompanying parents in produce fields where they play and defecate on heaps of vegetables during the harvest season. We have learned from several outbreaks of cyclosporidiosis that by importing foods, pathogens can be moved from areas where they are indigenous to locations where they seldom or do not exist. This occurred during a 3-year period of time in the late 1990s with *Cyclospora* in raspberries from Guatemala imported into the United States and Canada.

Aquaculture, a common practice for growing shrimp and tilapia in many Asian countries that export these products to the United States, frequently involves applying to these ponds raw, untreated domestic sewage and/or livestock manure as the primary source of nutrients. *Salmonella* and drug residues are frequent contaminants of fish and seafood grown under such conditions. It is estimated that at least two-thirds of the world production of farmed fish is grown in ponds fertilized with animal manure or human sewage. Economists predict that gains in seafood production will primarily come from farmed fish. Aquaculture accounted for 12% of seafood production in 1984 and for 37% in 2003. Predictions indicate that by 2014 the amount of tilapia imported into the United States will exceed salmon imports.

In addition to microbiological food safety issues, many developing countries produce foods contaminated with chemical residues. As an example, farmers in China rely on heavy use of chemicals to control pests, and widely apply antibiotics to control diseases in livestock, poultry and aquaculture. This includes use of many highly toxic pesticides, some of which are banned in the United States, and excessive application of chemicals because some farmers have little understanding of correct chemical use and some farm chemicals are sometimes mislabeled. In addition, industrialization and lax environmental controls in China contribute to heavy metal contamination of foods. Shrimp, poultry, honey, frozen spinach and tea contaminated with excessive residues of antibiotics such as chloramphenicol or pesticides are examples of foods from China rejected by the European Union, Japan or the United States because of chemical contamination.

Food shipments into the USA have been increasing at exponential rates. The US Food and Drug Administration (FDA), which has regulatory authority over about 80% of the US food supply, reported about 4 million food import entries in 2000, 8 million in 2005, and >11 million in 2007. In 2007, a sampling of about 1% of imported food shipments under FDA was visually inspected, with less than 0.5% of these shipments sampled for testing. A few examples of food refused by FDA in March 2008 because of *Salmonella* contamination include cheese from Honduras and Mexico, ready-to-eat shrimp from India, cookies from Mexico, spices such as black pepper, curry powder, and cumin from India, and peppers and chili powder from Mexico.

Future trends in food exportation to the United States include more produce coming from Mexico as California vegetable production shifts south of the border and Brazil and China becoming even more dominant global agricultural producers and food exporters. Currently, China is the United States' principal source of apple juice and garlic, and a major supplier of fish and seafood. Recently, China has been allowed to supply the United States with fully processed, ready-to-eat chicken. Considering that the single greatest cost of retail foods in the United States is for labor (ca. 38.5%), it is economically feasible for China to purchase US-grown frozen raw poultry, further process it in China where labor costs are $0.50 to $1.00 per hour, and market the packaged product in the United States with a significant profit margin. Brazil is a world power in the food export market. It is the number one global exporter of beef, orange juice, coffee, poultry, soybeans and sugar. In Brazil, land is relatively inexpensive compared to land values in most developed countries. Labor costs are relatively low, soil fertility is incredibly high, requiring little or no fertilizer, water is plentiful for crop growth, and depending on crops, two to three harvests can be obtained in one year compared to one crop harvested in the United States.

Some consumers believe that organic foods are safer than conventionally grown foods so they rely on organically grown products as their primary source of food. In 2006, organic foods comprised about 2.5% of the US food market. The estimated 10,000 organic farms in the United States are not increasing quickly enough to meet demand. Hence, organic food processors are sourcing ingredients globally from locations including South Africa, Bolivia, Venezuela, and Europe. This includes countries in which food is produced under insanitary conditions. There is no assurance that organic foods are microbiologically safer than others.

Current trends indicate that foods imported into the United States during the past decade have increased at an unprecedented rate, with food imports being greater than US food exports. Fresh produce, fresh and frozen fish and shellfish and tree nuts are dominant among food groups that

the United States receives from other countries. Developing countries are major contributors to the US food import market. Food, in many developing countries, is not produced, harvested and prepared under acceptable sanitary practices or under conditions equivalent to US-produced foods.

Economic pressures and other extenuating factors are driving the United States to become a dominant food importer whereby most of its food supply may in the near future be derived from other countries that currently do not meet the American public's expectation of microbiologically safe production, harvesting, and processing practices. Recent foodborne disease outbreaks occurring in both humans and pets are an indication that food importers and processors of imported food or food ingredients are not providing safe foods, and the United States' regulatory food safety programs are not adequately verifying that safe imported foods are being provided by those in the food industry. These global changes in food importation necessitates developing and implementing more effective, internationally accepted food safety management systems. Futhermore, the United States' food safety regulatory agencies would benefit from a modernization of their food safety assurance programs which currently are out of step with today's food import situation and future trends. We in the food safety community, no matter in what country we reside or if we are academics, food regulators, or food producers, preparers or distributors, are facing greater challenges than ever before in ensuring a safe and wholesome global food supply. I encourage us to work together through organizations like the International Association for Food Protection to address this challenge and help bring about changes needed to make the world's food supply safer for all.

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Our Experiences by the IAFP 2008 Student Travel Scholarship Award Recipients

Ji-Yeon Hyeon
Konkuk University
Seoul, South Korea

I was so excited to attend my first International Association for Food Protection Annual Meeting, and I was provided so many benefits as a Student Travel Scholarship recipient. I had the honor of meeting the world's leading professionals/ scientists in the food safety area, who mentored me through the Welcome Session and Student Luncheon. All were very kind, familiar, and patient with the poor English of foreigners, so I really enjoyed talking with them.

As I expected, IAFP 2008 was very well-organized and professional. It was an invaluable experience to be informed about the latest technology and food safety research through the technical and poster sessions. I was very surprised and motivated when I found reports similar to my own research. In addition, I felt the care and concern of IAFP for its students, because the Student Luncheon speakers were very helpful to students like me who are deciding on their career.

I would really like to thank all members of IAFP for electing and allowing me to attend and experience this symposium. And I truly appreciate the IAFP staff for their kindness and consideration. I will keep in my memories everything concerning IAFP 2008, and will grow and learn from it before attending IAFP 2009 in Texas.

Hudaa Neetoo
University of Delaware
Newark, Delaware

As one of the IAFP 2008 Student Travel Scholarship winners, I am immensely grateful to this organization for increasing the number of awarded scholarships to a total of six this year. Besides constituting a prestigious award, the scholarship embraces a noble cause by providing greater opportunities for students to attend one of the leading scientific conferences in food safety.

IAFP 2008 was a particularly enriching experience for me for several reasons. This year, I took on the role of Chairperson of the Student Professional Development Group, which enabled me to expand my circle of acquaintances at the various social functions, including the Welcome Reception on Saturday, the Student Luncheon held on Sunday, and the Student PDG Mixer on Monday evening. During the Welcome Reception, I had the opportunity to meet my mentor, Dr. Dale Grinstead. He is a very sociable person with a pleasant personality, and was very open and honest about the rewards and challenges of working in the area of food safety, particularly in an academic setting.

Chairing the Student Luncheon and Mixer were "fun" experiences, as I had the opportunity to organize social events together with the team of Student PDG officers. Although we see one another just once a year at the meeting, we coordinate well throughout the year and always seek one another's valuable opinions and advice. Hence, it was very touching to meet my fellow officers at the meeting, and to revisit some old friendships while making new ones.

I cherish the impressive scientific value of my IAFP 2008 experience. The meeting opened with a very enlightening Ivan Parkin Lecture delivered by Dr. Russell Flowers, proceeded over the next days with a series of oral (Technical, Roundtables or Symposia) or poster sessions of high caliber, and concluded with a Late Breaking Session. Also at IAFP 2008, I had an unprecedented chance to co-organize and co-moderate a symposium, which was very well attended throughout the session. Like many other students, I also monitored several sessions and summarized some presentations for publication in upcoming issues of *Food Protection Trends*.

During the meeting, I presented a poster on the application of effective antimicrobials to control foodborne pathogens on ready-to-eat foods with minimal impact on their organoleptic characteristics. Indeed, presentation of my work at the conference enabled me to build new contacts and establish new relationships with key industry professionals whom I followed-up with after the meeting to explore other research avenues.

IAFP 2008 in Columbus represented one of the most fulfilling meetings for me, acting as a focal point where the leading scientists in food safety converged in an atmosphere of "give and take" as colleagues and wonderful friends.

Rolf Erik Nilsson
University of Tasmania
Hobart, Tasmania, Australia

Attending the 2008 International Association for Food Protection's 95th Annual Meeting as a Student Travel Scholarship recipient was an honor and a privilege. I thank IAFP for making this award available. I would particularly like to thank the members of the Executive Board for taking the time to welcome me; Leilani McDonald for her timely organizational advice; and members of the Student Professional Development Group and my assigned mentor, Kendra Knight, for guiding a comfortable transition into the conference environment.

IAFP 2008 provided a diverse range of educational and networking experiences. The symposia, technical and poster sessions offered insight into novel research, the status of internationally prominent regulatory issues, and many topics concerned with food safety. In addition to this, the many stalls provided by sponsors and special contributors of IAFP 2008 displayed within the exhibition hall allowed an interactive introduction to a wide range of world class equipment and products. I particularly enjoyed the opportunity to listen to, and discuss, topics covered at the meeting with food safety professionals from around the world. This included acclaimed researchers in my own area of interest, *Listeria monocytogenes* stress physiology, as well as other academics and industry professionals covering topics new to me. I believe the social meetings augmented the many symposia and technical sessions I attended, highlighting the importance of networking and extending the benefits of the conference well beyond the allocated time frame.

The meeting exceeded my expectations educationally, professionally and socially. I feel I have gained confidence from the experience and have been provided with knowledge and contacts that will contribute towards success as a research student, and inspiration for my future career in food safety.

M. Elizabeth Palmer
Cornell University
Ithaca, New York

The International Association for Food Protection's 95th Annual Meeting was a superb educational event. I greatly appreciated the opportunity to attend and the incredible experience I gained from it. Given the prestige of IAFP, it is an honor to have received the Student Travel Scholarship. I am grateful for the invaluable mentoring, the many connections that I developed within the Association, and the chance to meet the talented individuals whose research and viewpoints I very much admire. The vast spectrum of information presented at IAFP provided me with a broadened perspective of food safety. I came to the conference having experienced only certain aspects of food safety and came away with an understanding of the enormity and complexity of food safety.

The scientific content of the posters, technical sessions, symposia, and lectures was excellent as it spanned diverse and highly relevant topics. Based on the topics addressed at the meeting, clearly the association recognizes the immediacy of understanding the scientific aspects underlying the issues critical to making advances in each of the

challenges faced by food safety scientists. The meeting was an excellent venue in which scientists and the contributors to the field met and communicated these important ideas and exchanged cutting-edge and first-hand knowledge with others.

The participants, contributors, and organizers made this a well planned and very informative event. The luncheons, dinners, and social events made for a relaxed setting for conversing about science and meeting new people. Overall, the meeting has enhanced my understanding of new concepts. This has expanded my knowledge base of all aspects of food safety thereby enabling me to identify the broader implications of my doctoral research.

Meeting other students and professionals encouraged the sharing of complimentary ideas and novel approaches to research, permitting me to be not just a student attending a conference, but to be a part of this community. I thank the Association and everyone involved in providing me with the opportunity to attend. I certainly look forward to future meetings and would highly recommend this to other young food safety scientists who have not yet had the opportunity to experience the IAFP Annual Meeting.

Akafete Teklu Fite
Addis Ababa University
Debre Zeit, Ethiopia

First of all I would like to express my great pleasure and thanks to the International Association for Food Protection (IAFP) for honoring me as a recipient of the Student Travel Scholarship to attend the 95th Annual Meeting in Columbus, Ohio. As a student, attending such an international meeting with professionals from all over the world gives me great pleasure and an experience that very few students have the opportunity to undertake.

Since I am professionally interested in the area of foodborne diseases, particularly salmonellosis, *Salmonella* in processed foods, food safety issues in food transportation, validating processes for reducing *Salmonella* in low water activity foods, and the "real" issue with MDR, I was pleased to be able to attend presentations given by the respective professionals. It was an enjoyable learning experience and an unforgettable achievement in my career.

In general, the meeting was very much an organized, coordinated, and ideal medium for food safety professionals to meet and share golden ideas from every corner of the world. Further, I met lots of people from a variety of areas: government organizations, non-government organizations, university professors, laboratory managers, students, researchers, distributors, and so on. I am really surprised that the international community for food safety and quality is so large and diverse—and I am deeply thankful for being given the opportunity to become part of it and learn from this community. The individuals I met during the meeting are truly invaluable contacts on a social and professional basis, so I will keep in close contact with them. Now, I hope to contribute to the international community for food safety and quality.

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Session Summaries

Members of the IAFP Student Professional Development Group assisted the Convenors by serving as Session Monitors at IAFP 2008. Student Montiors prepared the following session summaries for presentation in *Food Protection Trends*.

S1 – 2008 Foodborne Disease Update: *Salmonella* in Processed Foods

Amrita Pathania and Laura Bauermeister, Auburn University

The session began with a presentation by Agnes Tan, from The University of Melbourne, Parkville, Australia, on the topic "*Salmonella* Serotype Mbandka in Peanut Butter, Australia, 1996" which focused on the detection and lessons learned from the multi-disciplinary approach of the outbreak investigation. She discussed the problems that occurred during the investigation, the geographic distribution of the cases, an unknown vector and the potential risk factors.

Ian Williams, CDC-NCZVED, presented "Outbreak Investigation: *Salmonella* Tennessee in |Peanut Butter in the United States, 2007" in which he outlined the contamination at a single peanut butter plant over months causing a national outbreak. Peanut butter had never caused an outbreak in the United States and serotype Tennessee is rare. During his talk, he discussed about how the outbreak was investigated and the action taken by the FDA in notifying WHO, WHO-INFOSAN, CDC and various other countries.

Don Zink, FDA-CFSAN, concluded the first half of the session with the topic "Environmental Investigation and Regulatory Response: *Salmonella* Tennessee in Peanut Butter in the United States, 2007" during which he discussed the discovery of the Peter Pan outbreak through the epidemiological investigations triggered by the Foodnet. He discussed concerns related to food safety and the regulatory action and its relation to educational outreach.

Rajal Mody, CDC-NCZVED, presented on the "Outbreak Investigation: *Salmonella* 4,5,12:i:- Associated with Pot Pies in the United States, 2007." He discussed how the outbreak was traced back to the turkey pot pies although the source of the *Salmonella* in this outbreak is still unknown. Oversights included using a microwave with the wrong wattage and not holding the product after microwaving. This outbreak has led to a change in package instructions on this product and the CDC has made several recommendations, including; consumer education of prepared but not ready-to-eat foods and microwave cooking practices, printing clear instructions on the labels and companies should validate instructions.

Patricia White, USDA-FSIS, discussed the "Environmental Investigation and Regulatory Response: *Salmonella* 4,5,12:i:- Associated with Pot Pies in the United States, 2007." She further discussed the review of the establishment and found some issues regarding missing certificates of analysis and no validation of the microwave cooking instructions. Microwaving was a contributing factor in this outbreak and cases have ceased with the new label instructions. FSIS is focusing their efforts on outreach and education through the validation of cooking instructions for industry and educating consumers on the use of thermometers.

Joseph Meyer, ConAgra, concluded the symposium with "Industry Perspective on the Peanut Butter and Pot Pie Outbreaks." He discussed the actions taken in the peanut butter and pot pie outbreaks to prevent outbreaks of the kind in the future. For peanut butter, their ongoing efforts include the development of guidance materials for *Salmonella* control in low moisture foods. For pot pies, they continue to work with the American Frozen Food Industry, other industry members and consumers to persuade microwave manufacturers to clearly label wattage levels on microwave ovens and to work together towards one common goal.

S2 – Coming Out of the *Campylobacter* Closet: International Strategies for Reducing Human Campylobacteriosis

Grihalakshmi Kakani, Texas A&M University and Jessica Butler, Auburn University

Judi Lee from New Zealand Food Safety Authority discussed the topic "Codex Initiatives for Control of *Campylobacter* in Poultry." Codex agreed to work with New Zealand and Sweden to address some of the issues that include: meat from birds of the species *Gallus gallus*, focus on carcass meat/portions, and birds other than broilers were to be included from 2007. Current work in progress includes draft guidelines (2008) and scientific advice from JEMRA. Information yet to be available on several areas includes control measures, implementation of control measures, monitoring and review programs and risk-based applications.

Hans Lindmark from National Food Administration, Sweden, followed up the discussion by elucidating some of the regulatory programs implemented in Scandinavian countries. In Sweden and Norway, some of the programs include a bonus of 1% being offered for *Campylobacter* free flocks and implementation of biosecurity measures. Based on the several programs/measures implemented,

it was concluded that there is a close relationship between application of biosecurity and low incidence of *Campylobacter* in chickens in Norway.

Roy Biggs from Tegel Foods, New Zealand, reviewed the progress of *Campylobacter* control in New Zealand. Some of the strategies employed included risk-based management, better quantification of proportion of cases attributable to poultry, understanding the relative values of different interventions throughout the food chain in reducing risks to human health, providing the basis for informed risk management decisions and designing and implementing monitoring and review programs. The primary goals of the surveillance programs include monitoring of foodborne illnesses and genotyping of strains to assist with source attribution. The monitoring programs implemented were aimed at identifying the prevalence levels both at the point of slaughter and processing operations. The industry in New Zealand has mandated a 3.78 $\log_{10}$ CFU/carcass in February 2008 with a moving window approach; however, the interventions applied by the industry have not been mandated. The performance target of NZFSA (New Zealand Food Safety Authority) has been a 50% reduction in the incidence of *Campylobacter* after five years.

Roger Cook started out by discussing the history of *Campylobacter* and how previous talks given have been quite repetitive until this year. Judy Lee then discussed the new benchmark-setting body that consists of 177 countries and stated that New Zealand heads up this body, since they have suffered from recurrent *Campylobacter*-related outbreaks. She went on to discuss the Codex content, principles and elements of standards.

The function of Roy's and Judi's joint talk was to discuss how the industry handles *Campylobacter* problems as opposed to the way dealt by the government in New Zealand. The industry has made progress by consistent management focus in all plants while the NZFSA has focused on lowering the incidences of foodborne campylobacteriosis within 5 years.

Joe Shebuski from the UK emphasized that the *Campylobacter* problem is not only poultry-related, it also involves the environment as well as animals and pointed to the lack of importance placed on processing and use of antimicrobials.

S3 – Globalization of Acceptance Criteria for Microbiological Methods: Separating the Science from the Politics

Saurabh Kumar, University of Nebraska – Lincoln and Jeremy Adler, Colorado State University

Michael Broadsky started the talk by introducing the topic and relating the ISO 16140 standard to the issue of not being widely agreed upon and differences between the method validation and harmonization.

Ron Johnson discussed the global need for internationally accepted microbial testing methods due to increasing food import and export to ensure food safety and security. Currently, national testing standards differ and present an obstacle to free trade, thus creating an uneven playing field. To even the playing field, he proposed, the focus should be on performance characteristics and not a comparison of tests to a reference method. The reasoning for this is that in some cases the test (rapid or conventional) method is more sensitive than the reference method and for some there is no reference method to validate against.

Scott Coates gave an overview of development of AOAC harmonized methods by working with other certification bodies (FDA, USDA, ISO, AFNOR). Some countries are legally bound to perform statutory testing procedures greatly impeding the AOAC ability to harmonizing methods across countries. Once a testing method is agreed upon he outlined the 3 approaches for validation process (i) compare with the current reference method (ii) develop a new global reference method or (iii) having no reference method which was proposed by the Best Practices for Microbiological Methods Project in 2006.

Roy P. Betts discussed the dichotomy in the validation process being followed in European Union. Testing procedures performed by an ISO17025 accredited lab need only to be referenced by a published testing procedure or validated internally. However, under ISO16140 testing procedures are validated using a recognized standard. He also mentioned it is very difficult to make countries agree on standards as countries do not want concede their methods and interpretation may be different. In his opinion, performance-based prescriptive standards should be used instead of method comparison.

Jeff Farber updated the validation and harmonization process being followed in the Canadian regulatory system for "The Compendium of Analytical Methods of Health Canada." He outlined the various harmonization projects being undertaken across the globe for harmonization. The various research projects involving method validation with WHO and FDA were shown. He stressed the importance of using the natural contaminants for validation studies for better understanding of the microbial dynamics. He outlined the performance approach of the agency rather than prescriptive approach.

Scott Sutton discussed the timely, dynamic harmonization process in the pharmaceutical industry and warned "be carful what you wish for." He outlined the testing methods and quality assurance practices being followed in the pharmaceutical industry. He also stressed the involvement of scientists and industry in forming the legal perspective for better acceptance, implementation, and development of harmonized procedures.

In summary, to ensure food safety and security of globally transported food there is a need for developing science based harmonized microbial testing criteria. While plausible from a scientific standpoint, politically this may be very difficult. Finally, performance based standards may be the fastest route to harmonization.

S4 – Bacterial Physiology — A Forgotten Theme That is Critical for the Food Microbiologist

Diego Paiva, Auburn University and Bala Jagadeesan, Purdue University

The symposium focused on the effect of stress and growth environment on bacterial physiology and its implication in food microbiology. The presenters were Charles Kaspar, Kathryn Boor, Roy Betts, Teresa Bergholz, Larry Beuchat and Martin Wiedmann. The complexity of the molecular interactions in regulating the phenotypic expression of the bacteria during growth and stress conditions at the transcriptional, translational and post translational level were discussed in depth along with the role of master regulators such as Histone Nucleoid Structure Proteins (H-NS). Stress response and virulence gene expression regulation by sigma B factor in *Listeria monocytogenes* was highlighted to emphasize the importance of understanding the role of general stress response factors in the survival and virulence of foodborne pathogens in general – *L. monocytogenes* in particular. The diverse growth and adaptive response of *Salmonella* to complex food matrix and growth parameter interactions helped reinforce the fact that each food system is unique and thus the physiological response of the bacteria could considerably vary depending on food. In addition, the species, strain, age of the cells and the culture growth phase play a very important role on metabolism and physiological response of bacterial cells to stressful environments. Another very important factor which affects bacterial survival and growth is the food in question and how this specific food is processed, prepared for consumption and commercialized. Some other factors within food composition such as water activity, pH, nutrient availability and physical state of food (liquid, paste, solid) must also be taken in consideration while preparing the inoculum for challenge studies. The difference between shock response and continuous response was explained in *Escherichia coli* O157:H7 and its impact in conferring cross protection, resistance to antimicrobials, design of challenge studies and food processing environment were discussed. Finally, the bacterial physiology and its effect on pathogen detection sensitivity using genetic, protein based and traditional approaches were discussed in detail. Specifically with the development of rapid detection methods, the need to understand about the physiological status of the bacteria enriched for a shorter duration was stressed upon.

Thus the symposium emphasized the complexity of the molecular networks regulating the bacterial phenotypic expression under different growth and stress conditions. The symposium also focused on the applied aspects of the basic knowledge gained in areas such as design of challenge studies and effect on pathogen detection systems.

S5 – Sampling and Sample Prep: Unglamorous but Very Necessary

Heidi Weinkauf, Iowa State University and Michele Yabes-Manuzon, The Ohio State University

Sampling and sample preparation are two key steps for the effective detection of microorganisms. However, most of the research to date has focused on developing assay technologies. Nonetheless, without reliable upstream methods, these detection procedures can be ineffective. Mary Lou Tortorello from FDA-CFSAN stressed the need to develop alternative methods without the use of culture enrichment. In order to advance research in this area, a sample prep multi-disciplinary working group was formed in July 2007 to help promote research in sampling and sample preparation methods for rapid food analyses.

Byron Brehm-Stecher from Iowa State University discussed what comprises the most effective sample preparation methods. He pointed out that techniques and concepts could be borrowed from both allied and non-related fields to help improve sample prep methods. Improvements in these upstream methods are needed to address the physical challenges posed by the food matrix, and may eventually enable the direct analysis from the food without the isolation of cells.

Emilio Esteban of USDA-FSIS-OPHS emphasized that the sampling method of choice depends on the questions that need to be answered. He discussed the basis of designing surveillance and monitoring systems. This requires defining the purpose and most appropriate sample prep procedures, applying the method, analyzing the results and then making recommendations and implementing the ideas.

Tony Sharpe of Filtaflex Ltd. gave a historical overview of common approaches to sample preparation. The development of the stomacher in the 1970s was discussed along with alternatives that have since been created. The stomacher is a traditional method that is still widely used, however

the disadvantage of sample destruction has been realized and alternative methods have resulted, including the pulsifier.

Mark Carter of Silliker Inc. discussed the importance of sample compositing and challenges associated with it. Compositing is designed to save time and reduce the number of tests needed. The goal is to develop a method that has an equivalent performance to the reference method in terms of precision and accuracy. There should be a holistic approach to development and quality controls must be in place to monitor changes in the system.

David Golden from the University of Tennessee discussed surface sampling methods. For effective surface sampling, the target organism needs to be located, extracted from the surface, and removed from the sampling device before detection. The first swab/rinse procedure was developed in 1917 as a surface sampling technique and several advances have been continually introduced with this technique since then.

The symposium was concluded by Lee-Ann Jaykus from North Carolina State University who discussed both new and future perspectives in the field of sample preparation. She presented information on nucleic acid amplification, which seems to be the most promising detection approach to date. This method has the advantage of increased sensitivity, specificity and speed that could result in the linking of detection and confirmation. New ligands such as nucleic acid aptamers, which can fold into unique 3-dimensional structures allowing them to show specificity for a target, could be used as alternatives to antibodies.

S6 – New and Innovative Ways to Derive Risk-Based Management Options

Arpan Bhagat, Purdue University

Dr. Whiting initiated the session with regulatory perspectives for driving risk management options. He explained the reasons for the development of predictive microbiology being a more specific risk assessment. Risk assessment is the best evaluation of risks possible under given set of scientific calculations. However setting food safety objective (FSO) and acceptable level of protection (ALOP, # illnesses per year) are ultimately value judgments and not scientific calculations i.e., a numerical value for ALOP can be based on societal values and expectations.

Jeanne-Marie Membre explained the process involved in setting industrial process parameters on basis of risk-based metrics. Key areas that are to be considered while setting industrial process parameters include hurdle effects (using mild heat treatment, natural food preservatives, pH, organic acid) and supply chain characteristics (storage temperature, product shelf life and consumer habits). Risk assessment and risk-based metrics can be used to solve operational problems. They bring more confidence of decision making through transparency and scientific judgment. However a limitation to this is that it makes it obvious that zero risk does not exist and is resource intensive and specific rather than generic.

Greenfield risk-based approach to managing *C. botulinum* was discussed by Martin Cole. He explained that even though there has been a 90-year excellent safety record for thermal processing/canning, market demand for freshness, health and convenience along with an increase in trade of processed foods is driving innovation in development of new technologies, heat delivery and packaging. Hence there is a need to develop a FSO framework to ensure product safety through review of scientific data viz. *C. botulinum* outbreaks in carrot juice, Castleberry and green beans. Thus to set up FSO the approach should be based on products with well established safety records e.g., shelf-stable products and risk management framework should be used to compare equivalency. The alternators of resistance should also be taken into account such as food constituents that affect the delivery of treatments (pH, salt, and nitrite). This approach allows comparison of different control measures and provides basis for the control authorities and industries to assess acceptability.

Tom Ross went over the scenario analysis in supporting management of *Listeria* in ready-to-eat meats. The development of model in this case is restricted to risk from *L. monocytogenes* in Australian processed meats. The efforts have been put in by international team of well credentialed risk modelers, food microbiologists and industry experts. The data has been obtained from diverse resources and the model is microbiology ecology "rich." The conceptual model includes detailed steps from production to consumption. This exposure system model was then combined with a dose response model to plot the predicted number of illnesses per serving. Predicted number of cases per year was then calculated through critical assumptions from the model output. The rate of growth of *L. monocytogenes* in distribution was found to be influenced by a number of different scenarios and this model combines all the different scenarios.

S7 – Food Safety Issues in Food Transportation — Keeping It Cold and Keeping It Clean

Akafete Teklu, Addis Ababa University

Veny Gapud began the session with the talk "What Do we Expect from Our distributors?." Consumers expect no danger from pathogenic microorganisms and naturally occurring toxins.

The major players of food safety are suppliers, distributors and retailers. Reputable distributors have good food-handling practices, personal training, effective pest control program, receiving and shipping programs, product recall/withdrawal program, HACCP program, food defense program and product liability insurance. A distributor's performance can be monitored through establishing product specification, auditing suppliers/processors and distributors facilities through third party auditors and establishing delivery transportation audit. Gapud noted "food safety is non-negotiable so distributors should take it in to account."

Mogalie Laniel spoke about Radio Frequency Identification (RFID), as a New Application in the Food Industry. RFID is a method of identifying unique items using radio waves. A reader communicates with a tag which holds digital information and microchip attached to an antenna picks up signal. In a case study from 2003, water will absorb all the signals, moreover, the packaging material should be metal. Since most products contain > 90% water, it was a challenge for the food industry. In 2004 an attempt was made to modify it and as a result the read rate was 78%–92%. In 2005, new tags (Gen 2) that increases read rate from 92% to 100% were made. The RFID can bring added value at the field, at the farms, at transportation, at distribution centers and retail stores.

Jorge A. Herenandez's talk titled "Food Safety Challenges in Distribution" covered the four risks of distribution, namely temperature control, contamination, cross contamination and food security. Food safety challenges in the distribution are number of distributors, capability in equipment, fuel and labor costs, knowledge, distribution procedures such as storage condition, loading and unloading, refrigeration, dropping times and distribution practices like cross-docking, merging in transit and backhauling. Distribution practices for products include re-packing operation, re-boxing and traceability. Finally, the mitigation approaches include education about distribution practices, partnership approach, risk-based monitoring/ documentation, clear expectations and minimizing duplications.

The symposium continued with Michael E. Kashtock speaking on "Sanitary Design and Cross Contamination Issues in Liquid Food Transportation." Food industry set recommendations requiring carriers to disclose to shippers the three most recent prior cargos that have been hauled in tanker offered for transportation and details of the cleaning procedures. The SFTA 1990 gave DOT authority to issue regulations addressing the transportation of drugs, cosmetics, devices and food additives whereas the SFTA 2005 only address the transport of food by motor or rail vehicles. FDA activities that encompass food transportation concerns include HACCP, field assignment and guidance documents minimize microbial food safety hazards.

Paul Winniczuk's talk covered "Determination of the Effectiveness of Standardized Food-grade Tanker Sanitary Wash Protocols." He covered three main outbreaks due to improper washing. In 1973, *Brucella* contamination of fresh cheese occurred due to improper cleaning of tankers. In 1994, *Salmonella* outbreak of ice cream occurred due to improper cleaning of mixers. In 2001, juice HACCP rules comes due to illnesses of *Salmonella* in orange juices and *E. coli*.

Chris Thompson ended the symposium with a talk covering milk transport security "the Tanker of Tomorrow." Functional requirements for tankers are to provide "secure transport" of milk, operate with the current milk transport infrastructure and physically store milk data and security data with the milk. Security system challenges include adaptability such as tanker design and environmental stress, compliance with current requirements, user friendly and cost. He spoke of the wireless electronic system for securing milk from farm to processor.

S8 – Validating Processes for Reducing *Salmonella* in Low Water Activity Foods

Melissa Hughes, Texas Tech University and Silvia Dominguez, Rutgers University

Linda Harris opened the symposium discussing how certain low water activity foods are commonly implicated in salmonellosis outbreaks. *Salmonella* is an issue in these foods due to its low infectious dose and its ability to survive for long periods of time.

Bradley Marks, from Michigan State University, talked about modeling thermal inactivation, and how beneficial it is because it saves money and is an excellent prediction tool. A primary model addresses the question of how a population changes with time, and several examples were presented. With thermal inactivation of foods with a low a_w, "tailing" is observed in these primary models. Challenges with modeling were presented as well, especially the difficulty in testing models against independent validation data sets. It is crucial to determine robustness of a model, or "how well it predicts future independent results across a wide domain of conditions, relative to how well it was expected to predict."

Guangwei Huang, from the Almond Board of California, discussed the role of surrogates in validating thermal inactivation processes. The laboratory data acquired from different labs on identifying surrogates was presented in detail,

as well as the complications encountered. Two surrogate cultures, *Pediococcus* spp. and *Pantoea agglomerans*, showed similar trends to *Salmonella* Enteritidis. *Pantoea agglomerans* should be used with special caution, since it is a plant pathogen, and is limited to dry heat processes. *Pediococcus* could be a better surrogate, and is applicable for dry, moist, and steam processes.

Erdal Tuncan, from ConAgra Foods, presented an example on the validation of a roasted peanuts process. Validation was defined as "scientific proof" that a process can achieve certain lethality, and a strategy to perform it was outlined based on determination of a performance standard, understanding of the process, equipment and product, and feasibility and development of an execution plan. With a case study for dry-air peanut roasting, a validation strategy was exemplified. The peanuts' temperatures in different areas of the roasting bed were measured, and the area of slowest heating rate identified. Data on final temperatures and a_w achieved were gathered, and the lethality of the process was confirmed in the laboratory.

John Larkin, from the FDA, discussed factors affecting resistance to non-thermal processes. Data on this topic is extremely limited, especially under low a_w conditions. Information on microbial resistance, surrogates, and interactions with other technologies are currently not available. The presentation focused instead on requirements for validation of non-thermal processes, which included a defined level of risk, target organism of concern, intended foods where this process would be applied, and microbial resistance. Challenges associated with these requirements were discussed in detail. It was also mentioned that what is well-established for thermal processes will not necessarily apply to non-thermal, and caution must be taken when making assumptions.

A panel discussion concluded the symposium, where several attendees placed questions. Interest was expressed on technical details of temperature measurement for the almonds and peanuts processing examples, and on factors involved in the modeling example. Sharing of the raw data discussed in the symposium with other industry professionals was admonished.

S9 – Advancements in Retail Food Safety

Marjorie Davis, Virginia Tech
and Jessica Butler, Auburn University

Donna Garren from the National Restaurant Association began the session with a presentation on the topic "Supply Chain Collaboration: Efforts to Harmonize Supplier Standards and Audits." She provided an overview on Global Certification and the Global Food Safety Initiative (GFSI). It was highly emphasized during her talk that food safety is at the top of the mind with consumers and how consumer trust needs to be strengthened and maintained, while making the supply chain safer. Food safety was defined as the assurance that food will not cause harm to the consumer. She discussed this as being a non-competitive issue and that everyone should learn from each other to ensure a continuous improvement in the supply chain. The ultimate goal for GSFI is safe food and cost effectiveness as well as greater consistency in auditor competence.

The next speaker was Katherine Swanson from Ecolab Inc. with the presentation topic "Norovirus Control at Retail." She mainly discussed problems associated with Norovirus and associated risk reduction strategies. She discussed an outbreak where 170 people were infected and those employees that were infected were required to stay home for 3 days to prevent infection. It was also stressed that there are many lessons from past outbreaks including appropriate clean up procedures which are essential to prevent the spread of contamination and the importance of cleaning environmental surfaces.

Alejandro Mazzotla from the McDonald's Corporation spoke next on "Getting the Most Out of Retail Inspections." He emphasized the importance of ensuring high quality products and providing a safe product for customers. It is necessary for retail markets to show continuous improvement and collect a lot of data which all rely on the information received that includes customer satisfaction, claims, distribution center complaints and conversion efficiency. Once this data is gathered it is essential to do an analysis and provide recommendations to allow communication and eventually execution for continued improvements in retail food safety. His program is therefore a 4 step process; (1) to gather data which involves adding value, coaching and improving awareness, (2) analysis and recommendation, which is a key driver for consumers, (3) communication and (4) execution. By doing these inspections and putting programs in place to identify common problems and potential issues, adds considerable value to a restaurant. He finished by stating that there is a need to identify the root cause of key issues to ultimately add value to the system.

John Hanlin of SuperValu concluded the session with the presentation topic, "Consumer Attitudes to Food Safety Events – The Retailers Role in Rebuilding Consumer Confidence." He began his talk by discussing potential food safety hazards in the retail food environment such as microorganisms and their toxins, allergens, contaminants and foreign materials. He stressed the loss of consumer confidence and referenced the spinach outbreak.

Rebuilding consumer confidence in food safety could be done through prevention and intervention. This can be achieved through an increased response in retail food markets by effective recall notifications and verification processes as well as effective trace back to identify the root cause and provide corrective action.

S10 – From Fish to Table

Ravirajsinh Jadeja, Louisiana State University and Brooke Whitney, North Carolina State University

The talk "Seafood: Balancing the Risks with the Benefits" on Seafood Consumption by Dr. Santerre, was a review of the risks and benefits involved in sea food consumption and it compared both aspects of sea food consumption. He started with the benefits of eating seafood, briefly, in fetus, benefits range from prevention of early child births, sensory motor development, cognitive development and for adults it may reduce the danger of heart diseases, and emphasized that it is a good source of omega 3 fatty acids which if taken in appropriate quantity (250 mg/day) can save about 120,000 lives per year in the United States alone. Mercury and other toxic compounds like PCB are major risks associated with seafood consumption. Finally, he concluded that risks associated with consumption of sea food are comparatively very low to the benefits associated with sea food consumption.

In the presentation "To Cook or Not to Cook", Dr. Hicks, discussed the parasites and pathogens associated with different raw sea foods. Different risks involved in raw sea food consumption were discussed. Presenter also emphasized the employment of correct cooking procedures for preparation of safe food.

Dr. Flick talked on different safety aspects of safety in the filleting industry. He briefly talked about sources like wild and farm raised fish and potential risks associated with them e.g., ciguatera and scombro toxins in fin fish and puffer fish, in the case of wild fish harvesting it is difficult to isolate toxins from edible fish. In farm raised fish, systems employed for aquaculture have great impact on fish quality along with other factor like physical and bacteriological quality of water. He also mentioned that processing conditions are also a key factor in production of safer fillets.

Peter Hibbard of Darden Restaurants Inc. discussed several issues in shipping seafood. During shipping, temperature matters not just due to safety reasons, but quality issues as well. Interestingly, it has been reported that quick freezing verses slow freezing does not affect the eating quality of the seafood. One advance in seafood cooling and transport is the snap freezer system, which unlike traditional cooling keeps the temperature from wide fluctuations.

Gale Prince discussed several matters important to the retail outlets of seafood. Concerns for these retailers include recalls, consumer confidence, as well as the high percent of imported seafood. Mr. Prince stressed the importance of training the retail management team, sending an inside team to observe the supply chain so that ultimately the outlet can be assured the product meets safety specifications.

Danielle Schor discussed consumer issues related to seafood. When it comes to seafood, the consumer is confused. They are confused about mercury and PCB levels, country of origin and where to go for information. Yet with the confusion, consumers are aware of its benefits. Seventy-six percent of consumers knew of the benefits of omega-3 fatty acids and it was ranked as the number two top functional food.

S11 – Best Practices in Global Food Export and Import

Amrita Pathania, Auburn University and Grihalakshmi Kakani, Texas A&M

Robert L. Buchanan, FDA-CFSAN, began the symposium by speaking on the topic "Equivalence and International Comparison of Food Safety Systems–WHO Perspective." He gave an overview of the SPS agreement and stressed the appropriate level of protection as operating in the markets of different countries is difficult because of differences in food laws and their enforcement. He discussed the Codex Alimentarius– new standards for food safety management, explaining the Codex Committee on Food Import and Export Inspection and Certification Systems (CCFICS) and their objective to develop principles and guidelines with a view to protect the health of the consumers while ensuring fair trade practices and trade facilitation through international harmonization.

John Bassett from Unilever gave an industrial perspective on "Ensuring Food Safety in a Global Economy." Economic globalization has been the fundamental driving force behind the overall process of globalization. In a global economy, food for a single meal may come from several continents and travel halfway around the world. He stressed on the powerful economic impact of the consumer confidence in the food supply. He concluded by stating that the effort to improve food safety must be both local and global and making food safer in South America or Africa will also mean safer food for US and European consumers.

The second half of the session commenced with a presentation by Suely M.K. Nakashima from SADIA Foods GmbH, Germany. The company is involved in the export of raw chicken, turkey and value-added meat products to several countries that include Brazil, Middle East, and Russia. Some of the requirements for export of meat products include maintenance of an effective GMP, SSOP, and

HACCP systems, quality system certifications and development of a strong brand that provides product with consistent quality. Solutions suggested for overcoming the challenges of food safety in a global market include implementation of an efficient system for internalizing food safety demands, establishment of a net of consultants and implementation of an efficient quality system.

Caroline Smith Dewaal presented the topic "Consumer Perception on Imported Foods" highlighting some of the imported produce-related outbreaks that occurred in United States. Some of the recent problems include seafood, and pet food (2007), tomatoes, cantaloupes, and Serrano peppers (2008). Survey conducted by CSPI (Center for Science in the Public Interest) indicated that 79% of the consumers were concerned with the safety of imported food and some of the top concerns included use of unsafe pesticides, pathogens/ bacteria, unsanitary conditions, and use of antibiotics/animal drugs.

John Spink from Michigan State University completed the session with his talk on "Global Food Trade Issues: Smuggling and Counterfeit." Issues on counterfeit and food safety include unintentional adulteration, food defense/terrorism and economic fraud. The speaker emphasized the need for supply chain security and some of the factors that affect the security of the food chain include global economy, increased terrorist threats and increasing dependency of the businesses on efficient supply chain.

S12 – Back to the Future: How Clinical Microbiology Findings Today Predict the Food Microbiology Headaches for Tomorrow

Kirsten A. Hirneisen, University of Delaware and Leslie Hintz, Virginia Tech

This symposium showed the predictive side of food microbiology and how the future needs for pathogen detection in foods can be anticipated from epidemiology and clinical medicine. Stefano Morabito of Community Reference Laboratory for *E. coli* of Rome, Italy spoke about Shiga-toxin producing *Escherichia coli* (STEC) and food testing. The low infectious dose of EHEC requires very sensitive testing methods such as O157:H7 antibody capture, however this method does not allow for non-O157:H7 STEC isolates to be detected. An alternative strategy for STEC detection is directly targeted to EHEC and is based on PCR assessment of *stx* and serogroup associated genes.

Jan Vinje of the National Calicivirus Laboratory of the CDC discussed the challenges of norovirus detection as well as current research and control of norovirus infection was discussed. Norovirus are difficult to study since no animal model is currently present and only until recently has a cell culture model been developed. The discovery of mouse norovirus (MNV) which is transmitted by the fecal-oral route has allowed for a better surrogate. Protocols for the detection by RT-PCR from foods are currently available. Through genotyping, a standardized surveillance network (CalciNet) has been established.

Gregory Armstrong from the CDC, discussed both foodborne Hepatitis A and E. Foodborne Hepatitis A accounts for less then 10 percent of cases in the United States, but is transmitted at the point of service or during unit operations. Typically when a food worker is infectious, the virus can be transmitted on environmental surfaces for greater then one month. Hepatitis E virus symptoms are indistinguishable from acute Hepatitis A, B, and C but outbreaks usually follow travel to southern Asia. Hepatitis E has a higher prevalence in domestic cases when the individual is above 40 years of age.

Jan-Michael A. Klapproth of Emory University discussed inflammatory bowl disease as an infectious disease. The current hypothesis for IBD development is based on genetic defect. However, there is some limited data on the environmental agents inducing and maintaining intestinal inflammation. Currently no single test can be used for a diagnosis and the concentration of bacteria especially *E. coli* in diagnosed patients increases. This is thought to be due to the genetic mutations having an effect on immune regulation.

J. Glenn Songer from the University of Arizona, discussed *Clostridium difficile*: the latest bad bug and coming on strong but from where. *C. difficile* was previously believed to only be present in immuno-compromised environments, such as hospitals, but can now be seen as foodborne. The gram positive anaerobic spore former requires relatively low virulence. Recently, *C. difficile* has been seen in normally healthy individuals with several zoonotic hosts, piglets and neonatal calves. A research group sampled three grocery stores in Tucson, AZ and discovered 40% *C. difficile* positive samples in uncooked meats and 48% positive samples in ready-to-eat products. Over half of those positive results were from pork and ground beef. It is believed that *C. difficile* spores end up in muscle tissue and wait for a chance to germinate.

S13 – Pathogen Data Sharing to Advance Food Safety

Danielle A. Perkin, Kansas State University and Sarah E. DeDonder, Kansas State University

Dr. Robert Tauxe, of the CDC, began this symposium with a brief overview of the major multi-state outbreaks in the past two years. Of the 16 largest outbreaks presented, 9 of them identified a new food vehicle for foodborne infection that was not previously identified. He stressed that this

further illustrates that there is "not a major body of information that deals with understanding or controlling foodborne illnesses." Dr. Tauxe went on to describe the "Cycle of Continuous Improvement in Public Health," consisting of continuous flow surveillance, problem identification, investigation, source identification, prevention measures, and targeted research. He provided examples of information sharing successes and highlighted the need for cooperation and information sharing between government agencies, the industry, and academia.

Dr. Carl Custer, retired USDA-FSIS-OPHS, presented an overview of government agency interactions with regard to data sharing. He outlined two primary types of inter-agency communication: official and unofficial. He also stated that the primary challenge of data sharing in government agencies may be an overburden of information. He listed several agencies, programs, and resources currently in place to deal with foodborne disease information that utilize both official and unofficial interagency communication and cooperation.

Timothy Biela, of the Texas American Food Service, followed with a summary of the position of the beef industry in regards to data sharing. He highlighted that the beef industry has taken a more proactive approach in recent years to address food safety in the beef sector in a non-competitive environment, and stressed the need to share data with suppliers, while standardizing information sharing across the industry regarding every step of the production process.

Dr. Leon Gorris, with Unilever, spoke about the international perspective on data sharing and risk assessments. He highlighted the need for companies to share microbial methodologies in control standards, and build the ability to compare data affectively with other organizations. Dr. Gorris stated that companies have a wealth of knowledge, and suggested ways in which international companies could share as much of this data and information as possible.

Dr. Robert Buchanan, of the University of Maryland, presented information regarding the types of data that should be shared between countries. He highlighted the two primary Codex Alimentarius texts, which are done on an audit basis every 3–5 years. He extended the perspective Dr. Gorris presented to focus on the types of data that could, and should, be shared between nations.

Barbara Kowalcyk, with the Center for Foodborne Illness Research & Prevention, was the final scheduled speaker for this section. She highlighted that most consumers do not know to look for food recall information on the web. She also stated that America needs a science based, data driven approach to food safety, and that data sharing must be an effective part of this approach.

S14 – Food Safety and Regulatory Issues Associated with Non-Thermal Processing of Foods and Beverages

Jessica Maitland, Virginia Tech
and Arpan Bhagat, Purdue

Dr. Christopher Sommers, USDA, began the session by presenting information on "Food Irradiation Research and Technology." Since the 1905 patent, irradiation has been researched and developed for inhibition of maturation and disinfestations, food for astronauts, spices, raw poultry, raw red meat and potentially neutraceuticals. FDA has approved irradiation of meat, poultry, and non-molluscan shellfish after reviews of 29 long term feeding in animals and reproduction and teratology and genotoxicity studies.

Henrich Iversen, Tetra Pak introduced the basics of microfiltration and bactofugation. Both these processes are only used on fluid products. Bactofugation works on the principle of density wherein light and heavy phases separate. 6000G force is used for removing bacteria and spores from skim milk with an efficiency of 70% and 98.7% respectively. Thus this process is mainly used for prolonging the shelf life for a couple of days and not for food safety. Microfiltration is based on pore size (1 µm) appropriate to remove bacteria (1–10 µm) and spores. However, unlike heat treatment there are no specific parameters to ensure the efficacy of filtration.

Daniela Bermudez-Aguirre, Washington State University gave a presentation on Pulsed Electric Field (PEF) and Ultrasound processing. PEFs create electroporation through a charge accumulation in the cell wall which disrupts the cell wall as well as the nuclear membrane. Electroporation can be reversible (non-lethal) or not based on the size, shape and type of microorganisms. Ultrasound is through energy generated by sound waves by an assembly of power generator, transducers and sonotrode. The inactivation mechanism is cavitation which also releases cytoplasmic content. More experiments should be conducted with larger scale equipment in the future. However these technologies work better for spoilage organisms (yeast and molds) than pathogens.

Dr. Murat O. Balaban, University of Alaska, created a presentation titled "High Pressure and High Pressure Carbon Dioxide Processing." Using this technique food (vegetable products, RTE meats, juices and beverages) is pressurized up to 100000 Psig in a flexible package in a batch mode. Since there is no heat the freshness of the food is retained but some enzymes may be enhanced causing functional and textural problems. Dense phase CO_2 is mixed with the product and then

released, preserving the fresh squeezed flavors in a continuous mode under non thermal process pressure. For commercialization, more work needs to be done on data collection for pathogens and spores, carbon footprint, high capital costs and market/consumer expectations.

Dr. Christine M. Bruhn of University of California-Davis, wrapped up the session with some insight on "Consumer Acceptance of Alternative Technologies." Her overall point was that "People buy foods, not technologies." Many of these non-thermal processes can deliver a product that better fits in with consumer demands for foods that are convenient, novel, safe, healthy and environmentally friendly for which consumers are willing to pay a premium. The challenge for the future is to educate the consumer more on how the processes unfamiliar to them work.

S15 – Harmonization of Irrigation Water Practices

Andrea Laycock, University of Delaware and Brita Ball, University of Guelph

Dr. Michelle Smith, FDA-CFSAN, opened the session by presenting a regulatory review of US agricultural water quality standards. There are no regulations for agricultural water quality standards, although there is an EPA standard for reclaimed water (treated effluent) used for fresh produce. She outlined the importance of irrigation water quality because it dictates the potential for produce contamination, depending on crop characteristics and on when and how the water is used. Growers may have self-imposed or buyer-imposed quality criteria for irrigation water.

Dr. Suresh Pillai, Texas A&M University, discussed microbial quality of irrigation water in the US. He said that 75% of irrigated acres are in the 17 western states and 92% of irrigation systems are sprinkler or furrow. The quality of irrigation water varies. Surface water is expected to have microbial contamination; ground water may be contaminated. Microorganisms found in irrigation canal water are not uniformly distributed and fecal indicators are of limited value. He said these factors make it difficult to tell growers when, how and what to sample.

Dr. Norman Fogg presented non-microbial threats to irrigation water on behalf of Dr. Rita Schoeny, US EPA. Irrigation water may slip through the cracks between several regulations. Chemically contaminated water may contaminate crops; however, there is little data about chemicals in irrigation water. EPA's risk assessments for exposure to contaminants indirectly deal with irrigation water by considering the consumption of contarninated food. The use of wastewater to irrigate crops is a potential food safety hazard due to various chemical contaminants.

Next, Norman Fogg, FDA, discussed regional practices of irrigation water. He provided excellent pictures of irrigation systems throughout the United States focusing on water from outbreaks linked to tomatoes and leafy greens. In previous years, water has played a role in outbreaks involving tomatoes, cantaloupes, parsley, green onions, raspberries and lettuce. Several recent tomato outbreaks have been linked to irrigation ponds. He noted that surface water is more subject to contamination than well water, although surface water has the ability to move into ground water. He ended by discussing the variations in irrigation systems in the United States.

Jeanette Thurston, USDA-ARS, gave an overview of how animal agriculture affects irrigation water quality. Manure management programs are in place currently to decrease and disseminate pathogens; however, these programs must be closely followed to accomplish that goal. She discussed the need for data regarding pathogens, rather than indicator organisms, sensitivity and viability studies. Collaboration from universities and government agencies is needed to encourage farmers to implement effective manure management programs.

Barry Eisenburg, from River Ranch Fresh Foods, gave a growers perspective on irrigation water. He discussed the numerous changes growers and producers have been required to make recently and the additional costs for things from educating farm personnel to lifting irrigation pipes off the ground. What growers want most is to see the science to justify the requirements. Cooperation is needed from universities and private companies to do so. He mentioned that he was very pleased with the research presented at IAFP this year.

S16 – Spores in the Dairy Industry — A Growing Concern — What Can You Do?

Diego Paiva, Auburn University and Catie Simpson, Colorado State University

The symposium focused on trends and recommendations related to the microbiological quality, safety and shelf life of fluid milk and other dairy products. Ray McCoy discussed current distribution trends, in which a declining number of processors must meet the fluid milk demand of increasingly distant consumers. As a result, these products spend a greater amount of time in transit and require a longer shelf life (14–22 days). Progressive processing technologies (i.e., 177°F pasteurization treatments) have the potential to increase shelf life and are being implemented at commercial processing facilities. The effect of such treatments on quality (e.g., increased oxidation) was also discussed.

Kathryn Boor gave an update on current research in North America, but stressed that a significant proportion of relevant research is conducted by the private sector, and therefore, not available in the peer reviewed literature. Even so, currently available data indicate that gram positive spore forming bacteria, and specifically *Bacillus* and *Paenibacillus* spp., present the most significant hurdle when trying to extend the shelf-life of US milk. In response, Boor suggested that more stringent spore control efforts be initiated at all phases of milk production, and especially during milk production and transport (farms, plants and tanker trucks).

Per Einar Granum offered a European perspective on problems associated with spore formers in fluid milk and the effects of pasteurization temperatures on outgrowth, pointing out that higher processing temperatures may result in higher bacterial numbers over time.

Kathleen Glass discussed possible sources and subsequent consequences of spore-contamination in cultured dairy foods like whey powder, yogurt, and surface-ripened or other commercially processed cheeses. Glass also presented a series of control measures designed to systematically reduce spore load during processing and prevent outgrowth during storage. Recommendations included improved GMP, addition of inhibitory agents (i.e., organic acids, nicin, lysozyme) to dairy foods and strict temperature control throughout production and storage. When applicable, control measures should be designed to address the preferential accumulation of spores on stainless steel surfaces and in the fat phase of food products.

Darrel Bigalke described the importance of designing environmental microbiological sampling programs which focus on locations associated with the most contamination and/or contamination events and screen for the presence of SPC, LPC, coliforms and heat-resistant psychrotrophs. Screening of raw milk, utilization of the Moseley shelf-life test and the identification/stress-response of naturally occurring microbial populations were all recommended in addition to final product testing.

To conclude, Mark Wustenberg described the challenges associated with spore control at the farm level, and explained that excess mud in free-stalls/corrals, use of untreated water to mist pens and/or poor ensiling practices may all contribute to overwhelming spore loads in raw milk. The large size of many commercial dairies and high rates of employee turnover, in conjunction with high milking parlor throughput, undoubtedly contribute to periodic loss of process control. All speakers highlighted the need for increased education and awareness throughout the production chain, sanitary equipment design and rigorous use of effective cleaning and sanitation protocols.

S17 – Dairy Pasteurization in Today's Risk-Based Food Safety Environment – International Perspectives on the Use of Risk Assessment Tools

Rolf Nilsson, University of Tasmania, and Vanessa Ralha, Universidade Católica Portuguesa

Allen Sayler (International Dairy Foods Association) began with an overview of pasteurization history. Initially focused on the logic and development underlying the technology, discussion shifted towards recent questioning of the need for pasteurization, how this evolved and why. This developed further with commercial pasteurization examples, introduction of the Pasteurised Milk Ordinance in 1924, and the view that pasteurization of dairy products remains essential to maintain safety of dairy food.

Joanna Shepherd (New Zealand Food Safety Authority) followed with a discussion on research questioning the protection offered to NZ consumers by pasteurization of dairy products. The role balance between maintaining a level trade field and protection of consumer's plays was introduced. Joanna suggested a need to revisit risk assessment of dairy products in NZ, believing a regulatory paradigm shift towards a flexible outcome based approach derived from the most valid and recent data is required.

The session moved on to a discussion by Bruce Hill (Fonterra) on the prevalence of pathogens in NZ raw milk. Bruce's study sampled 95% of NZ dairy farms, with challenges faced by such an investigation covered. Findings included comparably lower levels of the usual pathogens with the exception of *E. coli* and *S. aureus* which were recovered at numbers similar to those identified in recent international surveys.

Lindsay Pearce (Fonterra) followed Bruce, questioning what pasteurization actually achieves for contemporary pathogens. Work targeted at filling data gaps essential for effective QRA was introduced. Lindsay explained protocol development, methodology and results of a lab-based commercial pasteurization experiment. The study provided valuable data on thermal inactivation of major milkborne pathogens in order to complement NZ-QRA.

Deon Mahoney (Food Standards Australia New Zealand) outlined risk management decision-making derived from scientific evaluation in the Australasian context. Australian dairy products are legally bound to be pasteurized with minor exceptions for some imported cheeses that require special permission to be commercialized. Deon spoke about interest in alternatives to pasteurization, and introduced the new Australian standard (4.2.4) stating how milk must be pasteurized / treated which comes into effect in October 2008.

Moez Sanaa (National Veterinary School of Alfort), Helene Couture (Health Canada), and Steven Sims (US-FDA) presented on the influences of French, Canadian and United States risk management respectively. These contrasted well with Deon's discussion, and highlighted the profound effect cultural characteristics such as the level of raw milk cheese consumption can have on risk management decisions. The economic importance of raw milk cheese production in France for example, has lead to increased emphasis on farm transformation and distribution hygiene practices. Risk options were introduced including risk mitigation, transfer, avoidance and acceptance. The need to focus on both risk and benefit analysis was emphasized. Steven went on to outline the three main factors influencing US risk management decisions, namely US law, acceptance of new technologies and the best available science. The session ended with a lively debate on whether *Coxiella burnettii* should be considered a foodborne pathogen and therefore included in dairy risk assessment models. No consensus was reached.

S18 – Innovative Applications of Bacteriophages in Rapid Enrichment, Detection and Identification of Foodborne Pathogens

Corri Rekow, Texas Tech University and Grihalakshmi Kakani, Texas A&M University

Mark Muldoon from Strategic diagnostics inc, discussed the goals and the challenges associated with the use of "Bacteriophages as Selective Agents for Rapid Enrichment and Detection of Foodborne Pathogens." The primary goal of the detection methods employing bacteriophages involves detection of specific single viable bacteria in a food sample in minimum amount of time. Some of the challenges encountered in the detection include high background flora that compete with the target pathogen resulting in false negatives and inability of the broad spectrum selective agents in resuscitating the target microorganism.

Pradip Patel presented the use of an assay "Bacteriophages – Mediated Adenylate Kinase Assay for High Throughput Pathogen Detection" for detecting bacterial pathogens in food samples. Some of the purification methods mentioned by the speaker for addressing background microflora include centrifugation, filtration, dielectrophoresis and ultrasonic systems. Some of the future prospects of the phage mediated assay include commercialization of phage mediated Adenylate-kinase, and use of multiplexed HTS assays for simultaneous detection of pathogens.

Jan Kretzer concluded the first session with his talk entitled "Bacteriophage Proteins as Sample Preparation Tools to Improve the Detection of Foodborne Pathogens." Some of the applications of the technology include strong reduction of concomitant flora, PCR sample preparation and ability to adapt to different diagnostic procedures.

Vincent Atrache presented the topic titled, "Novel Phage Ligand-Based Detection of *E. coli* O157:H7 and *Salmonella* in Food and Environmental Samples." The topic was introduced by covering the development of a new assay and why antibodies make a good tool for assays. The talk presented the results from a matrix validation study that used phage receptor proteins for a *E. coli* O157 (VIDAS phage). In this validation study, ground beef was sampled at 25, 75, and 375 g, beef trim at 75 and 375 g, feces at 25 g, and spinach and lettuce were sampled at 25 g. The results from this study indicate that the VIDAS test is a very sensitive test that reduces background flora and detects *E. coli* O157 more accurately than PCR.

George Paoli discussed the topic titled, "Antibody Phage Display for Foodborne Pathogen Detection." The topic was introduced by reviewing the role of the phage in detecting foodborne pathogens such as *Listeria monocytogenes*. The development of immunoreagents and biosensors was investigated to capture *Lm* using immunomagnetic beads. From this study, the phage expressing the *Lm* specific antibody fragment were used to develop the SPREETA SPR Sensor.

Breanna Smith presented the topic, "Bacteriophage Amplication Technology, a Platform for Bacterial Identification Testing." This presentation discussed lateral flow strips and their use in the detection of *Salmonella*. The topic was introduced by discussing phages and how they are highly specific for bacterial species. The talk reviewed a matrix experiment that was conducted in a chicken wash, dairy products and manure at different cell concentrations. The results from this experiment confirmed that bacteriophage diagnostics are simple, easy to use, an expandable platform, have a fast time to results, little hands on time, have a high performance and detects only live cells.

S19 – Chemical Contaminants Testing in Foods

Heidi Weinkauf, Iowa State University and Marjorie Fullerton, Alabama A&M University

This symposium addressed the current issues relating to the chemical contaminants that can be found and introduced into foods through a variety of sources including environmental pollutions, the intentional uses of various chemicals, or the migration of chemicals from packaging materials and also from food processing. Identifying and detecting chemicals present in foods is important

for all involved in food production, transportation and consumption and has followed the trends of decreased tolerance and improved sensitivity.

Grace Bandong from the National Food Lab discussed pesticide detection relating to compounds found in fruits and vegetables. She highlighted the trends that are being seen in this area of research with the focus being on finding methods that are highly selective, sensitive, rapid and cost effective. However, while detection limits are continually being pushed lower, some as low as 0.01 ppm, the difficulty of reducing costs can increase as a result of the capital required to purchase the highly sensitive analytical equipment. The tolerance levels in foods are set by the Environmental Protection Agency and are enforced by the Food and Drug Administration with tolerance violations being seen when levels exceed those set by the EPA. In an effort to meet the tolerance standards, Grace also described the importance of developing a pesticide program.

In addition to chemical contamination in fruits and vegetables, the types and monitoring of chemicals in seafood was also discussed. Detecting chemical hazards in seafood was presented by Gayle Sims of the Silliker Group. She first talked about the difficulty in defining chemical contamination since the definition can vary based on the entity being producers, buyers, distributors or consumers. This can result in conflicting views that can create disparity when trying to evaluate foods for the presence of chemicals. Gaye also highlighted the importance of obtaining a representative random sample in order to increase the probability of detecting chemical confirmation if it is present.

The final presentation in the symposium focused on detecting and monitoring the drug residues of veterinary drugs used for disease control and growth promotion. Eric Braekvelt from Health Canada discussed how health risk was determined through the use of a risk assessment based approach. This method uses a two-step process that first determines the hazard assessment, which can be done using the results generated from toxicity studies. The hazard assessment is then followed by an exposure assessment that is based on establishing methods for testing and predicting the likelihood of a group being exposed to the residue. In Canada, the total diet study is used to give a representative sample of foods typically consumed. This yearly survey can then be analyzed for the levels of pesticide or drug residue that individuals would likely be exposed to or accumulate from which surveillance and conclusions about exposure can be determined. Braekvelt highlighted the fact that improvements in analytical methods and instrumentation have resulted in an increased frequency of detection in recent years.

S20 – Food Defense Educational Programs: Status, Focus and Future

Hudaa Neetoo, University of Delaware and Danielle A. Perkin, Kansas State University

Dr. Randall Phebus, of Kansas State University, served as the convenor of this symposium.

Dr. Shaun Kennedy opened the session describing "The Need for National Educational Programs in Food Defense." Terms such as security, safety and defense were defined, compared and contrasted. Results of a National representative survey showing the decline of consumer's confidence in the safety of food system from 38% to 19.2% was clearly demonstrated. Hence, Dr. Kennedy emphasized that there is a need for food defense education programs to address this problem by providing adequate food safety training covering a mix of disciplinary expertise and integration across all the disciplines. Overall, the need to define the curriculum by audience, validating the effectiveness of the program and promoting active learning and experiential opportunities was stressed.

Following Dr. Kennedy's talk, Dr. David McSwane introduced the concepts of food safety and food defense and gave an elaborate overview of the importance of DACUM analysis (Developing a Curriculum). DACUM was said to be able to achieve multiple functions including job analysis, occupational analysis, process analysis and conceptual analysis. Advantages of the use of DACUM related to its efficacy, speed and low cost. DACUM was said to be able to define and analyze any occupation that can be described in terms of skills to perform specific tasks and DACUM can be applied to optimize instructional strategies, educational materials and evaluation instruments. The importance of having leadership skills and trans-disciplinary expertise were deemed important credentials for a Food Defense professional.

Dr. Craig Hedburg then delivered his speech outlining the Food Defense Education Program as taught at the University of Minnesota. The latter uses a trans-disciplinary approach analogous to that used by the public health institute. Dr. Hedberg made recommendations for educators to explore new ways of engaging students across topics, increase the number of course offerings and promote timely courses with concentration in "Food Protection." He also emphasized the importance of creating platforms for multi-institutional programs and wielding global food safety leadership.

Dr. Abbey Neutsch followed with an elucidation of current collaborative Food Defense initiatives in graduate level education. A joint effort between multiple universities and other educational agencies was stressed. Some primary reasons

for inter-institutional collaborative programs were continued reduction in funding, inherent strengths and weaknesses of each institution, and a diversity of program structures overall which better serves the student. Dr. Neutsch outlines two potential models for graduate education programs, including the "Great Plains (IDEA) Interactive Distance Education Alliance" (www.gpidea.org), and an informal education program with the National Center for Food Protection and Defense (www.foodprotectioneducation.org).

Finally, a panel discussion concluded the presentations with an opportunity for audience participants to voice their opinions, present ideas, and ask questions. Dr. Curtis Kastner served as the panel moderator.

S21 – Is It Overdone? Examining the Meat and Cancer Hypothesis and Its Impact on Food Safety

Corri Rekow, Texas Tech University and Jeremy Adler, Colorado State University

This symposia session discussed the issue of meat and cancer, the impact on human health, and the effects of nitrate and nitrite. The health benefits of many products, specifically sodium nitrite, have often been over looked resulting in inaccurate warnings about the safety of the product.

James Coughlin discussed the definition of risk and how it is applied to toxicology and epidemiology. Every food has a risk-benefit association and assessments are often made by looking at the individual ingredients that make up the product and not the product as a whole. Precautions should be taken when evaluating studies that investigate the risk of products. In order to properly understand the results that are presented, one should know common epidemiology statistics, the difference between a case control study and a cohort study, and the Bradford Hill Criteria for inferring causation. Drawing conclusions about diet-disease relationships need to be accurate and evaluated thoroughly because there are many uncertainties with dietary epidemiology.

David Klurfeld reviewed the issue of meat and its link to cancer. The conclusions from the World Cancer Research Fund (WCRF) report were presented and an evaluation was given on the inaccuracy of the findings. The report did not have enough evidence to back up the claims that were made. There are many limitations of evidence in epidemiology studies. Consideration should be taken when consuming all food products and dietary recommendations should be followed in order to maintain a healthy life.

Arthur Miller explained that there are several environmental sources of Polyaromatic Hydrocarbons and Heterocyclic Amines, which are compounds formed during carbon combustion. Even though these compounds are formed on meat surfaces during the cooking process, there is a net positive benefit to consuming cooked meat when considering other nutritional attributes. Formation of these compounds is dependent on the method of cooking, precursor levels, level of meat hydration, and reducing-ingredient concentration. More importantly, the amounts of these compounds consumed and absorbed via cooked meat present a potential but very low risk to human health.

Nathan Bryan described the physiological effect of dietary nitrate/nitrite, which is a curing agent and antimicrobial added at low levels to meat. Ultimately, nitrate and nitrite are reduced to the physiological signaling molecule nitric oxide (NO). Currently there is no causative link between cancer and nitrate. In fact, low plasma levels of nitrite reflect endothelial dysfunction, which can be repaired by supplemented nitrite to restore NO biochemistry. Additionally, the harmful effects of a high fat diet can be reduced by nitrite supplementation. Given this, NO is analogous to a vitamin as it is necessary at low levels for normal metabolism and is found naturally in foodstuffs. Finally, compared to fruits and vegetables the amount of nitrate/nitrite added to processed meats is negligible.

In summary, often only biased risks are considered to condemn a food when there may be several health benefits in consuming the food. Therefore, an unbiased whole food risk-benefit analysis should be used to accurately evaluate the safety of food.

S22 – What is the "Real" Issue with MDR?

Arpan Bhagat, Purdue University

Shaohna Zhao began the session with an overall assessment of resistance to third generation cephalosporins in *Salmonella* from NARMS retail meat studies. There are >100 antibacterial agents currently approved. National Resistance Monitoring System (NARMS) was launched in 1996 and CDC/FoodNet got involved in 2002 to provide descriptive data and trends on antimicrobial resistance on retail meats. MDR-AmpC patterns were found to be varied between and within isolates, the MDR plasmids were broadly disseminated among zoonotic pathogens associated with agriculture. Further newer generations showed an increased resistance and certain bacteria were found to have an intrinsic resistance.

John Threlfall provided an insight into the MDR in animals in United Kingdom. The major issues here are the contribution of agriculture and the attribution of animals. Since the approval of sulfa drugs in 1936 to glycylcyclines in 2005, resistance to drugs has been observed (penicillin in 1946, MDR in *Shigella* dysenteriae in 1953, and the most common among these, tetracycline).

There is a general trend of decrease in MDR even though the number of organisms having resistance of 1 antimicrobial is on the rise. Further, there is complexity in the data for the emerging serotypes in humans isolated from animals.

Jean Whichard discussed the MDR *Salmonella* isolated from humans in the US Coordinating Center for Infectious Diseases is the main organization involved with this. It conducts surveillance, epidemiological investigations, applied research and prevention measures. Risk findings indicate that prior antimicrobial agent use increases the risk of sporadic infection with MDR Typhimurium and so does traveling outside of the US. Also data was collected for the non-typhoidal MDR *Salmonella* for the association between resistance and blood stream infection for patient isolates with resistance to >1 clinically important drug.CDC 'arm' of NARMS conducts nationwide surveillance for antimicrobial resistance among *Salmonella* and other enteric pathogens isolated from human patients. Occasional decreased susceptibility to both fluoroquinones and cephalosporins was observed which shows a need to be extra careful with the consumption of antimicrobials as well as uncooked/ improperly cooked meat and eggs.

Ian Jenson explained the significance of MDR in terms of antimicrobial resistance in red meat supply chain in Australia. This is of significance in political context as well as the increasing prevalence of the same in beef cattle population. Although high diversity of isolates was observed in the retail meat samples based on the PFGE types. However most of the identical patterns came from the same site and transfer between the sites rarely occurred. This shows that there are a variety of ways in which the antimicrobial resistance genes can move from one pathogen to the other and studies should be designed to answer the questions associated with these mechanisms since the data cannot be retrofitted.

Finally the panel concluded that epidemiological studies from fruits and vegetable and seafoods also need to be conducted besides meats to explain certain phenomena like ciprofloxacin resistance in tilapia from Asia.

S23 – The Greening of Food Packaging – Safety of Biodegradeable, Reused and Recycled Food Packaging

Jessica Maitland, Virginia Tech
and Leslie Hintz, Virginia Tech

Dr. Susan Selke, of Michigan State University, began the session with an explanation of green packaging and its importance among current environmental issues. Green packaging has the ability to minimize adverse environmental impacts as well as help future sustainability. The presentation went on to outline and discuss the importance of consumer acceptance of the three approaches for packaging; reduce, reuse, recycle. To wrap up, Dr. Selke then discussed the biological and chemical issues with well known recyclable materials such as glass, metal, paper, and plastics.

Edward Kosior, of Nextek Limited, delivered a presentation entitled "Recycling and Reusing Plastic Milk Bottles," where he outlined all the steps in Nextek's production of recycled high-density polyethylene (HDPE) milk bottles. These milk bottles go through many processes, including washing, sorting and decontamination, as well as several evaluations to ensure a safe and reliable product. Currently, two plants in the UK are producing these bottles and Nextek hopes to increase this number over the next decade as well as explore opportunities in the US.

Ed Klein of Tetra Pak, Inc. displayed the video "Brazilian Recycling Efforts," displaying an innovative strategy to recycle Tetra Pak containers. Tetra Paks have six layers of paper, plastic, and aluminum that to be recycled required each layer to be precisely removed. A recycling solution was devised where all three components are separated and can return as raw materials.

Larry Fox of NatureWorks LLC, discussed the use of polylactic acid as a compostable polymer used in food packaging. NatureWorks manufactured IngeoBiopolymer with repeating units of lactic acid. The polymer is naturally made from corn sugar but future research is geared towards cellulose. Through bulk polymerization and no additional solvents, IngeoBiopolymer can transform itself from a functional container to soil in 80 days. IngeoBiopolymer has transformed plastics from a functional commodity cost item to a green packaging material.

Dr. Michael C. Van Derveer from the FDA's Office of Food Additive Safety discussed "Risk Analysis of Food Safety Issues Related to the Recycling, Reuse and Biodegradability of Food Packaging Material." In the early 1990s the CFSAN began to focus on recycling and developed several new guidelines for determining the safety of recyclable materials. These included the Threshold of Regulation published in 1995 to ensure no carcinogens or substances in dangerous levels are included. As recycling switched from only deposit centers to curbside pickup the guidance had to be altered to include possible non-food contact sources. Reuse practices are not regulated except under Good Manufacturing Practices. Biodegradability is subject to an environmental review to determine that the material fully degrades and does so at the correct speed as to not contaminate the food.

S24 – Food Allergens: Scientific Advances and Control Measures

Nancy Acosta, University of Birmingham and Amrita Pathania, Auburn University

The symposium began with a presentation by Wesley Burks, Duke University who presented the topic on, "Food Allergy: Mechanisms and Current Advances in disease Management." He expressed concern over the prevalence of food allergy which is IgE mediated affecting approximately 2–2.5% adults and 6–8% children. The only preventive measure available to susceptible individuals is strict avoidance of the causative diet. He talked about the standard of care for 2008 which includes appropriate diagnosis, access to treatment (self-inject able Epinephrine) and strict avoidance of food allergens. He discussed the future potential immuno-dilatory therapies like Anti IgE, Fusion proteins (Saxon et al.), engineered recombinant proteins. Food allergy is a major health problem in the western countries with few foods accounting for ~90% food allergic reactions. Attempts at primary prevention have not been effective but new therapies are on the horizon.

Tong-Jen Fu, FDA, presented the topic on "Food Allergens: Current Understanding and Impact of Processing" explaining food allergy caused by cross reaction of IgE to homologous proteins and pollen associated food allergy, Oral Allergy Syndrome. He discussed food allergy management considering strategies to prevent inadvertent exposure of sensitive individuals and development of foods with less reaction to allergens. There is a list of 57 animal and 132 plant allergens with a WHO/IUIS allergen nomenclature subcommittee. He gave a list of online sources for information on allergens like, Allergen Online (FARRP, USA), The Allergen Database (CSL, UK) and The Structural Database of Allergenic Proteins (UTMB, USA). He explained about the ways to measure allergenicity, In-Vivo (Double Blind Placebo Controlled Food Challenge and Skin Prick Test) and In-Vitro (IgE Binding and Immunoassays). He also talked about the physical processes which can decrease allergens like, Gamma radiation, acid/alkali treatments, fermentation, CNBr, Urea etc. Thermal processes change solubility and immuno-reactivity or antigenicity of food. Heat induced changes need to be considered when commercial ELISA tests are used for the quantitative analysis of allergens.

Rene Crevel presented the "Food Processors' Perspective" to food allergens. The challenge for the food industry to protect consumers is to follow the law considering commercial implications. He suggested the best approach to allergen control was the use a risk assessment tool integrated with a food safety management system. Communication with consumers was a key point needed by the use of clear labelling.

Steve Rizk presented "Allergen Control: United States and International Regulatory Perspective." He spoke about the lack of data to specify the level of prevalence and severity required to consider an allergen as a public health concern. Additionally, he mentioned the lack of uniformity between countries to determine food allergens, which caused great problems during exporting. He urged for proper labeling regulations with uniform criteria to control and gain trust of consumers. However, currently most companies are using a hypothetical allergen advisory labeling action table to determine the dose and probability of occurrence of a food allergen.

Late Breaking Session – Tomatoes, Peppers, Cilantro? Consequences of the *Salmonella* Saintpaul Produce-Related Outbreak

Heather Totty, Virginia Tech and Hari Dwivedi, North Carolina State University

Whenever a foodborne outbreak occurs multiple parties are affected: the consumers, the growers, the distributors, the investigators and the policy makers. This symposium encompassed all these aspects and created a thought provoking roundtable between diverse affiliates of food protection. Speakers all over food safety regulatory agencies were there, almost all of the speakers used the same outbreak map showing the United States and the states effected in shades of green and stressed that the recent outbreak of red round and roma tomatoes, jalapenos and Serrano peppers is still an on going investigation. Dr. Ian Williams from the CDC OutbreakNet recreated a step by step flow of the investigation explaining from the first detected outbreak on May 22nd, the investigation of three Mexican-style restaurants, notifying the FDA of a tomato outbreak in New Mexico and Texas, to the nationwide media announcement on June 7th. Dr. Williams expressed how the key product areas were Florida and Mexico and McAllen, Texas was pin pointed as the distributor of the jalapenos involved. Interestingly enough this was the first time an exclusion list had been used in a food borne outbreak. Sherri McGarry presented regulatory perspective of the United States Food and Drug Administration on the current possible sources associated with the outbreak, challenges in the trace back study of tomatoes and FDA outreach activities.

Production strategies were discussed by Dr. Keith Schneider who reported that more than $100 million was lost in Florida's tomato market alone. Dr. Schneider brought up the futuristic use of laser etching onto fruit surfaces to act as a barcode to allow for a more selective recall on produce in question. Ozone or chlorine dioxide treatments

could also be used to reduce the load of pathogens. Modified atmospheric packaging has also been shown to create a bacteriostatic effect.

Another interesting speaker was Dr. Cristobal Chaldez from the CIAD in Mexico. Mexico has almost 100 years of exporting produce without the association of a produce-borne outbreak, since 1900 there have been 12 outbreaks associated with the country. Chaldez focused on Sinaloa, Mexico's largest packing and exportation center that supplies tomatoes to the US, Canada and Asia. Mexico moves approximately 40,000 truck loads of tomatoes into the US each season. Chaldez explained that training handlers and workers is key to prevention since not all employees understand Spainish calling for cartoon diagrams to teach hand washing and good agricultural practices (GAPs).

The final speaker, Dr. David Gombas from United Fresh Produce Association, provided an industry perspective, pointing out that there is a 2–3 week picking time in tomatoes before the field is emptied and then distributed with a shelf life of 2–3 weeks indicating that the epi curve did not match tomatoes packing/harvest timeline since the first onset was April 10th. The investigation's conduct led to a loss of trust in FDA and CDC. Dr. Gombas expressed the urgency for more information sharing between the government and industry to help one another in making accurate findings while allowing both parties of the investigation to benefit.

RT1 – Eating Seafood—Is It Worth the Risk?

Alex Byelashov, Colorado State University and Mawill Rodriguez Marval, Colorado State

Michael Jahnke (Virginia Tech) reviewed the National Advisory Committee on Microbiological Criteria for Foods (NACMCF) response to the Food and Drug Administration (FDA) and the National Marine Fisheries Service regarding safe seafood cooking parameters. This document included the analysis of the scientific data on the following topics: microbial/viral/parasitic hazards in seafood: existing seafood cooking methods/requirements; potential differences in inactivation of biological hazards as affected by the type of seafood and its condition at the time of purchase; and the effect of cooking methods/temperature on inactivation kinetics. The NACMCF emphasized the need for the data on thermal inactivation kinetics for various types of seafood (considering the most resistant organisms of concern), heat penetration/transfer and thermal inactivation of biological hazards, and consumer education.

In his second talk Michael Jahnke covered pathogenic bacteria/toxins/ viruses/parasites that may be present in seafood, including *Salmonella, Listeria monocytogenes, Clostridium botulinum, Norovirus, Vibrio, Hepatovirus*, worms, protozoa, ciguatera and poison and histamine (scombroid poisoning). He also discussed factors that may affect seafood safety between harvesting and consumption, including environmental contaminants, processing (storage, cooking, and cross contamination), distribution and consumer handling/cooking practices.

Dr. Lee-Ann Jaykus (North Carolina State University) discussed the importance of identifying of pathogens of concern for each type of seafood and conducting the heat challenge with the most resistant strains. She emphasized on the molluskan seafood, which is a high risk product, as they are "filter feeders", consumed raw/undercooked, may contain high numbers of *Vibrio parahaemolyticus*, and may be frequently contaminated with heat-resistant enteric viruses. In conclusion, she emphasized the need for consumer education to properly handle/cook the seafood.

Dr. Anthony Flood (International Food Safety Information Council; IFSC) continued the session with the discussion on risk and benefits associated with the consumption of the seafood. He discussed the importance of the proper consumer education in terms of risk and benefits of seafood consumption as consumers may neglect foodborne hazards, concentrating on nutritional benefits.

Christine Bruhn (University of California–Davis) talked about the consumer education on safe seafood handling/cooking. She focused on consumer response to fish/shellfish health advisories, and the need for appropriate communication with consumers, which may empower them to make informed decisions and motivate health behavior. Food safety agencies and academia (outreach and extension) provide information to consumers regarding the seafood consumption/cooking/handling which may not always be consistent. This inconsistency makes it difficult for consumers to follow safe practices and judge the credibility/importance of the recommendations. In addition, when benefits and risks are presented, some consumers may see the risks only.

Dr. Joe Hunsaker (Hissho Sushi Company) discussed sushi preparation process, HACCP elements and safety practices at Hissho Sushi. He emphasized that HACCP and good manufacturing practices at Hissho Sushi enable production of safe food.

Presentations were followed by Dr. Angelo DePaola's (FDA) demonstration of predictive model/software for prediction of growth/survival of *Vibrio vulnificus* in shellfish. This was followed by discussion of the need for good manufacturing practices, sanitation, employee training in food service establishment and demonstration of the potential for alternative antimicrobial processes (i.e., high pressure treatment of shellfish).

RT2 – Occurrence and Control of Norovirus: Is Public Vomiting Public Enemy #1?

Marjorie Davis, Virginia Tech
and Jie Wei, University of Delaware

Melvin Kramer from the EHA Consulting Group, Inc. began the session with a presentation on the topic "Recommendations and Questions of Clean-Up and Liability of Noroviruses." He began by stating that Norovirus is not often fatal and most people will recover and shed the virus in a few weeks. Despite this fact, the speaker emphasized the importance of a rapid response when outbreaks occur which are most often on cruise ships and in hotels. He stressed the importance of hand washing and having hand sanitizer and hand washing stations in these areas.

The next speaker was Jan Vinje from the CDC with the presentation topic "Influence on Genotypes on Emerging and Increasing Norovirus Virulence and Infectivity." This speaker mainly discussed the re-emergence of GII4 Norovirus. It is known as the cruise ship virus and is also notorious on school campuses and food at salad bars is often implicated started by a vomiting event. Norovirus has an extremely low infectious dose and it can be detected by extracting the virus from foods by using Real-time PCR. This methodology can now look at epidemiological trends. The prevalence of the GII4 Norovirus, specifically, has been rising over the years and immunity is building up over time and this virus has become a significant issue because it is constantly mutating and changing.

Dr. Hal King, head of food and product safety for 1,300-unit Chick-fil-A Restaurants in Atlanta, began the second half of the session with "Perspectives on Battling and Fighting Norovirus Infections", discussing how they preventing norovirus in their restaurants. So far, the significance of virus in restaurants associated outbreak was more than bacteria in 2004. He emphasized that regularly scheduled and thorough cleaning of dining rooms, bathrooms, kitchens and play areas are important in norovirus-control and reducing the possibility of spread. Besides, employees in their restaurants were all trained to use tools in restrooms and kitchens in their respective areas to prevent cross-contamination. Also, when vomits happened in their restaurants, they should be quickly covered to reduce aerosols and cleaned with appropriate chemicals. Overall, Dr.King provided a lot of useful and helpful information on control of noroviruses in public areas.

Dr. Pillai Suresh, professor from Department of Nutrition and Food Science, Texas A&M University led discussion on survival and control of noroviruses on fomites and talked about the survival of viruses on lettuce. He pointed out that viruses absorbed to lettuce using electrostatic forces as major forces for non-specific binding, and at pH 5-6, van der Waals electrodynamic forces was also involved. Since each virus had its own adsorption efficiency, it was possible to use one selectively buffer to extract one particular virus from lettuce surface while other were present. However, 1 M NaCl was able to remove most viruses from lettuce. He emphasized that it had to be also kept in mind that bacteria on the lettuce could metabolism virus particles as proteins and nutrients, the influence between bacteria and viruses groups needed further study.

RT3 – Does Internalization of Pathogens Occur in Fresh Produce during Commercial Production and Processing?

Andrea Laycock, University of Delaware
and Aikansh Rajput, University of Nebraska-Lincoln

Karl Matthews, Rutgers, opened the session by discussing the "magic number" for internalization to occur, a very hot topic among food safety specialists. Contradictory to what some may think, what happens on the farm does not stay on the farm. Location of a pathogen plays a huge role in its survival on a plant, whether in the roots, fruits or leaves. Numerous studies have been conducted following the recent leafy greens outbreaks involving internalization, often with contradictory outcomes. These different outcomes may be caused by variation in the growth medium, point of inoculation, the cultivar, environmental conditions or the inoculum amount. Studies are occurring at Rutgers to compare many of these variables. Dr. Matthews concluded by mentioning that using a high inoculum for an internalization study is unrealistic; however, even low numbers are a potential food safety risk.

Keith Warriner, University of Guelph, chose to discuss the internalization of tomatoes rather than leafy greens. Until 1960, we understood that the inside of a fruit was sterile; however, in 1998 consumers were becoming ill from pathogens being internalized. Internalization of pathogens within seedlings or fruit is common; however, internalization within mature plants is less common. Researchers have found that spinach is often more contaminated after washing than before, yet on the other hand, internalization is not the first thing producers should worry about when using wash water.

Joseph Frank, University of Georgia, discussed the observation and consequences of pathogen interactions with fresh produce focusing on the importance of pathogen location on plants and the probability of survival. He discussed various ways of pathogen destruction in the field like UV radiation, starvation, stress and dehydration. Additionally he mentioned other factors, such as washing, and sanitizing for pathogen control. Factors affecting the growth and survival of pathogens during marketing include the cooling down of warm tissues,

internalization temperature differential, bruising, washing and handling. The talk also highlighted a study observing *Escherichia coli* O157:H7 interaction with lettuce and chlorine. Significant findings of the study were that *E. coli* O157:H7 attached to the cracks and cuts on the lettuce leaf. More over the study stated that 200 ppm chlorine solution was not sufficient to kill *E. coli* O157:H7 in stomata. The final conclusions were that post-harvest internalization is possible but the degree is not known and protection against chlorine solution occurs for both surface attached and internalized *E. coli* O157:H7.

Larry Beuchat, University of Georgia, gave a presentation on metabiosis as a factor contributing to internalization. He started the presentation by describing how metabiosis can change environmental conditions to favor or affect the growth of other microbes. Specifically, the presence of molds may encourage the growth of pathogens. They do so by disassociating proteins, which raises the pH and hence favors the growth of pathogens such as *Salmonella* and *Clostridium botulinum*. Thus, metabiosis could potentially be a threat to food safety.

RT4 – Global Perspectives and Novel Approaches for Effective Food Safety Communication within Culturally Diverse Audiences

Nancy Acosta, University of Birmingham and Jie Wei, University of Delaware

Vincent Fasone from Colombus Public Health spoke about their proactive enforcement process. They started a food safety program to assist Latin and Asian food service establishments. The program was designed for owners and/or food workers. It consisted in licensing the business and providing a food safety toolkit in Spanish and Chinese. The toolkit included a uniform approach to the food safety code, a list of critical violations and posters to illustrate food safety practices. The main challenges found in the program were language, cultural differences, distrust in government officials, financial limitations and low literacy. The main success was trust and confidence to health officials, built partnerships, increase in food safety education.

David Mclerry from Food Safety Promotion in the Irish Food standard Agency started an initiative to educate and create confidence in consumers in food safety. A study was carried out through school children to observe the food safety practices within a home environment. It was found over 50% of homes had risky fridge practices, that rural houses were worse than urban and that lower incomes had lower practices. The Agency designed creative television, radio and visual adverts to attract and educate consumers in food safety practices.

Dr. Philppa James, from New Zealand Food Safety Authority, began the second half of the session with "Using Cultural Perspectives to Enhance Food Safety Practices", discussing about how they promoting food safety to New Zealand's Maori and Pacific people. So far, they have developed a manual for food safety in Marae, emphasizing public health, safe food practices and support from leaders of Marae. The Pacific islands have a very diverse culture, composed of seven groups of peoples and foodborne diseases occurred frequently due to eat raw seafood. To help and improve food safety for islanders, they communicate with leaders in routine, consulted with Pacific community, published food safety magazines, and radio aid of food safety on islands. They successfully introduced Feleti, a cartoon character announcing clean, cover, cook and chill on food safety, which was welcomed by island people. Dr. James emphasized that the key to their success was continuing to promote resources and stay involved in community.

Dr. Andy Benson, from Asian Food Information Centre in Thailand, talked about how they conducted AFIC risk perception research in China, Malaysia and Australia. Based on their online questionnaine (150 respondents), they found Asian respondents concerns more on technology, man-made risk, responsible for risk management, and more wonder on addictives and toxic than Australian. China has most concern on food addictives in restaurants, while Australia has lowest confidence in internet information. All three countries have large concern on chemicals. Finally, they suggested on more training on differentiate between science and pseudo-science, more proactive, pre-emptive risk communications to Asian people.

RT5 – Comparative International Approaches to Regulating Unsafe Food

Oleksandr A. Byelashov, Colorado State University and Balamurugan Jagadeesan, Purdue University

Dr. Caroline Smith DeWaal (Center for Science in the Public Interest) opened the session with the United States definitions and interpretations of adulteration and food hazards. She discussed the use and impact of "zero tolerance" standards, including *L. monocytogenes* in ready-to-eat meat and poultry products, *E. coli* O157:H7 in ground beef, and *Salmonella* and *E. coli* O157:H7 in raw sprouts, on food industry and consumer safety.

Dr. Deon Mahoney (Food Standards Australia New Zealand) presented the Australian approach in regulation of unsafe foods. He covered the history of the development of the Australian food regulatory system, the role of states and territories in the regulatory and enforcement processes, and the definition of unsafe/unsuitable food. In general, the Australian food safety standards trend away

from microbiological limits, and are outcome-based, rather than prescriptive.

Dr. Paul Young (Waters Corporation) presented the interpretation of regulatory requirements in Japan. Seventy percent of Japanese consumers consider food safety as the most important factor affecting the purchasing decision, while only eight percent are concerned about the price. Furthermore, more than sixty percent of the caloric intake of Japanese consumers is imported form other countries. Japanese food safety standards are strict. For example, more than 10% of imported foods are tested for human health hazards, including more than 60 chemical substances, (compared to approximately 1% testing in the US). Companies that violate food safety standard may be restricted from exportation of foods to Japan; in some instances, foods form a whole country may be restricted from entering Japan.

Dr. Pekka Pakkala (Finnish Food Safety Authority) described the structure of the Finnish food safety authority (a single agency) and its role in regulating of unsafe foods in collaboration with the European Food Safety Authority (EFSA). Finnish food control agencies may consider foods unfit for human consumption when it poses health risks or because of the ethical reasons (for example, cats or dogs can not be used for food). He also described functions of Rapid Alert System for Food and Feed (RASFF) system, which allows the European food safety agencies to exchange of information on procedures performed to ensure food safety.

The roundtable discussion covered the role of the EFSA in food legislation and food law, the effect of the RASFF notifications on the consumer confidence, and measures to ensure the safety of imported foods in Australia. There was a discussion on the effectiveness and mechanisms of implementation of the US food recall system. Food recalls are voluntary in the US, but the federal agencies have the authority to cease the unsafe/mislabeled product if it is not recalled by the manufacturer. The recalled foods are generally destroyed, but in some instances may undergo further processing to ensure its safety.

RT6 – Water: Potability vs. Drinkability

Kirsten A. Hirneisen, University of Delaware and Stacey-Marie Syne, University of the West Indies

Water quality ultimately affects the quality and safety of food products along the entire food supply chain from farm to fork, however, the standard for water quality in food is defined in imprecise terms. Water is an important aspect of food being involved in both food preparation and food composition. In his talk entitled "Legal v. Illegal Aspects of Potability", David Bennitz of Health Canada discussed water regulations of Canada for transportation commodities such as airplanes and trains. The travel industry wants to use recreational guidelines for non-drinking water (200 *E. coli* /100 mL) and also to provide bottled water for drinking. Issues such as the lack of consistency in guidelines and regulations in terms of drinking water were discussed.

Joseph Cotruvo of Water, Environmental and Public health spoke on the US v. International Water Potability Standards. The World Health Organization has guidelines (not standards) for water potability. These standards are not always enforced by the government and these non-uniform guidelines ultimately affect the food industry. The WHO, EPA and Health Canada have similar guidelines for water potability, however, since they are not the same, they could allow for problems with the transport of food products from various countries. This difference of standard amongst countries affects both the health and aesthetic aspects of water.

Drinking water regulations and their application to the food industry was discussed by Jennifer Best of the EPA. The Safe Drinking Water Act authorizes the EPA to set health standards for drinking water, however, public water systems are not responsible for ensuring the safety of water which would ultimately be used in food. As a measure and precaution, the FDA requires water used in the food industry to meet EPA standards. It was suggested that further emphasis needs to be placed on the issue of water quality and HACCP systems should incorporate this aspect in future developments.

Kathleen Rajkowski (USDA) highlighted the use of reconditioned and reused water in the food industry. Regulatory requirements for water supply and water, ice and solution reuse outlined by the FSIS 9 CFR 416.2 (g) document offer manufacturers a guideline to the various uses and restrictions of this type of water. Focus was also placed on the ability of Gram negative bacteria to survive in reconditioned water at a temperature range of 21°C to 37°C. Attention was brought to faults in the Sanitation Performance Standards Fruit and Vegetable Program which in spite of following a HACCP plan, did not adequately deal with the issue of water supply.

T1 – Pathogens, Beverages and Water Technical Session

Marjorie Fullerton, Alabama A&M University and Heather Totty, Virginia Tech

Faith Critzer (University of Tennessee) started off the session with a very informative presentation on the "Expression of the Urease Operon in *Escherichia coli* O157:H7 Treated with 0.5% Sodium Benzoate." Critzer's presentation showed that at 60 minutes, the enzyme's activity increased 2 fold in the structure subunits while there was a 4-fold increase regarding the accessory proteins.

Roel Otto (Purac Biochem) focused on the potential of ε-polylysine and certain monoglycerol and lactic acid esters of C8 – C14 fatty acids to suppress the growth of *Enterobacteriaceae*. However, the growth of *Salmonella* and *E. coli* were unaffected by specific concentrations of the synergy.

Yanhong Liu (USDA-ARS-ERRC) was dynamic in presenting critical information on "Gene Expression Profiling of *Listeria monocytogenes* Strain F2365 in UHT Pasteurized Skim Milk." Liu's work demonstrated that compared to *Listeria monocytogenes* grown in brain heart infusion broth genes were up-regulated in UHT pasteurized skim milk, whereas 14 genes were down-regulated. Her study showed that while the oxidative stress was not higher in the ultra high pasteurization matrix of skim milk, but the ABC transporters of the organism were increased in this environment.

Palmer (Cornell University) examined antimicrobial peptides and bacteriocin resistance of sigma B subunit in *Listeria monocytogenes* concluding that *lmo* 2570 is sigma dependent but has no role in resistance.

Jie Wei (University of Delaware) presented interesting information on the topic of Norovirus survival in biosolids. Her results pointed out that the Murine Norovirus showed log reduction at different temperatures further demonstrating that survival of Murine Norovirus is dependent on biosolid type, treatment and storage conditions.

Alexandra Derevianko (University of Delaware) outlined the effect of zero-valent iron on removal of *E. coli* O157:H7 from agricultural waters. The study demonstrated that the ability of zero-valent iron to remove and inactivate *E. coli* O157:H7 showed great potential for reducing irrigation water contamination.

Transcription analysis of *E. coli* O157:H7 under acidic conditions was presented by Kristina Carter (University of Tennessee). The master virulence regulator of *Listeria monocytogenes*, PrfA, and sigB were examined by Reid Ivy (Cornell University) comparing their activity at and below 37°C. The organism proved to be more invasive at 30°C demonstrating that cells grown at different temperatures invade differently.

Kendra Nightingale (Colorado State University) presented on "Virulence Attenuated *Listeria monocytogenes* Commonly Isolated from Food Show Potential to Confer Protective Immunity." Nightingale's work with guinea pigs exposed to *Listeria monocytogenes* shows immunization promise for the use of interlin A with premature stop codons.

The five gene multiplex primer PCR used by Carlson (Colorado State University) when examining bovine *E. coli* O157 adherence to human intestinal cells was intriguing because it screened for multiple virulence genes at once and pointed out genotypes without *stx* genes had enhanced attachment.

Daniel Tadesse from The Ohio State University presented on "Molecular Epidemiology and Characterization of Virulence Gene in *Yersinia enterocolitica* Isolated from Swine." The study indicated that swine carry pathogenic *Yersinia enterocolitica* strains, an important source of human infection.

T2 – Antimicrobials and General Microbiology Technical Session

Heidi Weinkauf, Iowa State University and Hudaa Neetoo, University of Delaware

Dr. Fernando Luciano opened the session describing the antimicrobial activity of Allyl isothiocyanate (AIT) emphasizing the implication of different pHs as well as the possibility of antimicrobial activity due to degradation products of AIT.

Dr. C. G. Weber then addressed the audience on the antimicrobial effects of persimmon. Persimmon puree (1–10%) was found to be effective at reducing growth of the gram-positive bacteria, *Listeria monocytogenes* in a liquid media. However, persimmon was not found to be effective against the gram-negative *Escherichia coli* O157:H7.

Tammy Platt described a feedlot study that evaluated the effect of administered diets containing tylosin and monensin on the antimicrobial resistance development of isolated *Enterococcus* strains. Results indicated that the administration of sub-therapeutic antimicrobials to livestock had a negligible effect on the transfer of resistance to humans via the food supply. The first half of the session was concluded with a presentation underscoring the ability of VERDAD, a new clean label product, to effectively control the growth of *L. monocytogenes* in both cured and uncured products, with optimal use levels of around 3–4% in an uncured product.

In the second half of the session, Fedorka Cray presented his findings on the antimicrobial resistance in *Campylobacter* isolates recovered from chicken carcass rinsates in 2007. He demonstrated that overall *C. coli* isolates tend to be more refractory to antimicrobial agents than *C. jejuni* isolates.

Yumei Dai subsequently presented his research on the quantification and modeling of the antimicrobial efficacy of triple combinations of lauric arginate (LAE), cinnamic acid and Na-benzoate or K-sorbate against four spoilage yeasts to determine possible synergistic, additive or antagonistic activities between the antimicrobials. The speaker showed that triplet combinations of LAE, cinnamic acid, Na-benzoate or K-sorbate exhibited a high degree of synergism and pointed to the need of

identifying possible interactions between multiple antimicrobials. Mohammad Obaidat's presentation addressed the use of volatile antimicrobials in the vapor state such as allyl isothiocyantate, carvacrol and cinnamic aldehyde against pathogens on tomatoes at three storage temperatures of 4, 10 and 25°C. His research showed that the control of pathogens on fresh tomatoes marketed in packages containing head space under controlled temperature storage has great promise.

Dr. Joshua Gurtler then addressed the audience presenting his study on the effects of nisin on the survival of *Yersinia* in whole liquid egg stored at refrigerated and abused temperatures showing that nisin at a level of 500 IU/ml had no bearing on the growth or survival of *Yersinia* in WLE stored at 5, 10 or 21°C for up to 72 hours. The session was concluded by Kirsten Hirneisen who assessed the baro-protective effects of food components (fats and proteins) on viral inactivation using a seafood salad as a model system for her study. Her results indicated that pressure inactivation of Hepatitis A, Norovirus and Feline calicivirus were impacted by the fat and protein content of the salad.

T3 – Toxicology, Seafood and Meat and Poultry Technical Session

Hudaa Neetoo, University of Delaware and Laura J. Bauermeister, Auburn University

Dr. Lindsay Arthur opened the session by outlining the dangers of human exposure to cadmium. The objectives of her research were to identify the soil characteristics known to affect the Cadmium (Cd) accumulation in different soybean cultivars. Her findings demonstrated that soil pH played a considerable role in Cd accumulation

James Sasanya evaluated the use of a New LC-UV/MS method to analyze parent mycotoxin zearalenone, mycotoxin analogues and its conjugates in wheat samples pointing out that the novel method has the capability to detect mycotoxin conjugates in wheat at levels about the legal limit

Masashi Ando demonstrated that the mercury concentration in cultured bluefish tuna could be reduced through raising fish on horse mackerel and sand lace; thus suggesting the feasibility of an important breeding method to address the issue of mercury toxicity in fish.

Kristin Bjornsdottir presented her research on the development and validation of a screening method for the detection of histamine-producing bacteria. Her results showed that novel methods such as PCR could be more reliable and convenient for a timely detection of histamine-producing bacteria.

George Flick evaluated the effect of two alternative cooling conditions on mortality and microbial safety/quality of clams and observed statistically lower aerobic plate counts when clams were stored under the alternative cooling conditions suggesting therefore that the clam industry should probably reconsider their currently recommended cooling practice.

Stephanie Drake evaluated the impact of on-deck storage of the safety of commercially harvested oysters with respect to oyster-borne pathogens *Vibrio vulnificus* and *Vibrio parahaemolyticus* and showed that current harvesting practices can have a bearing on the levels and strains of these pathogens. She stressed the importance of using data garnered in her studies for risk assessment studies and for shaping future policies.

Tagelsir Mohamed used molecular methods to look for class-I integron and BlaCMY antibiotic resistance genes in *Salmonella* and also determined the genetic diversity in populations of *S.* Typhimurium and *S.* Kentucky isolated from a poultry facility.

Alejandro Echeverry evaluated use of lactic acid bacteria, acidified sodium chlorite and lactic acid in marinated beef products as control measures for *Salmonella* Typhimurium DT104 and *Escherichia coli* O157:H7.

Nigel Harper validated the thermal processing techniques used in chopped and formed beef jerky to control pathogens. Specifically, *Salmonella* spp. were reduced by 5 logs under normal processing conditions, however, *Escherichia coli* O157:H7 needed an additional 1.5 hours of drying at 68°C to achieve a 5 log reduction.

Kristina Barlow presented information on *Listeria monocytogenes* collected by FSIS testing programs in ready-to-eat meat products from 1994 to 2006.

Mark Berrang presented on the use of on-line brush and spray washers used tin a poultry processing facility and their ability to reduce *Campylobacter*, *Escherichia coli* and *Salmonella*.

Richard Gast wrapped up this session with a study on *Salmonella* Enteritidis and how it multiplies in the egg yolk membrane and penetrates into the egg yolk contents. This information offers more evidence in the importance of rapid refrigeration to keep the bacteria from multiplying and keeping the consumer safe.

T4 – Risk Assessment and Produce Technical Session

Saurabh Kumar, University of Nebraska – Lincoln and Olasunmbo Ajayi, Alabama A&M University

Eelco Franz presented on "A Chain Modeling Approach to Estimate the Impact of Soil Cadmium Pollution on Human Dietary Exposure." He indicated that there is a direct or indirect transfer of heavy metal into dietary through soil, using three models of heavy metal uptakes: soil, cattle and human exposure.

James Withee described the use of random sampling; risk-based sampling algorithm and statistical/computational design to sample federally inspected ground beef for the presence of *Escherichia coli* O157:H7 by the Food Safety and Inspection Service (FSIS).

Arthur Miller presented on "Risk Assessment for Thermal Inactivation of *Salmonella* spp. in Fresh Pork" showing that *Salmonella* spp. growth can exceed 6 log CFU/g in pork, due to extreme temperature abuses, and during storage/refrigeration. However, cooking at temperature of 145°F for 15 s, did not increase risk of salmonellosis and at 160°F *Salmonella* spp. did not survive thermal inactivation.

Deon Mahoney described that *Salmonella* contamination of eggs could be the result of external (surface) or internal (vertical or horizontal transmission). Risk factors include the consumption of uncooked foods containing eggs, use of dirty eggs and concern of food handling.

Min Li spoke on the use of predictive modeling of *Listeria monocytogenes* to monitor the reduction on Fully-Cooked Chicken Drumettes during Post-Process Hot Water Pasteurization. He showed that Weibull model provides a reliable prediction of thermal inactivation of *Listeria monocytogenes* and post package hot water is effective in reducing the pathogen.

George-John Nychas presented a predictive model developed for the growth of *Listeria monocytogenes* in vanilla cream (traditional milk product). He outlined that Barayni and Roberts model was used of the primary model. The values of the performance indices indicated good fit of the model.

Silvia De Lamo-Castellvi assessed the combined Effects of Sucrose Laurate Ester and Pressure-Assisted Thermal Processing to Inactivate *Bacillus amyloliquefaciens* Spores Suspended in Mashed Carrots.

Balasubramanium discussed the combined effect of sucrose laurate ester and high pressure processing to inactivate the *Bacillus amyloliquefaciens* spores suspended in mashed carrots. He reported the synergistic effect between the two treatments in spore lethality but indicated limited effectiveness of sucrose laurate ester in inhibiting the recovery of remaining spore population.

Eelco Franz discussed the role of nutrients and biodiversity in controlling *E. coli* O157:H7 in the primary production chain of lettuce. He highlighted factors such as fiber content, pH, dissolved organic carbon etc. in controlling the growth of pathogen.

Michael Cahn discussed the effect of irrigation on survival and dispersal of surrogate pathogen. He highlighted the effect of applied volume on the recovery rate.

Yaguang Luo discussed the effect of abuse of temperature on the safety of the commercially packaged fresh cut salads.

AnneMarie Buchholtz gave a presentation on the use of Glo Germ in evaluating the cross contamination during the processing of leafy greens.

Carol D'Lima discussed the results for the evaluation of the sensitivity and specificity of Rapid Test Kits for the detection of *E. coli* O157:H7 from lettuce and leafy greens.

T5 – Applied Laboratory Methods and Novel Laboratory Methods Technical Session

Mawill Rodríguez-Marval, Colorado State University and Saurabh Kumar, University of Nebraska-Lincoln

Erin Wenke evaluated different stomaching systems for their effect on viable cells and coliform counts as well as noise levels. Results showed no difference regarding microbial but significant differences were found in terms of noise levels and ease of cleaning.

Thomas Romick presented a study evaluating a total bacterial count assay by different collaborating laboratories, using quantitative real time PCR. Results indicated that all labs prepared the standard curve properly, but some variation was observed with the unknown samples. The system is portable, and has a total running time of only 30 minutes.

Faith Critzer presented her work on the construction of internal amplification control (IAC) for *Salmonella* detection using real time RT-PCR. The system helps in eliminating false negatives during assay due to PCR inhibitors. The assay showed a detection limit of 2 log CFU/ml of *Salmonella*.

A system to simplify real time PCR applications in food and environmental testing by minimizing sample preparation was presented by Robert Tebbs. He described a master mix which is resistant to high levels of contaminants, and is cost and time effective.

Ebot Tabe presented an evaluation of fecal DNA purification methods and conventional culture methods for detection of *E. coli* O157:H7 in naturally infected feedlot cattle. The accuracy of detection by QIAmp DNA Stool tests was higher for enriched samples as compared to those non-enriched.

Ji-Yeon Hyeon research evaluated VIDAS™ and real time PCR for *E. coli* O157:H7 detection on inoculated ground beef and radish sprout, by comparing them to a standard culture method. RT-PCR and VIDAS™ were superior to culture methods for samples with high numbers of background flora.

So-Ri Han compared the sensitivity of KOBAM methods (Korean Food Code Bacterial Manual, KFDA), in order to develop an effective validation system for rapid detection methods of *L. monocytogenes*. The study highlighted that longer enrichment period is required for proper detection by KFDA method.

Joshua Gurtler presented the research evaluating the performance of different media for *Salmonella* recovery from thermally treated egg white. The study highlighted that selective media are poor in recovering injured cells and that presence of low levels of chelating agents in TSA enhanced the recovery rate.

Duck-Hwa Chung, described a detection method by using ELISA and HPLC coupled with electrospray tandem mass spectroscopy for quantification of aflatoxins in agricultural products. He reported better accuracy and cost effectiveness of this method compared to traditional methods. Raj Mutharasan presented a piezoelectric excited millimeter sized sensor to detect *Cryptosporidium parvum* in milk. Detection was based on mass change sensitivity. He commented on the possibility on using this principle for detection of any microorganisms by using the appropriate antibody.

Ronald Derike presented research on the use of propridium monoazide to distinguish viable from dead *Clostridium* spores. This research would help in evaluating the thermal process efficiency to inactivate spores, resulting in rapid enumeration of surviving spores.

Michele Manuzon presented the FT-IR (Fourier Transform Infrared) spectroscopic method for analysis of biofilms on food equipment surfaces. Her results would help in evaluation, redesigning and validation of cleaning protocols.

T6 – Education and Sanitation Technical Session

Nancy Acosta, University of Birmingham

W. Yuan spoke about the lack of awareness of registered dieticians and nurses of *Listeria monocytogenes*. She found that they had a low level of understanding of *Listeria* and did not associate it with high risk products. These raised the need for continuing education.

G. Reo promoted the use of occupational exposure program (Bloodborne Pathogen Program) in food service establishments. The program is aimed to protect employees from exposure of body fluid spill.

Ben Chapman conducted an observational study of food handling practices within the food service industry (e.g. cross contamination and hand washing). He found that 61% handwashing attempts were acceptable, mainly due to lack of paper towel to dry; and handlers do not wash hands at rush times urging the need for continuing education.

M. Courey examined the risks and solutions associated with food transportation. She found that most of the trucks had practices that could lead to cross contamination such as lack refrigeration, improper packaging and no labeling. Recommending surveillance and enforcement to prevent cross contamination during transportation.

E. Maldonado studied college students' food safety knowledge and awareness in Mexico. She found that students were skeptical about food safety measures.

Z. Yan tested the efficacy of three disinfectants (Vortex, Octave and XY-12) in two different types of surfaces in conveyors belts. Results showed a significant difference in log reduction on Vortex compared to the other disinfectants. Between the belts, the thermodine belt gave significant reductions compared to interlock as it had a smoother surface.

S. Dedonder observed the preparations procedures of frozen cooked and raw breaded chicken. She found that participants scored higher on self reported food safety practices, while in reality they were not following them during its preparation.

M. Binkley surveyed the consumers awareness of food safety associated with take-out food. It found consumer did not know how to handle food once it left the establishments. The temperature integrity of different packaging materials was tested. The material that performed better was polystyrene and microwavable did not keep food hot.

J. Saini validated a "Four-chain Quaternary Ammonium Compound and Polymeric Biocide for Inhibition of *Listeria monocytogenes* Attachment on Food Contact Surfaces." No bacteria were recovered after the use of these compounds. This indicates they are effective cleaning and sanitizing agents to control *L. monocytogenes*.

M. Musgrove studied "The Presence of Aerobic Microorganisms, *Enterobacteriaceae* and *Salmonella* in the Shell Egg Processing Environment." Results were variable depending on the surface and location of the sample. However, this indicates locations within the processing environment where stricter hygiene is needed.

H. Yang evaluated household products as sanitizers against *L. monocytogenes*, *E. coli* O157:H7 and *Salmonella* Typhimurium. This included hydrogen peroxide, acetic acid, vinegar diluted in baking soda and bleach. The sanitizer with better results was household bleach.

I. Gill studied the impact of the new legislation that requires risk-based inspection in Fraser Canada. It also requires food operators to undergo training, a self-control program and temperature monitoring documentation. The effect has resulted on food operators being more responsible and premises having lower hazard ratings.

T7 – Spoilage and Epidemiology Technical Session

Hari Dwivedi, North Carolina State University and Michele Yabes-Manuzon, Ohio State University

Debra Smith from Campden and Chorleywood Food Research Association discussed the ecology of yeasts and molds in food factories, and how

these fungi contribute to spoilage. Their study focused on the molecular characterization of fungal isolates mainly *Penicillium* from selected food products and processing environment using rep-PCR-based genotyping technique. They found a match between environmental isolates with the strains found in spoiled food products. She stressed the importance of this study in understanding the role of the processing environment in the occurrence and persistence of various fungi.

Irwin Donis Gonzalez from Michigan State University discussed microbial contamination during production of edible peeled chestnuts and the use of X-ray irradiation to inactivate contaminating bacteria and yeasts on this product. There may be more than 2-log increase in contamination levels of mesophilic aerobic bacteria (MAB) and yeasts in chestnuts between harvest and after peeling, and these could be significantly decreased by treating peeled chestnuts with low-energy X-ray.

Rajal Mody from CDC talked about the recent multistate outbreak of *Salmonella* I 4, [5], 12:i: in the United States associated with the consumption of commercial frozen pot pies. He mentioned that the improper microwave instructions on the food product label were responsible for this outbreak. He stressed the importance of standardization of microwaves, clear labeling and validated microwave instructions to reduce the risks of illnesses from frozen, processed, but not ready-to-eat foods.

Alexandre Leclercq from Institut Pasteur discussed the rising incidence of listeriosis in France and its relations with host factors and food control. He pointed out that the increase in immunosuppressed populations and underestimated impacts of new immunosuppressive treatments are mainly responsible for this increasing incidence. He also mentioned that changing food practices and insufficient food hygiene regulatory guidelines may account for this. He stressed the importance of worldwide evaluation of the recent increase in listeriosis cases and the need for enhanced guidelines and proper communication toward the people at risk to manage the incidence of listeriosis in France.

Mary Patrick from CDC discussed the exposures of children riding in shopping carts to raw meat and poultry products. She reported how parents commonly put their children in shopping carts next to raw meat products, and how this may enhance the risks of transmitting *Salmonella* and *Campylobacter* to their kids. Their study found out that child exposure was greatly affected by socio-economic status and ethnic origin. She stressed the importance of educating parents about the risks associated with this practice.

James Oloya from North Dakota State University presented their study on the genotypic similarities and antimicrobial resistance (AMR) profiles of *Salmonella* isolated from humans and animals in North Dakota. They observed the occurrence of different antimicrobial resistance patterns within the same genetic profiles, suggesting the existence of established strains. He pointed out that only one human isolate showed similar AMR profile with animal isolates. He concluded that food animals may be significant source of *Salmonella* infection to humans, but may not be a significant donor of AMR genes to human *Salmonella* isolates.

Highlights of the Executive Board Meeting

August 1–7, 2008
Columbus, Ohio

Following is an unofficial summary of actions from the Executive Board Meeting held in Columbus, Ohio on August 1–7, 2008:

Approved the following:

- Minutes of April 23–25, 2008 Executive Board Meeting
- United Arab Emirates Affiliate Charter
- Budget for FYE August 31, 2009

Discussed the following:

- E-mail votes taken since the last meeting
- Board schedule and responsibilities for IAFP 2008
- Banquet script for Awards presentations
- Financial results from the Latin America Symposium on Food Safety-Campinas, SP, Brazil – May 26–28, 2008
- IAFP participation in COLMIC meeting during 2009
- IAFP participation in the China International Food Safety & Quality, Beijing, China September 24–26, 2008
- 2008 European Symposium planning-Lisbon, Portugal – November 19–21, 2008
- IAFP's participation in the Dubai International Food Safety Conference, Dubai, U.A.E. – February 24–26, 2009
- IAFP's International Symposium for 2009 – Korea
- IAFP participation in a future India food safety conference
- Met with representatives of the U.A.E. Association for Food Protection and the Dubai International Food Safety Conference
- Appointing Michael Brodsky as Parliamentarian for the IAFP Business meeting
- How to influence TV chefs on safe food handling practices
- Produce Session at IAFP 2008–possibility to serve as basis for a Timely Topics follow-up in the fourth quarter 2008 or first quarter of 2009
- Food Quality proposal
- Met with representatives from Springer Publishing Co.
- Non O157 *E. coli* white paper
- *JFP* Food Worker papers
- Letter from former *FPT* Editor
- WHO-NGO update
- Board position descriptions
- New Sustaining Members
- SQF International Conference
- 3-A Sanitary Standards, Inc.
- Affiliate compliance report
- Sample Prep Working Group – white paper drafted and in review
- Compendium on Methods for Microbial Examination of Foods
- Opportunities for students to further serve IAFP
- IRS Form 990 issues to consider for future tax reporting
- International Leadership Award sponsorship
- Conferences requesting speaker recommendations
- Applied Laboratory Methods logo
- Exhibit at FoodMicro 2008, Aberdeen, Scotland – September 1–4, 2008

Reports received:

- *IAFP Report*
- *Food Protection Trends*
- *Journal of Food Protection*
- IAFP Web site
- Financial statements
- Board Members attending Affiliate meetings
- *Affiliate View* newsletter
- Future Annual Meeting schedule
- Exhibiting (IAFP On the Road)

Next Executive Board meeting – October 28–29, 2008.

Minutes of the International Association for Food Protection 95th Annual Business Meeting

President Gary Acuff welcomed attendees to the 95th Annual Business Meeting.

Moment of Silence

President Acuff asked those present to observe a moment of silence in memory of departed colleagues.

Call to Order

The Annual Business Meeting of the International Association for Food Protection was called to order at 12:19 p.m. at the Hyatt Regency Columbus in Columbus, Ohio. A quorum was present as defined by the IAFP Constitution.

With the approval of the Executive Board, President Acuff appointed Michael Brodsky as Parliamentarian for the Business Meeting.

Minutes

Minutes from the IAFP 94th Annual Business Meeting which were published in the October 2007 issue of *Food Protection Trends* were approved after a motion from Bob Sanders and a second from Gale Prince.

President's Report

President Acuff reported on programs and activities of IAFP over the past year. He reported that membership has increased 3%, with the Association now having slightly less than 3,300 Members. This growth is attributed to the dues restructure and the Association's increasing international presence. *JFP* Online has 1,400 subscribers with 200 being institutional subscriptions.

President Acuff noted that the 2008 Annual Meeting attendance was at 1,840 attendees, showing nice growth when compared to the Calgary and Baltimore meetings. The Student PDG is doing very well with 80 members attending the Student Mixer and many serving again as AV assistants during the sessions. He emphasized that overall the Association is very healthy and strong, largely due to active participation of members.

Upon conclusion of his report, President Acuff presented three Presidential Recognition Awards. The first was to Connie Tharp for her long-standing support of David's IAFP activities. She has attended the Annual Meeting for sixteen years and has often served as an impromptu tour guide during IAFP international meetings. The final two awards were presented to Frank Yiannas and Jeff Farber. Frank had voluntarily resigned his Executive Board position as Past President because of an unexpected government representative vacancy due to Stan Bailey's employment change. Jeff willingly agreed to return to the Executive Board as Past President to ensure equal representation for all Member categories.

Tellers Committee Report

Mindy Brashears, Teller, reported there were 732 ballots received. Isabel Walls was elected as Secretary for the 2008–2009 year. A motion by Kathy Glass and seconded by Anna Lammerding to accept the report and destroy the ballots was approved.

JFP Management Committee Report

Chairperson Mark Harrison reported that submissions to the *Journal of Food Protection* continue to be stable, with over 400 articles published in 2007. International submissions now constitute 55% of the papers published in *JFP*. A survey on page charges indicated that most corresponding authors prefer no page charges but authors that find page charges justified are more willing to pay these charges to a non-profit organization. The Committee will continue to monitor the impact of page charges on submissions over the next few years. Recommendations were made to the Executive Board to reappoint Michael Davidson as Scientific Editor for another 4-year term, to appoint a subcommittee to look at the potential impact of implementing open access (as defined by NIH) to *JFP* articles, and to consider the need for a change in the *JFP* cover design.

FPT Management Committee Report

Chairperson Jinru Chen reported that there were 18 people in attendance at the *FPT* Management Committee meeting and reviewed the accomplishments of the last year. David Golden was appointed as Scientific Editor and the Instructions for Authors were reviewed and revised. *FPT* submissions were down from 24 to 14 when comparing 2006 and 2007 numbers, respectively. The Committee recommendations to the Board included advertising *FPT* in Affiliate newsletters to increase submission of applied journal articles and increase Affiliate involvement. The Committee also recommended the appointment of a subcommittee to develop a plan to recruit submission of manuscripts and to implement the newly revised Instructions for Authors. Due to the resignation of Doug Powell, the elimination of the Scientific News Editor position, and thus the Science News section of the journal, was also recommended.

Foundation Fund Report

Gale Prince, Chairperson of the Foundation Fund, reported that more than $200,000 had been added to the Foundation Fund over the past year. The fund balance as of May 31, 2008 was $768,000. IAFP Members met last year's match challenge of $5,000 and had already met this year's challenge, meaning that Gale would be writing a matching contribution check again this year. Gale reminded the attendees to participate in the silent auction. Upon conclusion of his report, the Florida Association for Food Protection asked to be recognized and then offered an amusingly cryptic presentation, which concluded with a contribution of $1,000 to the Foundation Fund.

Affiliate Council Report

Chairperson Carl Custer reported that Roger Cook will be the new Affiliate Council Chair and that Dan Erickson was elected as the new Affiliate Council Secretary. The Council discussed Web site development during their meeting and made two recommendations to the Board. The first was to promote Affiliate membership to IAFP Members and the second was to encourage the Affiliates to take a greater communication role in future foodborne disease outbreaks, as appropriate.

Executive Director's Report

David Tharp reported that fiscal year 2008 was a productive year. The Association made strides in terms of international involvement as evidenced by the October meeting in Rome, Italy, the May Latin American meeting in São Paulo, Brazil, and the upcoming meeting in Lisbon, Portugal. The 2007 China conference in Beijing was a good experience and IAFP intends to participate again this year. A new Dubai Affiliate organization was chartered as a result of IAFP participation in the Dubai food safety meeting. Longer term plans include holding a European meeting each year, one in Korea in 2009 and a meeting every other year in Latin America. David noted that the IAFP Foundation received $1,000 from the Brazil Affiliate as a result of the conference held there.

David reported on the financial condition of the Association. As of August 31, 2007, the Association's General Fund held a balance of over $760,000. He reported that fiscal year 2007 was financially successful due to a well attended 2007 Annual Meeting and that the overall revenue for the year was $2,600,000. For 2008, financial challenges which have been encountered include the dues restructure, page charge revenue decline, and the low return on investments.

David thanked the IAFP Staff for their hard work and continued commitment to the Association. In particular, he pointed out the sacrifice they make to be away from their families for the week of Annual Meeting. He also expressed his thanks to the IAFP Board and Members for the support they provide year-round.

At the conclusion of David's report, a motion to accept all reports was made by Carl Custer and seconded by Fred Weber. It was approved.

Unfinished Business

There was no unfinished business.

New Business

There was no new business.

Adjournment

A motion to adjourn the meeting made by Carl Custer and seconded by Fred Weber was approved. The meeting was adjourned at 1:01 p.m. by President Gary Acuff.

Respectively Submitted,
Lee-Ann Jaykus, Secretary

COMMITTEE MINUTES

STANDING COMMITTEES

Food Protection Trends Management Committee

Members Present: Jinru Chen, George Baker, Mark Berrang, Richelle Beverly, Beth Ann Crozier-Dodson, Michelle Danyluk, Denise Eblen, Montserrat Iturriaga, LeeAnne Jackson, Maria Nazarowec-White, Kathleen Rajkowski, Patricia Rule and David Golden.

Visitors Present: Pete Cook and Susan McKnight.

Board and Staff Liaisons Present: Gary Acuff, Stan Bailey, Carl Custer, Donna Bahun, David Tharp and Lisa Hovey.

Meeting Called to Order: 2:05 p.m.

Recording Secretary of Minutes: Michelle Danyluk.

Old Business: Jinru Chen welcomed everyone, introduced the five new Committee Members, and acknowledged Production Editor Donna Bahun and the five departing Committee Members for their dedication to the journal. She also acknowledged the members of the Search Committee for *FPT* Technical Editor and of the subcommittee for revising *FPT* Instructions to Authors. Richelle Beverly reviewed the anti-trust guidelines. Discussion on *FPT* Science News section and Scientific News Editor was added to the agenda. The 2007 Committee Minutes was approved without modification.

Gary Acuff reported that IAFP has focused its efforts on international activities in the past year. The European symposium was well attended. The first food safety symposium in Latin America has gone well and was well supported by suppliers and exhibitors. The next international food safety meeting will be in Korea in October 2009. IAFP will sponsor the food safety conferences in China and Dubai. IAFP has acquired additional affiliates from Turkey, Spain and United Arab Emirates. Additionally, the "timely topic" meeting in Washington DC was well attended and received positive reviews. The IAFP membership has gone up about 3%.

David Tharp gave an update on the financial aspects of IAFP. The Foundation Fund has continued to grow. The association offered travel scholarships to 6 students including 3 international students. The general fund has also done well in the past year.

David Golden reported that the *FPT* submissions this year have gone down from 24 to 14. However, the publications have gained recognition especially in the areas of consumer attitudes, consumer trends and retail. The review process is electronic and is much faster now than previously with hard copies.

Mechanisms to improve the *FPT* submission rate were discussed. Increase of the visibility of *FPT* by advertising in affiliate newsletters was recommended. David Golden suggested publishing non peer reviewed undergraduate student research in *FPT*. Patricia Rule recommended having the student PDG submit school spotlights. PDG white papers could be submitted as general interest papers. Industry experts could be invited to write articles on specific topics for *FPT*.

Donna Bahun reported that the IAFP office requires help from the Committee to recruit articles. The Committee recommended forming a subcommittee to address this issue. Jinru Chen appointed LeeAnne Jackson (Chairperson), George Baker and Patricia Rule as the subcommittee members, pending Board approval.

Scanning old *DFES* articles was approved by the Board last year. Kathleen Rajkowski will donate her old *DFES* to IAFP. Gary Acuff will plan to scan them.

New Business: LeeAnne Jackson gave an overview on the revisions made on the previous *FPT* Instructions to Authors. Minor editorial changes were suggested by the Committee Members and visitors. The Committee accepted the revisions. The revised Instruction to Authors will be submitted to the Board for approval.

Jinru Chen indicated that she had received a letter from Ed Zottola, the former Scientific Editor of *FPT*. The letter has been forwarded to the Board.

Doug Powell has previously been the Scientific News Editor, and due to other commitments, he no longer wishes to be involved. The Committee recommended eliminating the position of Scientific News Editor and removing the Science News section from *FPT*.

The Committee fully supported a move towards an electronic version of *FPT*.

Recommendations to Executive Board:

1. Advertise *FTP* in affiliate newsletters to increase submission of applied journal articles and affiliate involvement.
2. Appoint a subcommittee to develop a plan to continually recruit manuscripts; The subcommittee members will include LeeAnne Jackson (Chair), George Baker and Patricia Rule.
3. New instructions to authors have been reviewed and revised. Executive Board approval is needed to publish these instructions.
4. Eliminate the position of Scientific News Editor, and thus the Science News section of the journal.
5. Rapidly move towards an electronic version of *FPT*.

Next Meeting Date: July 12, 2009.

Meeting Adjourned: 3:25 p.m.

Chairperson: Jinru Chen.

Journal of Food Protection Management Committee

Members Present: Mark Harrison (chairperson), John Bassett, Larry Cohen, Carl Custer, Judy Greig, Margaret Hardin, Elaine Berry and Kathleen O'Donnell.
Editors Present: Michael Davidson, Joseph Frank, Elliot Ryser and John Sofos.

Outgoing Members Present: Kathryn Boor, Maria Teresa Destro, Loralyn Ledenbach and P. C. Vasavada.

New Members Present: Elaine Berry, Mark Carter, Atin Datta, Santos Garcia-Alvarado, Leon Gorris, Kendra Nightingale and Manan Sharma.

Board and Staff Present: Gary Acuff, Lee-Ann Jaykus, Vickie Lewandowski, David Tharp, Lisa Hovey, Tamara Ford and Didi Loynachan.

Visitors Present: Larry Beuchat, Jinru Chen, Sun Kim, Jenny Scott and Dick Whiting.

Meeting Called to Order: 10:00 a.m.

Recording Secretary of Minutes: Elaine Berry.

Selection of Committee Vice Chair: Margaret Hardin.

Old Business: The agenda was reviewed and approved. The minutes of the 2007 meeting were reviewed and approved. Chairperson Mark Harrison read the antitrust guidelines.

Report from IAFP President: Gary Acuff reported that IAFP has been active on the international front. The 3rd European symposium was well attended and a 4th European symposium is being planned in Portugal. The first International Symposium was held in Latin America this year in Brazil. The plan is to move this symposium around the world; the next will be in Korea. IAFP has also sponsored other international meetings including conferences in Dubai and China. There are three new international affiliates this year. IAFP also held a "timely topics" symposium on microwave pot pies in Washington, D.C. this year. *Food Protection Trends* (*FPT*) now has a new cover and the implementation of a new online version of *FPT* is under consideration. The need to increase submissions to *FPT* was discussed. IAFP membership has increased, likely due to the reduced fee structure and the increased international exposure.

Report from the IAFP Office: David Tharp indicated that IAFP is financially in good health. Due to some sizable contributions, there was $760,000 in the foundation fund as of August 2007. Foundation funds were used to support six students to attend the IAFP Annual Meeting this year. The goal is to have $1,000,000 in the foundation fund by 2010. Last year, $180,000 was added to the general fund; the current year conditions have not been as good, but it is anticipated that it should be at the breakeven point for the year.

Report from the *Journal of Food Protection* Scientific Editors: Joe Frank presented the report on behalf of the Scientific Editors Mike Davidson, Joseph Frank, Elliot Ryser and John Sofos. They reported that Volume 70 of *JFP* (2007) contained 2,983 pages and 404 articles, including 389 research papers, and 15 review and general interest papers. In comparison, Volume 69 published in 2006 contained 3,100 pages, and 430 articles, including 421 research papers and 9 review and general interest papers. The average time from submission to publication was approximately 9 months. Researchers from countries other than the United States authored 54.5% of the articles in Volume 70 and represented 41 countries. The Editorial Board had 146 members at the end of 2007; sadly, Member Dr. Alex von Holy passed away. The first seven issues of Volume 71 (2008) contained 1,540 pages (246 papers), compared to 1,780 pages (248 papers) in the first seven issues of Volume 70 published in 2007. The estimated number of issues waiting to be published based on typeset pages is currently 2.60, compared to 1.78 a year earlier, and closer to the more typical 2.21 backlog of 2006.

Report from the Administrative Editor: Tamara Ford reported that online journal submission remain at 100% in 2008. Online subscriptions among members have increased substantially; as of July 8, 2008, *JFP* had 752 print subscribers and 1,416 online subscribers. This is in comparison to 663 print subscribers and 199 online subscribers as of June 22, 2008. Regarding the survey concerning *JFP* page charges, there were 373 completed surveys, for a response rate of 45 percent. Respondents were contributing authors to *JFP*. The page charge results of the survey were summarized as follows:

1. Six in 10 respondents would be more willing to pay page charges to a non-profit organization than a commercial publisher.
2. The median respondent has submitted manuscripts to two journals with page charges in the last two years.
3. The median respondent thinks that a fair page charge is between $1 and $50 per page.
4. One out of 5 respondents thinks that no page charge is fair.
5. Four in 10 respondents pays $500 or less in pages charges annually.
6. One in 4 respondents pays between $500 and $1,000 in page charges annually.

New Business: A motion for the Executive Board to reappoint Michael Davidson as a scientific editor for another four-year term was approved. The results of the *JFP* Survey were further discussed. *JFP* page charges generate approximately $275,000 per year, representing 9 to 10% of the overall budget. The committee decided that it will continue to monitor submission rates to determine if we are losing good papers because of page charges, and perhaps re-survey again in a few years. Open free access to publications was discussed. NIH restricts publication of funded work to journals that allow open free access. A motion was approved to appoint a subcommittee to examine the issue and look at potential impacts of implementing free open access (as defined by NIH) of *JFP* after 12 months of publication. Kathryn Boor, Leon Gorris, and Kendra Nightingale volunteered to serve on the subcommittee. The possibility of changing the *JFP* cover design also was discussed. It was not determined to be a high priority, in part because of the moves to electronic subscriptions. The committee approved a motion to recommend that the Executive Board consider this need. The nine-month time from *JFP* submission to publication was further discussed and was considered to

be reasonable. Author revisions account for much of this time, but having more reviewers with particular expertise would help: mold and mycotoxins, food engineering, and toxicology.

Recommendations to Executive Board:

1. Reappoint Michael Davidson as Scientific Editor for another 4-year term.
2. Appoint a subcommittee to look at the potential impacts of implementing free open access (as defined by NIH) of *JFP* after 12 months of publication.
3. Consider the need for a change in the *JFP* cover design.
4. Approve Margaret Hardin as Vice Chair for a two-year term.

Next Meeting Date: July 12, 2009.

Meeting Adjourned: 11:47 a.m.

Chairperson: Mark Harrison.

Program Committee

Members Present: Indaue Mello-Hall, Faye Feldstein, Maria Teresa Destro, Paula Fedorka-Cray, Kalmia Kniel, Loralyn Ledenbach, Alejandro Mazzotta, Joan Menke-Schaenzer, Randall Phebus, Donald Schaffner and Mary Tortorello.

Members Absent: Maha Hajmeer.

Board Members and Staff Present: Vickie Lewandowski, Lee-Ann Jaykus, David Tharp, Lisa Hovey and Tamara Ford.

Meeting Called to Order: 7:00 a.m.

Recording Secretary of Minutes: Emilo Esteban.

Summary of Activities and Actions Taken: Pascal Delaquis, Emilio Esteban, Linda Harris, Susan McKnight and Gloria Swick-Brown will be leaving the Committee at the conclusion of IAFP 2008. On behalf of the Program Committee, we want to thank them for their contributions during their term. Their efforts were, in part, responsible for the successful programs presented at the Annual Meetings, and we truly appreciate all their hard work and dedication.

Members who will join the Committee this year: Faye Feldstein, Paula Fedorka-Cray, Maha Hajmeer, Maria Teresa Destro and Loralyn Ledenbach. Faye Feldstein will serve as Vice Chairperson for IAFP 2009 and will become Chairperson for IAFP 2010 in Anahiem, California.

The Committee served as a forum for groups wishing to present symposia and workshop proposals for IAFP 2009. At the Wednesday committee meeting, 52 symposia and 9 workshop proposals were submitted. Further review of all symposia will be made during the Thursday meeting.

Recommendations to Executive Board: None.

Chairperson: Indaue Mello-Hall.

SPECIAL COMMITTEES

3-A Committee on Sanitary Procedures

Members Present: Steven Sims and Phil Wolf.

Visitors Present: Allen Sayler, Dennis Gwalswyk, Dan Erickson, Bob Sanders, John Buchanan and John Bruhn.

Board Member Present: Vickie Lewandowski.

Meeting Called to Order: 10:00 a.m.

Recording Secretary of Minutes: Steven Sims.

Old Business: None.

New Business: The Committee on Sanitary Procedures (CSP) developed three action items.

They are:

1. Seek IAFP Dairy Quality and Safety PDG endorsement for the proposed workshop, "3-A 'Hands-on' Workshop – Evaluating the Sanitary Design and Construction of Milk Handling and Processing Equipment."
2. Suggest to the IAFP Dairy Quality and Safety PDG that a recent IAFP article on *Listeria* prevention in small cheese plants be converted to a IAFP booklet and possible other booklets for other foods.

Recommendations to Executive Board:

The 3-A Sanitary Standards Inc. has identified a critical need to increase participation in their standards writing process by State Regulators and dairy equipment users.

As a part of this effort CSP is proposing an IAFP workshop: "3-A 'Hands-on' Workshop – Evaluating the Sanitary Design and Construction of Milk Handling and Processing Equipment."

In the course of CSP discussions, a problem was identified in that State regulators seldom attend workshops because of State budget problems. It was noted that in other circumstances where state participation is critical to some larger purpose, government employees are offered a different registration rate in order to encourage the needed participation (in this case to meet a CSP/3-A goal). If this workshop is accepted, we are seeking approval of the IAFP Board to offer a differential registration rate. We suggest $100 for Government, $375 for other attendees.

1. We are proposing this in conjunction with a proposed request to 3-A Inc. regarding use of symbol council money dedicated for education be explored to use to assist regulators who may not be able to attend because of money.

Next Meeting Date: Conference call August 6, 2008.

Meeting Adjourned: 11:45 a.m.

Chairperson: Steven Sims for Don Wilding.

Audiovisual Library Committee

Members Present: Judy Harrison, Bennett Armstrong, Warren Clark, Jr., Thomas Lovey, Robert Sanders and Dorothy Wrigley.

Board and Staff Members Present: Leilani McDonald and Vickie Lewandowski.

Meeting Called to Order: 1:05 p.m.

Recording Secretary of Minutes: Bennett Armstrong.

Old Business: Decreasing usage of the AV Library to be reversed. Attachments a-g were reviewed concerning usage and budgets. Results of an email survey on usage to committee members were discussed.

New Business: We discussed looking at new Internet sources, links, databases, podcasts, videos, PowerPoint slides, etc. and attaching links to these on our audiovisual library homepage. We discussed converting old materials to DVD or other contemporary formats. We recommended that IAFP staff and state chapters verify websites/links/podcasts/database search engines for inclusion in the AV Library link.

Recommendations to Executive Board:

1. We would like the IAFP staff to help in publicizing the AV Library and in publicizing materials on file and the media formats we want to expand into.
2. We also would like to ask for flexibility in how we use the budget to fund development of the IT formats for the AV Library link, and for prizes to heavy users of the library, and to those who donate new materials to the library.
3. We would like to recognize the state chapter and college that donate the most new materials during the 2008–2009 year.

Next Meeting Date: 2009.

Meeting Adjourned: 3:00 p.m.

Chairperson: Judy A. Harrison.

Committee on Control of Foodborne Illness

Members Present: Ewen Todd (Chairperson), Judy Greig (Vice-chairperson), Pete Cook, Thilde Peterson, Jack Guzewich, Chris Griffith, Sherri McGarry, Maria Nazarowec-White, Ruth Petran, Agnes Tan, Gale Prince and Kristina Barlow.

Visitors Present: Bashir Yousif, Isabel Walls, Randell Phebus, Kurt Buckman, Tom Schwarz, Craig Harris, Bobby Krishna, Khalid Sharif and Thomas Lovey.

Board Present: Lee-Ann Jaykus.

Meeting Called to Order: 8:10 a.m.

Recording Secretary of Minutes: Judy D. Greig.

Old Business: The Board encouraged the Committee to make the 6th edition (1999) of the Procedures to Investigate of Foodborne Illness Manual a priority. The previous edition was circulated to individuals with background in investigation of foodborne illness. Comments from the Committee and other sources have been forwarded to Jack Guzewich; a summer student has partially compiled the information. Jack will review the input data. "Keys" have been placed in an Excel spreadsheet and proofed to be used for any further changes.

The Waterborne Manual has not been updated since 1996 and a revision is suggested. Ewen Todd, Judy Greig, Marilyn Lee, Michael Brodsky, Agnes Tan and Sherri McGarry will form a team with input from the Water Safety and Quality PDG, EPA, NCEH, Carol Selman and possibly Dean Cliver. CDC is in the process of setting up a team to develop a surveillance program for waterborne disease and water contamination, but irrigation water will not be covered by this team.

There was discussion to revisit the previous IAFP HACCP Manual sometime, and it was noted that HACCP is evolving and useful versions would be applicable to catering and retail. A review of HACCP could be included on a discussion on organizational food safety culture with Chris Griffth as lead.

Rob Tauxe was contacted concerning the need to update the CDC Pathogen list which had input from this Committee in the past. It was agreed that IAFP could take the lead.

Three papers concerning the Infected Foodhandler have been published in 2007 and three more are in press. One more is being written. The Committee recommends to the Board that when complete the papers will be presented in a volume that could be bound for purchase. There may be some reformatting of the tables and text for a book format.

Thilde Peterson reported the second stage of the "Mystery Outbreak" will be presented on Tuesday. 97% of attendees last year stated they enjoyed the experience and got something of valuable for their own work. 11 E-mails were received from Europe asking for the presentation for use in their areas. There will not be a panel this year because travel budgets were cut. The presentation package will be available for free from IAFP. Last year 257 people took part. This year the scenario will be reviewed and then the participants will investigate what breakdowns occur during an investigation and what happens in your jurisdiction. Additional help is needed on Tuesday during four 45 minutes sessions to help with the discussion following the presentation – Sherri McGarry, Ewen Todd, Chris Griffith, and Agnes Tan will help. The Board wants new formats for the annual meeting and this was an excellent example of change.

New Business: Ewen Todd suggested developing a workshop to include a tabletop exercise based on a foodborne outbreak. The Procedures to Investigation of Foodborne Illness Manual could be the homework before the workshop. Each of the tables would be "seeded" with an expert in foodborne disease investigation to couch the participants. This could also be the launch of the foodhandler package. The workshop would begin with talks on surveillance. The current "tomato" outbreak would be a good example of something difficult to investigate. Documents from various organizations could be reviewed

and critiqued. Ewen has worked with a group on Food Safety and Defence of the Great Lakes Boarder Health Initiative that put on a tabletop exercise in July: Thilde Peterson, Ewen Todd, Judy Greig, Maria Nazarowec-White, and Sherri McGarry.

Symposia for 2009:

1. Traceability and surveillance. The Executive Board is looking at a special traceability IAFP meeting and so is FDA.
   A roundtable for traceability and surveillance would be the best format.
2. Climate change: food safety and security, new pathogens [with International Food Policy Group]. WHO just did a paper and there is one presentation this year. Lee-Ann Jaykus will provide input.
3. Organizational food safety culture.
4. Imported and recall.
5. Attribution with limited information – interactive round table for decision making. When to do a recall? How does a company contact the public – Costco. At EU meeting had consumer, industry, media and novel means of communicating. Adaptive executive communication – flow chart – Professor Deermier Chicago Reputation management map.

Recommendations to Executive Board:

1. The Committee recommends that at least part of the 6th edition of the Procedures to Investigate Foodborne Illness Manual (tables) be provided for sale in an electronic format.
2. The Committee recommends that work begin on a revised Waterborne Manual.
3. The Committee recommends that the CDC pathogen list of foodborne agents should be updated to be a searchable electronic document with a CCFI lead.
4. The Committee recommends that the Infected Foodhandler papers be compiled into one volume available for purchase from IAFP.
5. Workshop and symposia suggestions.

Next Meeting Date: July 12, 2009 in Grapevine, Texas.

Meeting Adjourned: 4:30 p.m.

Chairperson: Ewen C. D. Todd.

Constitution and Bylaws Committee

Members Present: Ann Draughon, Kathleen Glass, Robert Sanders, Jenny Scott, Steven Murphy, David Tharp (Staff Liaison) and Isabel Walls (Board Liaison).

New Members Present: None.

Visitors Present: None.

Call to Order: 11:05 a.m.

Recording Secretary: Steve Murphy.

Old Business: 2007 Minutes were presented. Bob Sanders made a motion to approve the minutes as written; seconded Kathy Glass. The 2007 minutes were unanimously approved as written.

New Business:

1. Steve Murphy indicated that Zeb Blanton expressed interest in the Vice Chair position. He was unanimously selected as Vice Chair by the committee.
2. The committee discussed concerns related to Article IV. C. in the Constitution that states "The Executive Board must include, at all times, members officially connected with education, government, and industry. There must be at least one representative from each of the three categories at all times." Concerns are in regard to maintaining this representation in the event of a Board Member's change of employment status (i.e., change in "official" connection), a Board Member's resignation, or other circumstances. It was generally felt by the committee that a smooth transition without loss of Board Members with experience and/or years of service on the Board was desirable. Current wording in the Constitution and Bylaws does not adequately address these situations, nor does is specifically address the succession of Board members in the event of a loss of Board Member. The committee generally agreed that changes in the Constitution and/or Bylaws would be helpful in clarifying procedures in such circumstances. The committee proposed solutions that need to be refined; these will be worked on through e-mail and/or conference call.

Recommendations to Executive Board:

1. That Zeb Blanton be selected as Vice Chair of the Committee.
2. Recommendations on the Constitution and Bylaws relative to this topic will follow [in the coming months]:

   The Committee discussed concerns related to Article IV. C. in the Constitution that states "The Executive Board must include, at all times, members officially connected with education, government, and industry. There must be at least one representative from each of the three categories at all times." Concerns are in regard to maintaining this representation in the event of a Board Member's change of employment status (i.e., change in "official" connection), a Board Member's resignation, or other circumstances. It was generally felt by the Committee that a smooth transition without loss of Board Members with experience and/or years of service on the Board was desirable. Current wording in the Constitution and Bylaws does not adequately address these situations, nor does it specifically address the succession of Board Members in the event of a loss of Board Member. The Committee generally agreed that changes in the Constitution and or Bylaws would be helpful in clarifying procedures in such circumstances. The Committee proposed solutions that need to be refined; these will be worked on through e-mail and conference calls during the next year.

Next Meeting Date: Conference call to be arranged. Next meeting July 12, 2009 in Grapevine, TX.

Meeting Adjourned: 12:00 p.m.

Chairperson: Steven Murphy.

Foundation Committee

Members Present: Gale Prince (Chairperson), Don Zink (Vice Chairperson), Stan Bailey, Zeb Blanton, Roger Cook, Robert Gravani, Peter Hibbard, Lee-Ann Jaykus, Vickie Lewandowski, Robert Marshall, Fred Weber and Paul Hall.

New Members Present: None.

Visitors Present: Bennett Armstrong, Beth Hoffman and Brenda Halbrook.

Board and Staff Liaisons Present: Gary Acuff, Lisa Hovey and David Tharp.

Meeting Called to Order: 3:12 p.m.

Recording Secretary of Minutes: Don Zink.

Old Business: Minutes from last year's meeting were accepted. The committee reviewed investment results. Market conditions have resulted in reduced market returns by approximately $32,000. The committee expects that difficult conditions will continue, but decided to maintain the current investment strategy.

The committee increased the budget for student travel scholarships from $15,000 to $20,000 in consideration of rising travel costs. The committee accepted the amended budget.

The committee discussed the cost benefit of international meetings and "Timely Topics" meetings. The general sense of the committee is that these meetings are valuable.

The committee discussed the declining use of the Audiovisual Library.

The committee believes that we continue to be on track for our goal of $1 million by 2010.

New Business: The committee discussed future fund raising efforts and considered the use of outside fund raising consultants.

Gale Prince suggested that we consider initiating a leadership development program. There was broad support for this idea and the committee felt that it deserved further discussion.

David Tharp raised the question of whether or not we would allow corporate sponsorship of student travel scholarships.

Recommendations to Executive Board:

1 The committee recommends that the Executive Board accept the revised budget reflecting an increase in the student travel budget to $20,000.
2. The committee recommends to the Executive Board that they consider innovative ways to offer state of the art food safety training and, if necessary, establish a separate committee or task the Audiovisual Library Committee for the purpose. The committee feels that it is particularly important to include student members in this effort. The Foundation Committee will consider funding a promising approach to this problem.
3. The committee recommends that the Executive Board increase the Ivan Parkin Lecture honorarium to $2,000 effective in 2009.
4. The committee recommends that the Executive Board identify and contact at least 3 fundraising firms and explore the possibility of raising a significant amount of money ($5 million or more) for the IAFP Foundation.
5. The committee recommends that the Executive Board allow corporate sponsorship of student travel scholarships and that these travel scholarships be awarded using the same criteria and selection process as now employed for Foundation Fund student travel scholarships.

Next Meeting Date: July 12, 2009.

Meeting Adjourned: 4:43 p.m.

Chairperson: Gale Prince.

Membership Committee

Members Present: Edward Wellmeyer, Jenny Scott, Susan McKnight, John Bruhn and Lee-Ann Jaykus.

New Members: Crispin Philpott.

Visitors Present: None.

Board and Staff Liaisons Present: Vickie Lewandowski and Lisa Hovey.

Meeting Called to Order: 3:00 p.m.

Recording Secretary of Minutes: Crispin Philpott.

Old Business:

Review and update on '07 Board Recommendations; Board feedback provided by Board Liaison Vickie Lewandowski and Staff Liaison Lisa Hovey.

1. Request for strategy to retain members, attract more student and international members. Board response: Membership strategy development is the charter of the Committee.
2. Request for Board to broaden IAFP scope to include focus on non-microbial areas that impact protection and quality (e.g., toxicology & veterinary medicine). Board response: Currently under consideration; queried if IFT has Toxicology Division.
3. Committee to draft international members questionnaire. To be submitted to Board for approval. Current status: on-going effort.

Membership growth update by Staff Liaison Lisa Hovey: Current membership at 3,269 – growth over 2007 of 95 members. The current level of Sustaining Members at 96. A three-phase mail-out effort is underway to promote new membership and update reduced membership cost.

New Business: The attending Committee members unanimously approved the appointment of Don Schaffner to Vice Chair for a two-year term (2008-2010).
A variety of tactics and strategies to promote new IAFP membership, while retaining current members, was proposed and explored. The Committee believes that there is a high level of expert talent within the organization that can be further utilized. Councils of key International members can be established to promote new membership within their respective regions, while the creation of an IAFP Expert List by discipline and region may also add

value to current members and promote new Membership. Committee members would like to liaise with the Affiliate Council to expand cost-effective IAFP membership among Affiliate members. It is believed that 90% of Affiliate members are not IAFP Members. Access to Affiliate membership lists for the purpose of promotional mailings is sought. A final growth tactic considered by the Committee is to assign a $50 membership fee to exhibitor booth staff at the annual meeting. IAFP currently allows each exhibitor three attendees at no cost. It is believed that few of the booth staff are IAFP Members. If this move were not onerous to exhibitors, to be determined by an exhibitor survey, then it may increase annual membership by more than 1,000. Recommendations to the Board reflect the Committee's discussions at this meeting.

Recommendations to Executive Board:

1. Recommend the approval and appointment of Don Schaffner to Committee Vice Chair for a two-year term (2008–2010).
2. Recommend that key international members in Europe, Asia, Latin America and elsewhere be utilized to broaden international membership. Many are leaders in their respective industry, regulatory and academic areas. A leadership council by region could be established to recruit and promote IAFP membership.
3. Recommend that the Board create a list of experts from within IAFP membership by discipline and region. Avail this list to IAFP membership for contact and guidance by issue and/or area. This may provide added value to current IAFP membership and promote new membership.
4. Recommend Board approval for the Committee to liaise with the Affiliate Council to promote IAFP membership. It is believed that less than 10% of Affiliate members are IAFP Members. Access to Affiliate membership lists through the Council will enable expanded promotional mailings.
5. Recommend the Board to survey Annual Meeting Exhibitors to assess sensitivity around a $50 membership fee assigned to exhibit staff. Currently, exhibitors are allowed 3 gratis booth staff; many are not current IAFP Members. This could expand the IAFP membership roll by more than 100.

Next Meeting Date: A Committee teleconference will be scheduled and conducted by incoming Vice Chair Don Schaffner in 1Q/09.

Meeting Adjourned: 4:30 p.m.

Chairperson: Gordon Hayburn.

Nominating Committee

Meeting Called to Order: 3:35 p.m.

Recording Secretary of Minutes: Fred Reimers.

Old Business: None.

New Business: Welcomed the new 2008 Nominating Committee and discussed the process and timelines we will use for selecting nominees for the 2009 Secretary election. Nominations for consideration must be received by November 6.

Recommendations to Executive Board: None.

Next Meeting Date: IAFP to schedule conference call – November 10 at 11:00 a.m. CST.

Meeting Adjourned: 3:51 p.m.

Chairperson: Fred Reimers.

Past Presidents' Committee

Members Present: Jeffrey Farber, Jenny Scott, Paul Hall, Jack Guzewich, Kathy Glass, Gale Prince, Bob Sanders and Anna Lammerding and Ann Draughon.

New Members: None.

Board and Staff Liaisons: Gary Acuff and David Tharp.

Meeting Called to Order: 3:06 p.m.

Recording Secretary of Minutes: Gary Acuff.

Old Business: Agenda approved. Minutes approved.

Report from President: Gary Acuff provided a brief report summarizing activities and progress over the past year. IAFP has continued to expand internationally with meetings in Rome, Italy and Campinas, Brazil, as well as sponsored meetings in Dubai and China. In addition, a very successful "Timely Topics" meeting was hosted in Washington, D.C. on prepared, but not ready-to-eat foods. Membership continues to be healthy after the dues restructure last year and, combined with increased international meetings, has shown a 3% increase over last year. President Acuff was also pleased to report that IAFP now has three new international affiliates in Turkey, Spain and the United Arab Emirates. It is expected that this year's meeting will have an attendance close to 1,800 and that sponsorship and exhibitors are again strong.

Report from Executive Director: David Tharp reported that it has been a slightly more difficult financial year for the Association, with investments performing poorly in the current economic environment. In addition, reprints and page charges have decreased, and the European Symposium in Rome was costly – however, David added that the Rome meeting was to be considered an investment in our European presence. The Timely Topics Symposium was profitable and *JFP* Online helped our overall financial condition. With the success of this year's meeting, the Association should finish the year with a positive fund balance for the fifth year in a row. IAFP continues to be in the best financial condition of our history.

Recommendations to Executive Board:

1. Change meeting time from 4:00 p.m. to 5:00 p.m.
2. Reprint "*Listeria* Prevention Practices for Small Cheese Operations," Meunier-Goddick, et al. *FPT* 28:473 for distribution in industry, etc.
3. Contact Greg Hooper to write microwave paper from Timely Topics symposium on "Prepared, but not Ready-to-Eat Foods" for *FPT*.
4. Confer with international affiliates to get hot topic symposium suggestions (start with Mexico).
5. Provide complimentary IAFP journals subscription to university libraries of student travel scholarship winners from developing countries.

Next Meeting Date: July 11, 2009.

Meeting Adjourned: 4:06 p.m.

Chairperson: Jeffrey Farber.

PROFESSIONAL DEVELOPMENT GROUPS

Applied Laboratory Methods PDG

Members Present: Pat Rule, Pamela Wilger, Vanessa Cranford, Ruth Eden, Stan Bailey, Mary Lou Tortorello, Patrice Arbault, Reginald Bennett, Jinru Chen, Donna Christensen, Alessandra Chiareli, Rocelle Clavero, Richard Christianson, Stefano Colombo, Phil Coombs, Jeff Kornacki, Robin Kalinowski, Keith Lampel, Y. Jennifer Lee, Molly Mills, Wendy Maduff, George Wilson, Nandini Natrajan, Omar Oyarzabal, Purnendu C. Vasavada, Michael Scott, Leslie Thompson, Christine Aleski, Elena Enache, Susan McCarthy, Xiangwu Nou, Peter Olsen, Marcie Van Wart and David Velasquez.

New Members: Tami Wood, Margaret Hardin, Emilio Esteban, James Agin, Amy Remes, Dan Belina, David Evanson, Irit Weiser, Frank Burns, Judy Lee and Sun Kim.

Meeting Called to Order: 9:00 a.m.

Recording Secretaries of Minutes: Pamela Wilger and Vanessa Cranford.

Agenda

1. Welcome and Introductions.
2. Reading of the Antitrust Guidelines.
3. Comments from Stan Bailey.
4. Updates from members:
   a. Sample Prep Working Group: M.L. Tortorello.
   b. Campy Workshop May 2008 at the University of Auburn: Omar Oyarzabal.
   c. Mold ID Wet Workshop from past two days: Pat Rule/Frank Burns.
   d. Web-based discussion group.
5. Symposium/Workshop ideas for 2009.
6. Ideas for topics for the discussion/education teleconferences.
7. Any other old business.
8. Any new business.
9. Determine next year's calendar for tele-conferences.

Old Business: Due to the large number of ideas submitted for the 2009 meeting, the detailed updates from the members will be done by writing and sent out to the members separately. The Sample Prep Working Group meeting held yesterday afternoon went well. The summary and actions will be sent out later by M.L. Tortorello. The Campy Workshop May 2008 at the University of Auburn was sold out and went well with changes incorporated from the prior year's workshop. Omar Oyarzabal will summarize in writing later. The Mold ID Wet Workshop from past two days went very well. There were 31 participants, sold out. The Beverage PDG will submit it again due to the positive comments from the participants and success this year per Pat Rule/Frank Burns. The members decided to request IAFP host a new communication tool/discussion Board from the IAFP Board and our PDG Members volunteered to moderate it. We need one that produces quick responses and keeps track of forgotten passwords. Everyone will need to use this tool to make it valuable.

2009 IAFP Applied Methods Program Proposals: We had 2 workshops and 11 symposiums to discuss.

Workshops:

- We decided not to submit the wet workshop done in the 2007 meeting in Florida.
- We will submit the workshop on "The Recovery and Control of Contamination from Low Water Activity Foods: Sampling, Testing, and Remediation."

Symposia:

- Submit a joint with the Beverage PDG on "Where Mold Detection is Today and Where It Needs to be Tomorrow."
- Submit a joint with Meat, Dairy, and Produce PDGs on "Shiga Toxigenic *E. coli*: The Bad, the Worse, and the Pathogenic."
- Submit a joint with the Fruit and Vegetable PDG "Less Recognized and Underappreciated Foodborne Pathogens – No Crystal Ball for the Next Big Bug."
- Submit the idea for the produce detection methods working with the Fruit and Vegetable PDG.

The next three ideas will be submitted as independent ideas, but they could be scheduled throughout the meeting as a colloquium with a common idea of microbiological testing from sample to isolate.

- Submit "Enrichment media and protocols: giving detection methods the leg to stand on".
- Submit a joint with Food Law on the legal issues of confirmation and validation.
- Submit Automated Sample Preparation. Approaches for Food Diagnostics idea.
- The Sterilant Gas idea will be submitted by the Sanitation PDG.
- The bacteriophage idea was withdrawn due to this idea was presented this year.
- Decided the idea to have a vendor session based symposium would violate the commercial rules of IAFP.
- The idea of "Next Generation Rapid Tests for the Detection of Food Pathogens – The Department of Homeland Security Food Biological Agent Detector Sensor (FBADS)" was discussed and decided it would be very hard to get the speakers to participate and open up to give valuable information since it is part of the Department of Homeland Security.

The Applied Laboratory Methods PDG Logo:

Three ideas for our logo were passed out and discussed. It was decided to keep the one with our name written out next to the picture for letter head or headings and the right bottom one with the blue background as our small logo. It was also suggested to remove the bubbles and replace them with pictures of DNA, protein molecules, chemical structures and antigen/antibody structures, for example. We will see what the designer can come up with and email to everyone again for comments. We are hoping to use this logo especially in the future IAFP programs by our supported symposia and workshops so it is easier to see our contributions for better planning. It will also be used in our correspondences and communication tools.

Ideas for Topics for the Discussion/Education Teleconferences:

- Current research from students – will discuss with the Student PDG.
- Repeat the Produce one from June on washing and detection when all speakers are available.
- Limit the teleconferences to one hour.
- Tape and post the teleconferences on our IAFP Web site.

New Business: None discussed due to lack of time.

Recommendations to Executive Board:

1. Periodically change the PDG Committee Meeting Schedule so people can get to different PDG meetings starting next year.
2. We would like a projector and screen to help improve our Applied Laboratory Methods PDG Committee Meeting next year.
3. We would like IAFP to host a discussion board/ electronic communication tool for our Applied Laboratory Methods PDG to help improve Member communication.
4. Continued support for yearly teleconference and web-based presentations to be determined.
5. Support our taping of our Educational Series calls and webinars by posting them on our Applied Laboratory Methods PDG IAFP Web site.
6. Conduct and publish a Member survey, which includes a salary section.
7. Reserve a one day meeting room on Saturday at the 2009 IAFP Annual Meeting for purpose of the Sample Prep Working Group meeting to include lunch and refreshments, if possible.

Next Meeting Date: None confirmed other than to continue conference calls and webinars.

Meeting Adjourned: 11:00 a.m.

Chairperson: Pamela Wilger.

Beverage PDG

Members Present: Jeffrey Semanchek, Frank Burns, Larry Beuchat, Elena Enache, Julie Kuruc, Kathleen Lawlor, Mangesh Palekar, Patricia Rule, James Schuman, Joe Shebuski and Pamela Wilger.

New Members Present: Amanda Lathrop, Jacquelyn Miles, Nandini Natrajan, Joshua Gurtler and Ken Janes.

Staff Liaison Present: Donna Gronstal.

Meeting Called to Order: 2:30 p.m.

Recording Secretary of Minutes: Jeff Semanchek.

Old Business:

A. Symposium for 2008 was discussed. Food Safety and Regulatory Issues Associated with Non-Thermal Processing of Foods and Beverages. To be held Tuesday, August 5 from 1:30 p.m. – 5:00 p.m.
B. Mold workshop for 2008 was discussed. Twenty-four participants attended the two day workshop. All participant feedback was good – excellent. Group discussed whether to submit the workshop again for 2009 meeting due to interest. Several participants were present and commented on how well the workshop was organized and the quality of speakers and presentations.
C. Symposium on spoilage investigations in beverage spoilage was discussed. Speaker conflicts with competing worldwide scientific meetings affected the ability to secure required speakers. Group feels the symposium is a worthwhile topic for re-submission for the 2009 IAFP program.

New Business: Group discussed symposia development with other PDGs as a way to provide increased interest by IAFP Member. Also discussed the importance of seeking international speakers and perspective perspectives. Symposium dealing with Supply Chain Safety and Quality was discussed. Kathy Lawlor and Mangesh Palekar will develop symposium details and submit for 2009 IAFP program. Plan to work with the International Food Protection Issues committee to co-develop symposium. Key desirable perspectives include, international, supplier, broker, regulatory etc. Symposium dealing with mold detection…current state and where it needs to be tomorrow was discussed. Pat Rule and Frank Burns to co-develop symposium with Applied Laboratory Methods committee. Discussed whether to hold wet mold workshop at IAFP 2009 based on excellent feedback and overwhelming interest by IAFP Members. Participant evaluations will be reviewed and used to slightly adjust workshop. Speaker interest and verbal commitment was achieved to hold the workshop again in 2009. Discussed submitting symposium dealing with beverage spoilage investigations. Interest from group was high. Mangesh Palekar and Jeff Semanchek to submit to program committee.

Recommendations to Executive Board: None.

Next Meeting Date: Nov. – Dec. 2008.

Meeting Adjourned: 4:00 p.m.

Chairperson: Jeff Semanchek.

Dairy Quality and Safety PDG

Current Members: Loralyn Ledenbach, Allen Sayler, David Blomquist, Dennis Bogart, Don Breiner, John Bruhn, Frank Burns, Warren Clark, Nancy Eggink, Dan Erickson, Eugene Frey, Dennis Gaalswyk, Rick Katz, Don Lane, Deon Mahoney, LindseyMcDonnell, Steve Murphy, Stephanie Olmsted, Gary Pruitt, Amy Remes, Jim Rieth, Amanda Rife, Joanna Shepherd, Steve Sims, Gry Dawn Terrell, Helene Uhlman, P.C. Vasavada and Philip Wolff.

New Members: John Rushing, Tom McCaskey and Sally Miller.

Visitors Present: Jan Van Pelt, Alessandra Chiareli, John Buchanan, Fritz Lembke, John Beck, Patrice Arbault, Bruce Hill, Bob Sanders, Rocelle Clavero, Dayle Reynolds and Larry Beuchat.

Board Liaison Present: Vickie Lewandowski.

Meeting Called to Order: 2:05 p.m.

Recording Secretary of Minutes: Allen Sayler.

Old Business: 2009 Proposal Discussion:

A. UHT/ESL. Steve Murphy stated he had presided over ESL symposia 3 years ago and a more definitive one 2 years before that. There was a long discussion on the issue. Allen Sayler stated the dairy industry did not believe ESL needed to be defined. Nancy Eggink was willing to develop idea further and concentrate on UHT processing.

B. Spore and virus inactivation related to heating dairy products. Steve Murphy noted that this would be a good idea, but with the topic covered at this year's meeting, we should delay submission of this for at least a year and then consider an update.

C. Update on 2009 NCIMS issues. Stephanie Olmsted recommended folding this into the above UHT symposium, which would include an update on the NCIMS Aseptic pilot as a new regulatory approach by the NCIMS.

D. The Bad, the Worse and the Pathogenic (non-O157:H7 shiga toxin producing) – Applied Methods PDG – Patrice from France shared the background on this possible symposium. Asked Dairy Quality & Safety PDG to support. Dennis Gaalswyk seconded. Committee supported

E. Yeast & Mold Wet Lab Workshop – Beverage PDG representative asked for DQS PDG to support on this idea to be resubmitted. DQS PDG moved to support this proposal for a workshop (John Bruhn moved).

F. Raw Milk Update – Continuing need to get out the message of raw milk challenges related to human consumption of raw milk. Include dispelling myths, regulatory concerns, international perspective, perspective on colostrum, gallons of milk sold vs. numbers of illness outbreaks for raw vs. pasteurized milks. Raw Milk – done at Calgary in 2006. Could be an update to dispel myths, provide a more international perspective from New Zealand, Mexico, Canada, Japan, Korea, Europe, etc. Should address rising *Listeria* outbreak rates from dairy product consumption in Europe as compared to relatively flat rates in the US. An FDA perspective is needed, possibly from John Sheehan and a consumer perspective from Caroline Smith DeWaal would also be important. Need to include CDC outbreak data related to raw milk and FDA recall data, if there is such a thing. Need to identify the individual states allowing raw milk sales direct to consumers for consumption purposes. May need to gather raw milk recall data from individual states that allow the sale. Could also discuss MSRA and VRE possibility in raw milk. Also need to confront the argument of nutritional superiority of raw milk over pasteurized milk, with Dairy Management, Inc.'s PhD nutritionist addressing this. The Chair will look into developing this idea. Discussion about value since the current issue is political, not scientific. Important to recognize difference between commercial raw milk versus drinking their own milk off their own farm. While a proposal for a symposium was not supported, the PDG supported the following action items.

   1. Develop list of people who would be willing to testify about the science of raw milk consumption. John Sheehan from FDA could be one source for speakers to provide facts to the raw milk consumption debate.
   2. Develop an article on raw milk consumption in the *Journal of Food Protection* or *Food Protection Trends*.
   3. Look at RawMilk.com and develop scientific points to rebut and publish on IAFP Web page.
   4. Dennis Bogart suggested we work with FDA to expand their authority to regulate the intrastate sale of raw milk. Steve Sims suggested we contact John Sheehan about this to start an FDA initiative.
   5. A webinar hosted by the DQS PDG on raw milk consumption was discussed. Feeling was that this would not have enough interest and could possibly bring the wrong groups to the table.
   6. Accumulate sources of factual information sources on raw milk consumption ("Barfblog" and other sources of like FDA website and Marler-Clark Web site). Put on DQS PDG webpage. According to Steve Sims, extension agents are a big problem in promoting raw milk consumption. Also need to find a way to get factual information to mothers, doctors and grade schools.
   7. DQS PDG agreed to develop additional articles and/or an IAFP brochure on raw milk consumption by humans. Raw Milk subcommittee Volunteers – Ron Schmidt, PC Vasavada, Allen Sayler, Steve Murphy, Dennis Bogart, Amanda Rife, Nancy Eggink.

G. How Clean is Clean? (workshop or symposium) or Food Product Surface Cleanability – How to define and measure, different for different industries. Processing Equipment Cleaning – need to investigate what is "clean" or product contact surfaces, the technology for measuring "clean", the various materials used for product contact surfaces and how to clean them. Work with another PDG that is attempting to develop a definition for "clean". Allen Sayler described the idea for a symposium. Dennis Bogart reported that the Food Hygiene & Sanitation PDG is planning for a 2-day workshop that includes processing equipment standards and validation of cleaning. Steve Sims reported that 3-A CSP would be proposing a workshop on 3-A standards and how to properly apply them for the 2009 IAFP meeting. John Bruhn moved that we support both workshop ideas from the Food Hygiene & Sanitation PDG and the 3-A CSP. Seconded and members voted to support motion. Steve Sims will bring to Monday Chairperson's meeting the idea of a two-tiered registration system ($375 for industry and $100 for government employee). DQS PDG voted to support both workshops.

H. *Listeria monocytogenes* (Lm) Update – How are rates changing globally, international controls – are they working or not, review of Lm guidance document from FDA. Proposed by the Chair. Review of new FDA guidance document. Industry response sent in by GMA for FDA request for comments, according to the Chair. Speakers from FDA, EFSA, Latin America perspective, New Zealand-Austraia Food Safety agency. Also, a recommendation from Bob Sanders to get one of the authors of the July 2008 *Food Protection Trends* to address small processor challenges on *Listeria* control.

I. Global Food Safety Initiative and Its Effect on Food Safety –Third Party Auditing Systems Impact on Food Safety – with FDA proposing the recognition of third party auditing systems and the retail food industry mandating GFSI-recognized third party auditing systems (SQF, BRC, Dutch HACCP, German system), this proposal would investigate the various types of third party food safety auditing systems, their effectiveness, the resources invested in them by the food processing industry and identify why food processing plants are subjected to so many different food safety audits by customers expecting the same level of food safety. Allen Sayler explained the idea. Dennis Bogart talked about why need by retailers for third party auditing system. Third party auditing systems can raise the government "bar" on food safety. Could include NCIMS third party certification system. Get the European perspective as well. Include ISO 22000. Include retailers to get "why" they are support this increased emphasis on third party certification system. Differentiate third party standards versus third party auditing certification. Moving from third party auditing to third party certification, i.e. Randolph and Associates, Quality Chekd to GFSI, ISO, etc. There was a discussion about whether the proposal should include government to government certification systems and it was decided this would expand the topic beyond one symposium. The PDG clearly supported the need to include a roundtable at the end. Patrice Arbault commented that third party audit certification is an issue because of the French government cutting of budget but still required the food processing industry to achieve the same ALOP. EU directives recognize third party auditing certification. Dan Erickson stated the BRC is not a (product) standard, but a management standard. Dennis Bogart stated this year is very much a year of transition from audits to certification for US food processors. He noted that food processors are very tired of having 15 different audits of their plants. SAFE tried to reduce the variety of audits, but was not entirely successful. The symposium proposal needs to address whether these new third party certification systems will actually improve food safety or continue to drain food safety resources from the plant floor to shadow third party auditors. The proposal should attempt to measure whether this new third party certification initiative will reverse that.

J. Room Temperature Display of RTE Foods – many retail food stores are or would like to have room temperature displays of foods to attract the attention of consumers. What are the food safety issues related to the various classes of dairy products, particularly cheese that are displayed at room temperature. Include mail-order cheeses in this review of the safety. PDG supported submitting this as a symposium. Allen Sayler will write up. Coordinate with the Retail Foods PDG.

K. Safety of other types of milks and cheeses – soy milk, rice milk, sheep/camel/yak/other animal milk products, possibly include a taste testing of some of these products. Discussed but there was a lack of support.

New Business:

- Chair volunteered to update DQS PDG Web page, after her term.
- Steve Sims shared 3-A CPS recommendation that July *Food Protection Trends* article by Dr. Floyd Bodyfelt and Dr. Lizabeth Godik on small cheese manufacturing avoidance of *Listeria*. Shorten and have DQS PDG have a booklet. Dennis Bogart suggested that measures to control *Listeria* in a small cheese plant is not that different than such control in a small fluid milk or ice cream plant. Recommendation was to expand idea to include small dairy plants of all kinds (example was the Whittier Farms incident). Stephanie Olmsted will talk to authors about doing this shortening and making it more generic for all dairy plants. Will be included in recommendation to IAFP Executive Board. PDG supported having two booklets, one for small cheese manufacturers to be completed now and another, later targeting fluid milk and ice cream manufacturers. Bob Sanders stated it would be helpful for regulators. He also recommended this idea be spread to other parts of the food industry, such as meat, produce, bakery, etc.
- Joseph Odumera was nominated for Vice Chair by P.C. Vasavada, nominations closed. He was elected and will begin his term at the 2009 Annual Meeting.

Recommendations to Executive Board:

1. Booklet on Control of *Listeria* for Small Cheese Manufacturers. Future booklet for small milk and ice cream manufacturers.
2. 2009 Proposal Recommendations:
   a. Third Party Certification: Does This Improve Food Safety.
   b. 2009 NCIMS Outcomes & Updates.
   c. RTE Foods Displayed at Room Temperatures – Food Safety Implications.
   d. *Listeria monocytogenes* Update.
3. Endorse DQS PDG establishment of subcommittee on human raw milk consumption.
4. Approve Joseph Odumeru as Vice Chair, beginning his term at the 2009 Annual Meeting.

Next Meeting Date: July 12, 2009.

Meeting Adjourned: 4:00 p.m.

Chairperson: Loralyn Ledenbach.

Food Chemical Hazards and Food Allergy PDG

Members Present: Peter Slade, Lindsay Arthur, Todd Rossow, Tong-Jen Fu, Tom Schwarz, Gary Pruitt, Linda Leake, Ginny Edleman and Maria Nazarowec-White.

New Members Present: Eric Braekevelt, Ken Davenport, Gale Prince and Kurt Buckman.

Visitors Present: Visitors were not identified on the sign-in sheet.

Board Liaison Present: Isabel Walls.

Meeting Called to Order: 9:04 a.m.

Recording Secretary of Minutes: Linda Leake.

Old Business: Election of a vice chair was conducted. Peter Slade asked if anyone was interested in volunteering to have their name be place in nomination. It was identified that Linda Leake had volunteered during the conference call on June 17, 2008. No other members volunteered during the PDG meeting. Tom Schwarz nominated Linda Leake for vice chair, and T. J. Fu seconded the nomination. With no objections, Peter Slade appointed Linda Leake as vice chair and asked her to take minutes of the meeting. T. J. Fu briefly summarized the two symposia scheduled for this week that have been organized by our PDG. She noted that Peter Varelis would not be able to speak as scheduled during the symposium on Chemical Contaminants Testing in Foods due to the prohibitive cost of airfare from his home base in Australia. A lengthy discussion was conducted relative to the list of hot topics that had been formulated during this PDG's conference call on June 17, 2008 and the suitability of and interest in these topics for possible symposia, roundtable discussions and/or workshops for the IAFP 2009 Annual Meeting. These topics include diacetyl in flavorings, trace metals in seafood, chemical toxicants in imports, seafood specification, wastes resulting from farming of seafood, colony colapse disorder in bees, migration of chemicals from packaging materials, protocols for threshold level setting for chemicals, allergens, pathogens and nutrients, and emerging organic pollutants. Additional topics discussed for possible symposia and workshops include forensic chemistry and methodology for food defense, acrylimide, trace metals specific to various parts of the country, chemical hazards relative to specific commodities including produce, dairy and seafood, and packaging issues including endocrine disruption. Brought to light was the possibility of collaborating with other PDGs on symposia covering topics of mutual interest. Following this discussion, Peter Slade summarized what he considered the key points and interests that were brought to light, namely emerging issues, a commodity based approach to developing symposia, adulteration and packaging.

New Business: Members who had volunteered during the June 17 conference call to prepare symposia proposals presented their proposals for discussion. Linda Leake shared her proposal for a symposium on inhalant hazards associated with diacetyl and other flavorings. T.J. Fu presented several proposals prepared by her and others not in attendance today. These included Emerging Organic Pollutants organized by T. J. and Jo Marie Cook, Best Practices for Allergen Cleaning and Validation/Verification organized by Lauren Jackson and T. J., Looking for Thresholds: The Multi-disciplinary "Key Events" Approach organized by Mary Alice Smith, Beth Julien and T.J., and Pesticide Residues & International Pesticide Regulations organized by Jo Marie Cook and T. J. Following a discussion of each of these proposals, which included suggestions from all PDG members, Peter Slade summarized by saying he felt topics with the most merit currently are pesticides, allergens, global trade and packaging. He said diacetyl and others warranted further thought and discussion. He said he would review each proposal before presenting them to the program committee. Linda Leake mentioned, that in light of so many developments relative to packaging, especially possible food safety issues, it might be worthwhile to have a packaging PDG. Board Liaison Isabel Walls stated that she was welcome to propose formation of a new PDG to the Board at any time.

Recommendations to Executive Board:

1. Recommendation/Question – Would there be an interest in developing a PDG dedicated to packaging?
2. Approve Linda Leake as Vice Chair from 2008 – 2010.

Next Meeting Date: Conference call to be scheduled.

Meeting Adjourned: 11:10 a.m.

Chairperson: Peter J. Slade.

Food Hygiene and Sanitation PDG

Members Present: Dale Grinstead, Todd Rossow, Zeb Blanton, Dennis Bogart, Sid Camp, Rocelle Clavero, Ken Davenport, Charles Giambrone, David Herweyer, Kenneth Janes, Donald Lane, Jennifer Lee, Tom McCaskey, Fred Reimers, Allen Sayler, Thomas Schwarz, Peter Snyder, Kelly Stevens, Susanne Tortorelli, Sharon Wood and Craig Yoder.

New Members Present: Mark Carlson, Joshua Gurtler, Jeff Kornacki, Bobby Krishna, Yale Lary and Dave McBeain.

Visitors Present: John Allan, Dan Belina, Eric Martin and Wendy Franco.

Board Liaison Present: Lee-Ann Jaykus.

Meeting Called to Order: 1:00 p.m.

Recording Secretary of Minutes: Todd Rossow.

Old Business: Introductions: The roster was passed around and introductions of attendees. After the meeting was started several joined the meeting however were not recorded on the Sign-in Sheet. Anti-Trust Statement: Dale read this prepared statement to the group.

Minutes from last meeting were presented. A motion to accept the minutes was made by Sid and Rocelle provided a second. The motion passed. There was discussion on why none of last year's submitted symposia were accepted. Dale stated that it was creating too much repetition from previous symposia.

New Business: The Floor was open for symposia suggestions:

1. Growth Niches in Equipment – Possible use of sterilized gas. The presenter felt there is a need for a new approach. A draft of the proposal was provided to Dale and review to the group by the submitter (Jeff Kornacki).
    - Comment for inclusion of this approach to application in dry processing areas. Yale Lary provided this comment.
    - Dale asked that Yale and the submitter (Jeff Kornacki) go to speaker room and complete the form. It is due by Tuesday at 10:00 a.m.
2. Discussion on hygienic design: Allan Sayler shared that other PDGs including the 3-A group are working in this area. New equipment may have the certification of cleaning and sanitation, but not for existing equipment. How do you make sense out of

it? Where to look for niche harborage issues? AMI and 3-A Sanitary Design but need for other processes too (Rocelle) Bakery has BISC per Don Lane. Dairy and Meat have their standard, but how do you clean and sanitize those that were built incorrectly and how do provide for validation of effective cleaning and sanitation.

- NSF, 3-A standards and other sanitary guidelines are in place. Challenges. It may be cleanable, but is it easily cleanable? Focus on the design that it is easily cleanable. Retrofitted equipment is the main issue. Many people that purchase the equipment are purchasing off of price and not necessarily off of sanitary design. This could be a topic for a symposium.
- Lee-Ann Jaykus, Board Liasion, introduced herself and shared that IAFP wants to help support the PDG. She encouraged the group to submit papers to *Food Protection Trends* for publication. She stated that if we can sell that the workshop can be well attended to the Committee it could be very successful.

3. Dale shared the recent materials worked on by the PDG for a 2 day workshop. We need to develop a convincing workshop to get the Program Committee to approve the workshop.
   - We need to define the audience.
   - Tools must be defined and do a GAP analysis. The workshop would be used to open up dialog with the many different groups. What records would be adequate to prevent a recall to demonstrate an effective break.
   - Possible Topics – New Equipment and Facility – Old Equipment Designs and Facilities changes to make more easily cleanable (work on some success stories) and Validation of the SSOPs (proper sampling plan and what is statistically significant).
   - General awareness of what we must be mindful of Past Experiences. Food Safety focus since sanitation.
   - Meet at 5:00 p.m. Monday at registration desk to complete the materials for submission.
   - Several attendees stayed after the meeting adjourned to work on the straw man for this Workshop.

Recommendations to Executive Board: None.

Next Meeting Date: July 11, 2009.

Meeting Adjourned: 2:00 p.m.

Chairperson: Dale Grinstead.

Food Law PDG

Members Present: Gary Ades, John Allan, LeAnn Chuboff, Vanessa Cranford, Ginny Edleman, Craig Harris, Gordon Hayburn, Anna Lammerding, Deon Mahoney, Kenneth Malone, Thomas Schwarz, Jenny Scott, Caroline Smith DeWaal and Jolyda Swaim.

New Members Present: DeAnn Benesh, Emilio Esteban, Wendy Franco, Bobby Krishna, Nandini Natrajan, Khalid Sharif, Gloria Swick-Brown, Pamela Wilger, Christine Wilson and Bashir Yousif.

Visitors Present: Nancy Acosta, Eric Martin and Molly Mills.

Board Liaisons Present: Lee-Ann Jaykus and Isabel Walls.

Meeting Called to Order: 2:00 p.m.

Recording Secretary of Minutes: Caroline Smith DeWaal.

Old Business: The Committee discussed the Food Law symposium at IAFP 2008 on Comparative International Approaches to Regulating Unsafe Food. It also discussed the Elements of Food Law workshop topic that was proposed at the last meeting of the committee in July 2007, but not acted on by the PDG and never formally submitted to IAFP.

New Business: The Committee discussed the possible formation of an International Food Protection Issues PDG and agreed that it would be best to work closely or incorporate portions of that work in the Food Law PDG. Review of the mission statement of the PDG showed that international law was clearly contemplated in the formation of the Food Law PDG.

A number of proposals for workshops, symposia and roundtables for the next IAFP conference were discussed, and the committee agreed to move three forward:

1. Roundtable on Building a Modern Food Safety Framework for Non-Meat (FDA-Regulated) Food Products: This roundtable will discuss new legislative proposals for improving food regulation at the U.S. Food and Drug Administration and include a perspective from a country or region that has recently updated its food regulatory system.
2. Symposium on International Drivers for Food Regulation (This is the second in a series of topics proposed for comparative review by the Food Law PDG): This Symposium will include perspectives from both importing and exporting countries on how food safety laws could be harmonized to work more effectively.
3. Workshop on Food Law, including issues related to Food Labeling and Health Claims: This two-day workshop is proposed to discuss labeling and health claim issues. Many members must deal with such issues in addition to food safety in their jobs, and it is felt this topic would attract participants who would appreciate this supplemental information presented at IAFP.

The Food Law PDG will work together with the Applied Laboratory Methods PDG to develop a symposium that will include legal aspects associated with sampling and sampling plans.

Recommendations to Executive Board:

1. The membership recommends appointment of Caroline Smith DeWaal as Vice Chair 2008–09 to assume the Chair position at the 2009 meeting.
2. The membership recommends the appointment of Jenny Scott as Vice Chair of the Food Law PDG in 2009.
3. The membership also recommends that these be two-year appointments.

Next Meeting Date: July 12, 2009.

Meeting Adjourned: 3:10 p.m.

Chairperson: Anna Lammerding.

Food Safety Education PDG

Members Present: Sandra McCurdy, Christine Bruhn, Renee Boyer, Benjamin Chapman, Jinru Chen, Anthony Flood, Ema Maldonado-Siman, S. Balamurugan, Amy Simmone, Susan Sumner and Purnendu Vasavada.

New Members: Craig Harris, Wendy Franco, Dave McBeain, Mark Carlson, Randall Phebus, Houssam Elmenini, Andy Benson, Brian Turner, Philippa Ross-James, Deon Mahoney and Bennett Armstrong.

Board Liaison Present: Jeffrey Farber.

Meeting Called to Order: 9:05 a.m.

Recording Secretary of Minutes: Amy Simonne.

Old Business:

1. R. Boyer reported for the FSE PDG sub-committee that developed our 2008 Roundtable (RT4) for Tuesday 8:30 a.m., "Global Perspectives and Novel Approaches for Effective Food Safety Communication."
2. B. Chapman presented a proposal for a Food Safety Education PDG outreach activity to increase evidence-based food safety related posts on Wikipedia. Activities would include developing a handbook for creating, contributing and editing on Wikipedia, identifying the topics to cover, and identifying topic experts and contributors. Only two members had experience making Wikipedia posts. Group discussion included the potential identification of IAFP-affiliation of the posting authors, support from the International Food Safety Council (A. Benson), the challenges related to information reliability, and the time commitment involved for hot and controversial issues. After a pilot by our group, it was suggested that other PDGs be invited to participate. C. Bruhn moved to adopt the project, S. Sumner seconded the motion and the Wikipedia project was adopted by the PDG. B. Chapman will convene a committee of those interested in participating – R. Phebus, S. Balamurugan, S. Sumner, S. McCurdy, and D. Schaffner – to pilot the project during 2008–09 with about 20 topics.

New Business:

1. R. Boyer was elected as the new FSE PDG vice chair.
2. Members were asked to consider who would be appropriate to nominate for IAFP awards (page 67 in the program), particularly the Educator award.
3. Members discussed novel ideas and activities that the FSE PDG could consider, in addition to the Wikipedia project. Discussion included use of interactive audience response systems during annual meeting workshops (clicker technology), Webinars for group communication, and international communication.
4. B. Turner provided information about Sodexo's work (catering, school and corporate food service, global company).
5. S. McCurdy briefly presented information provided to the FSE PDG about Booz Allen Hamilton's Center of Excellence for Risk and Crisis Communications. Dr. Tim Tinker is available to present about risk communication, if the FSE PDG proposes a symposia or workshop on this topic.
6. Discussion of ideas for 2009 IAFP Meeting:
   a. C. Bruhn provided information about a symposium being proposed by the Microbial Risk Analysis PDG on measuring and interpreting consumer risk behaviors and suggested the FSE PDG may want to co-sponsor. The group agreed; the symposium is relevant to interests of many members.
   b. Group discussion developed ideas for a Roundtable session on validating educational materials targeting food service safety, including international programs. A. Simonne and C. Bruhn will develop the ideas for presentation to the IAFP Program Committee; the Retail Food Safety and Quality PDG will be contacted about co-sponsoring.
   c. Group discussion developed ideas for a 0.5-day or 1-day Risk Communication pre-meeting workshop. S. Sumner, A. Benson, T. Flood and C. Bruhn will develop the ideas discussed. As potential speakers, C. Bruhn suggested the name of the chair of the FDA risk communication committee, B. Chapman suggested a Canadian who has been involved with communicating about BSE, and D. McBeain volunteered to assist with industry recall information.
7. R. Phebus made an announcement about the symposia on food defense (Wednesday, 1:30 p.m. – 3:30 p.m.).
8. Recommendation to the Executive Board: The FSE PDG agreed to inform the Board that we will be piloting a project to improve the evidence-based food safety information on Wikipedia.

Recommendations to Executive Board:

1. The FSE PDG informs the Board that we will be piloting a project to improve the evidence-based food safety information on Wikipedia.
2. Request approval of Renee Boyer for a one-year term as Vice Chair.

Next Meeting Date: July 11, 2009.

Meeting Adjourned: 11:09 a.m.

Chairperson: Sandra M. McCurdy.

Fruit and Vegetable Safety and Quality PDG

Members Present: Gary Ades, Larry Beuchat, Elizabeth Bihn, Shirley Bohm, Donna Christensen, Michael Cooley, Carol D'Lima, Barry Eisenberg, Robert Elliott, Robert Gravani, Stephen Grove, Jack Guzewich, Montserrat Hernandez Iturriaga, Stephen Kenney, Kalmia Kniel, Keith Lampel, Wendy Maduff, William McCullough, Sherri McGarry, Susan McKnight, Xiangwu Nou, Leopoldo Orozco Ramirez, Terry Peters, Suresh Pillai, Jena Roberts, Elliot Ryser, Amarat Simonne, George Tice, Mary Tortorello and Pamela Wilger.

New Members Present: Steve Brill, Alvin Lee, Ofelia Rodriguez, Danielle Schor, David Velasquez, DeAnn Benesh, Michael Dunn, Scott Burnett, Agnes Tan, Peter Kennedy, Jitu Patel, Marilyn Erickson, Irit Weiser, Sun Kim, Faye Feldstein, Craig Henry, Mark Harrison and Maria Nazarowec-White.

Board Liaison Present: Stan Bailey.

Visitors Present: Amanda Rife, Dean Davidson, Molly Mills, Kathy Lawlor, Bashir Yousif, Khalid Sharif, Julia Perez and James Agin.

Meeting Called to Order: 1:00 p.m.

Recording Secretary of Minutes: Jack Guzewich.

Old Business: None.

New Business:

1. Stan Bailey addressed the attendees welcoming them, reviewing the benefits of these meetings and encouraging them to continue being active at IAFP. Following this the agenda was approved.
2. Jack Guzewich was elected new Vice Chair of this PDG.
3. An update of outbreaks of foodborne disease linked to produce in the last year was given by Jack Guzewich from the FDA view point. The most recent *Salmonella* Saintpaul outbreak triggered a long series of questions, which were answered by Jack Guzewich and Sherri McGarry.
4. A brief update on produce-related FDA regulations was given by Jack Guzewich.
5. Ideas for symposium proposals were presented. Emphasis was put on presenting proposals jointly with other PDGs. The following proposals were recommended:
   a. Data, Standards, Lessons Learned from Leafy Green Research. Symposium or roundtable partnering with the Water Safety and Quality PDG
   b. Less Recognized and Underappreciated Foodborne Pathogens – No Crystal Ball for the Next Big Bug. Partnering with Applied Laboratory Methods PDG
   c. Yeasts and molds in beverages. Partnering with the Beverage PDG.
   d. The Viral and Parasitic Foodborne PDG also requested support for a joint symposium
6. Another idea for a workshop or symposium on validation of methods for testing produce was proposed by Suresh Pillai.
7. An idea for a tabletop exercise as a novel event was suggested to illustrate the attendees on how a foodborne disease outbreak is studied and what the limitations are when studying produce outbreaks. This idea was highly welcome by the attendees.

Recommendations to Executive Board:

1. Approve Jack Guzewich for a two-year term as Vice Chair.

Next Meeting Date: July 12, 2009.

Meeting Adjourned: 2:40 p.m.

Chairperson: Alejandro Castillo.

International Food Protection Issues PDG

New Members Present: Vijay Juneja, Divya Jaroni, Danielle Schor, Patricia Desmarchelier, Nandini Natrajan, Pamela Wilger, Kathy Lawlor, Mangesh Palekar, Linda Leake, Andy Benson, Xiangwu Nou, Andrew Hudson, Ian Jenson, Jennifer Lee, Barbara Blakistone, Lisa Weddig, Bob Young, Akio Kitahara, Ewen Todd, Jack Guzewich, Chris Griffith, Jeyam Subbiah, Alessandra Chiareli, Angelo DePaola, Erin Crowley, Wendy Franco, Kristina Barlow, Peter Ben Embarek, Jeffrey Farber, Leon Gorris, Agnes Tan, DeAnn Benesh, Jenny Scott, Craig Harris, Harsharardhan Thippareddi, Kathleen Rajkowski, Caroline Smith DeWaal, Deon Mahoney, Cindy Stewart and Peter Slade.

Visitors Present: Dennis Burson, Amarat Simonne, Atin Datta and John Allan.

Board and Staff Liaisons Present: Isabel Walls and Didi Loynachan.

Meeting Called to Order: 3:05 p.m.

Recording Secretary of Minutes: Isabel Walls.

Old Business: None.

New Business: This was an organizational meeting to determine whether there is a need for a new PDG to address international food protection issues, such as an update on Codex Alimentarius issues and microbiological standard setting. After much discussion, it was proposed to establish this group as a forum to discuss scientific issues of interest to the international food protection community, including how to build effective food safety systems, equivalence of food safety regulatory systems in different countries, scientific issues that become barriers to trade, the "One World One Health" initiative, and improving food safety in developing countries. The group should meet regularly by conference call and possibly on Saturday afternoon before IAFP. The group could also organize a symposium for the IAFP Annual Meeting, but this would not be its primary purpose. This group could partner with the Global Harmonization Initiative, which will meet during the 1st European Congress meeting in November. Leaders of PDGs and international affiliates could be encouraged to help establish this new forum. The group could write White Papers for IAFP, which will be of use to the food protection community.

The following individuals volunteered to help establish this forum: Andy Benson, IFIC; Peter Ben Embarek, WHO; Bob Buchanan, UMD; Jeff Farber, CFIA; Ian Jenson, Meat and Livestock Australia; Deon Mahoney, Food Standards Australia; Caroline Smith De Waal, CSPI; Cindy Stewart, Silliker; Ewen Todd, Michigan State and Isabel Walls, USDA FAS.

Recommendations to Executive Board:

1. To establish a PDG to allow for in-depth discussion of international food protection issues.
2. To appoint Isabel Walls as Chair and Jeff Farber as Vice Chair for a two-year term (2008–2010).

Next Meeting Date: August 2, 2008.

Meeting Adjourned: 3:45 p.m.

Chairperson: Isabel Walls.

Meat and Poultry Safety and Quality PDG

Members Present: Daniel McElroy, Timothy Freier, Margaret Burton, Dennis Burson, Roger Cook, Catherine Cutter, Kathleen Glass, Margaret Hardin, John Hudson, Randy Huffman, Ian Jenson, Robin Kalinowski, John Marcy, Omar Oyarzabal, Marin Pavlic, Pete Snyder, Mark Pratt, S. Balamurugan and Patricia Wester.

New Members Present: Jeff Berresford, Alex Josowitz, Divya Jaroni, Frank Burns, Craig Henry, Pamela Wilger, Fred Reimers, Nandini Natrajan, Kathleen O'Donnell, David Velasquez, Yale Lary, Houssam Elmenini and Barbara Masters.

Visitors Present: Eric Willingham, Judy Lee and Brita Ball.

Board Liaison Present: Stan Bailey.

Meeting Called to Order: 2:00 p.m.

Recording Secretary of Minutes: Tim Freier.

Old Business: The antitrust statement was read.

New Business: Stan Bailey welcomed everyone and told the group about the late-breaking session that will occur on Wednesday morning concerning the *Salmonella* Saintpaul outbreak. He also encouraged the PDG to consider submitting articles to *Food Protection Trends*, and that IAFP is considering making this an on-line journal which would save $100,000 per year.

Symposium suggestions for 2009 IAFP:

Nandini Natrajan and Pamela Wilger from the Applied Laboratory Methods PDG requested that the Meat and Poultry PDG consider sponsoring a symposium jointly covering non-O157:H7 STECs. The topics and potential speakers were discussed and it was agreed to submit this symposium, with Tim Freier agreeing to be an organizer.

Margaret Harding suggested a symposium on integrated pathogen control strategies for poultry. It would cover on-farm interventions, strain typing, the new young chicken baseline and other topics. Craig Henry suggested that the symposium also include the new regulatory implications of USDA having more presence on-farm. The committee agreed to propose this symposium with Margaret and John Marcy serving as organizers.

Craig Henry suggested a symposium on carcass irradiation. The committee felt that this would be a good topic for a short symposium, discussing irradiation, consumer acceptance, trade implications, etc. Craig and Randy Huffman will serve as organizers.

Kathy Glass reopened the discussion on *Food Protection Trends* ideas. Pete Snyder suggested that retail people need very basic review articles explaining the risks of the various products that they handle, and a simple outline of what they need to do. Dan McElroy agreed to work with Pete and other members to work on this review.

Recommendations to Executive Board:

1. The committee recommends that the aforementioned symposia be considered.

Next Meeting Date: July 12, 2009.

Meeting Adjourned: 3:05 p.m.

Chairperson: Dan McElroy.

Microbial Modelling and Risk Analysis PDG

Members Present: Mickey Parish, Leon Gorris, John Bassett, Peter Ben Embarek, Yuhuan Chen, Roger Cook, Michelle Danyluk, Angelo DePaola, Jeffrey Farber, Andrew Hudson, Kenneth Janes, Ian Jenson, Vijay Juneja, Fumiko Kasuga, Deon Mahoney, Kenneth Malone, Joseph Meyer, Deog-Hwan Oh, Tom Ross, Jenny Scott, John Sofos, Agnes Tan, Ewen Todd and Richard Whiting.

New Members: George Nychas, Kostas Koutsoumanis, Panos Skandamis, Cindy Stewart, Jeanne-Marie Membre, Suresh Pillai, Divya Jaroni, Akio Kitahara, Bob Young, Ann Draughon, Jeyamkondan Subbiah, Harshavardhan Thippareddi and Irit Weiser.

Meeting Called to Order: 12:06 p.m.

Recording Secretary of Minutes: M. Parish.

Old Business:

1. Attendees introduced themselves.
2. A motion was passed to accept and adopt the Microbial Risk Analysis PDG minutes from 2007 without changes.

New Business:

1. Merger of two PDGs: Leon Gorris led a discussion among attendees from both PDGs about merging the newly proposed Predictive Modelling PDG and the Microbial Risk Analysis PDG. Many comments were given by the attendees, all in favor of merging the two groups to avoid duplication of efforts and to allow for a possible synergistic relationship between the two fields. It was noted that the PM PDG was created to provide a stable home for an ad hoc PM group that has organized several international meetings in this field. Richard Whiting moved that the two groups merge, which was seconded by Yuhuan Chen and Ewen Todd. The motion passed unanimously. After a short discussion, attendees agreed that the new name will be the Microbial Modelling and Risk Analysis PDG. It is anticipated that the new PDG will be involved in development of international meetings in conjunction with IAFP.
2. PDG leadership: After discussion, Ann Draughon moved that Mickey Parish and George Nychas serve as Co-Chairs for two years. Seconded by Seconded by Leon Gorris, the motion passed unanimously. After accepting nominations, Deon Mahoney was elected Vice Chair of the merged PDG taking the office of Chair at the IAFP Annual Meeting in 2010.
3. Current Meeting: Mickey reminded everyone about the PDG symposia/roundtables being held at this meeting. Leon gave a report on the Risk Analysis workshop held August 2. There were 32 attendees including 23 from industry and participants had provided positive feed-back.

4. Symposia for IAFP 2009 Annual Meeting: Several topics for 2009 were discussed.
    a. Mickey will submit a proposed short symposium/ roundtable titled "Measuring and Interpreting Consumer Risk Behaviors" for submission with the Education PDG and the National Alliance for Food Safety and Security.
    b. The PDG agreed to sponsor a symposium proposal "Predictive Microbiology as a Validation Tool: Applications and Challenges" to be submitted by Vijay Juneja.
    c. The PDG agreed to co-sponsor with ILSI a symposium by Richard Whiting on a topic related to threshold events that occur between consumption and illness as related to carcinogens, allergens, nutrition and microorganisms.
5. George Nychas led a discussion about predictive microbiology and uses in terms of safety, spoilage and fermentations. Areas of interest included use of PM as a tool for industry and government with inclusion of broader issues such as bioinformatics, systems biology, network science, neural networks, fuzzy logic, etc. Other topics mentioned as possible symposia topics included predictive modelling of survival in low moisture matrices and the linkage between microbial risk analysis and epidemiology. These could be topics for future symposia.
6. Deog-Hwan Oh asked for assistance for symposium on predictive microbiology for the Korean regional IAFP meeting next year. George Nychas, Leon Gorris and Fumiko Kasuga will assist.
7. Other items of interest included an announcement of the Int'l. Conference on Microbial Modelling in Foods to be held in Washington, D.C. September of 2009. Meeting on botulism will be held in Philadelphia on September 14 of this year. Members suggested putting a blog site on our PDG website. Mickey will discuss with IAFP. Bob Young offered a free Excel spreadsheet that can be used by industry to prioritize point within a process for cleaning/sanitation. Mickey will send to the PDG membership. Peter Ben Embarek mentioned developments at FAO/WHO and directed members to www.mramodels.org.
8. Leon Gorris suggested that the PDG could add value by providing input into the program of the regional meetings of IAFP, such as the 2009 IAFP meeting in Europe. He collected ideas from the participants and will submit a symposium "Applications of Predictive Modelling in Food Safety Management" and a workshop "Using Predictive Modelling Tools" to the meeting of the organizing committee for IAFP Europe meetings on Tuesday morning, August 6.

Recommendations to Executive Board:

1. Merge the two PDGs into one. The new name is Microbial Modelling and Risk Analysis PDG. Mickey Parish and George Nychas to serve as co-chairs for a two-year term. Deon Mahoney to serve as vice chair.

Next Meeting Date: July 12, 2009.

Meeting Adjourned: 1:52 p.m.

Co-Chairpersons: Mickey Parish and George Nychas.

Retail Food Safety and Quality PDG

Members Present: Veny Gapud, Ann Marie McNamara, Donna Garren, Harsharardhan Thippareddi, Charles Papa, Ernie McCullough, Eric Martin, Gary Ades, Larry Kohl, Mangesh Palekar, Jinru Chen, Kathleen Rajkowski, Fred Reimers, Sharon Wood, Bobby Krishna, Amanda Lathrop, John Marcy, Amy Simonne, Todd Rossow, Craig Harris, Vijay Juneja, Faye Feldstein, Jena Roberts, O. Peter Snyder, Tom McCaskey, Gloria Swick-Brown, Mary Sandford and Steve Kenney.

New Members Present: John Zimmermann, Dale Grinstead, Margaret Burton, Jeff Semanchek, Christine Wilson, Christopher Griffith, Gina Nicholson, Tom Schwarz, Terry Kennedy, Ruth Petran and Jeyam Subbiah.

Visitors Present: Bashir Yousif, Bennett Armstrong, Jack Guzewich, Tricia DiPersio, Eric Willingham, Don Lane and Patricia Wester.

Board Liaison Present: Stan Bailey.

Meeting Called to Order: 10:10 a.m.

Recording Secretary of Minutes: Ann Marie McNamara.

Old Business: Chairperson Veny Gapud reminded the committee of the PDG mission statement and read the anti-trust guidelines to attendees. The individuals present stated their names and affiliations. Stan Bailey gave a welcome to the group from the Executive Board in which he praised the good work of the committee and referred to the growing membership of our PDG. Ann Marie McNamara was introduced to the group as the new Vice Chair. Veny reminded the group of the joint symposium on "Food Safety Issues in Transportation – Keeping It Cold and Keeping It Clean". Donna Garren mentioned the retail safety symposium being held on allergens, norovirus and accreditation being co-convened by Frank Yiannas and Donna Garren. Veny read the 2007 meeting minutes and the PDG members approved them as written.

New Business: Veny called for new symposium topics amongst the members. Pete Snyder presented the need for HACCP-based validation studies to show the safety of retail practices. Sharon Woods proposed a symposium: Sustainment and maintenance: successful execution of food safety and quality practices at retail/ food service. Patricia Wester proposed a symposium with Kathy Rajkowski, USDA ARS, on import safety on retail items such as produce, seafood, and non-food items. Don Lane proposed a symposium on sustainability efforts and managing the safety of locally purchased food items. Veny requested each of these groups to further define and develop their symposium proposals for submission to the program committee. Peter Snyder provided the committee with a one-page handout on his proposed research team idea to evaluate the need for research topics for retail.

Recommendations to Executive Board:

1. IAFP needs to foster marketing of PDGs to broaden membership. It is difficult for new members to determine if they wish to join a PDG without more information on the groups.

2. The IAFP also needs to facilitate communications by the PDG throughout the year. The Committee believed that it is the responsibility of IAFP and not the PDG chairs to create an environment for communications, such as conference calls, Web-based electronic meetings, and list-serves.
3. Approve Ann Marie McNamara for a two-year term as Vice Chair.

Next Meeting Date: July 12, 2009 in Gaylord, Texas. The group would also like a conference call in November to assure the symposium are developed fully and one in the spring of 2009 to discuss potential symposia for 2010.

Meeting Adjourned: 11:40 a.m.

Chairperson: Veny Gapud.

Seafood Safety and Quality PDG

Members Present: Marlene Janes, Chairperson, Kathleen Rajkowski, Vice Chairperson, Jon Bell, Richelle, Beverly, Barbara Blakistone, Timothy Dambaugh, Angelo DePaola, Stephenie Drake, Joe Frazier, Beilei Ge, Peter Hibbard, Amanda Lathrop, Susan McCarthy, Pamela Tom, Morgan Wallace and Lisa Weddig.

New Member Present: Houssam Elmenini.

Visitors Present: Divya Jaroni, Adam Barnes and Erin Crowley.

Board Liaison Present: Isabel Walls.

Meeting Called to Order: 1:05 p.m.

Recording Secretary of Minutes: Kathleen Rajkowski.

Marlene Janes greeted the group. The sign-in sheet was distributed, an introduction to Seafood Safety and Quality PDG was given and the Minutes from last year were distributed for review.

Old Business: An update on roundtable RT1 and symposium S10 was given by Kathleen Rajkowski. There was discussion on questions to be introduced at the roundtable. Andy DePaola will give information at the RT1 question period and a demonstration on risk calculators. The Board Liaison was introduced.

New Business: Discussion of proposals for 2009 meeting:

1. Develop workshop rapid method on rapid methods to detect pathogens from seafood – Marlene Janes and Beilei Ge.
2. Develop symposium on enhancing the safety of shellfish from *Vibrio* – Impact of *Vibrio* control plans on oyster safety – Marlene Janes and Andy DePaola.
3. Develop a symposium with Retail PDG on how retail deals with imported product safety (traceability) – Kathleen Rajkowski and Patricia Wester.

Recommendations to Executive Board: None.

Next Meeting Date: Conference calls TBD – fall of 2008 and spring of 2009.

Meeting Adjourned: 10:30 a.m.

Chairperson: Marlene Janes.

Student PDG

Members Present: Hudaa Neetoo, Nancy Acosta, Laura Bauermeister, Renee Boyer, Benjamin Chapman, Michelle Danyluk, Alexandra Derevianko, Silvia Dominguez-Risco, Stephenie Drake, Kirsten Hirneisen, Angela Laury, Andrea Laycock, Wendy Maduff, Leopoldo Orozco Ramirez, Catherine Simpson and Brooke Whitney.

New Members: Jeremy Adler, Manuel Alvarado, Brita Ball, Alison Brown, Evan Chaney, Jeong Hwan Cheon, Marjorie Davis, Andrea Dow, Devin Dutilly, Alejandro Echeverry, Wendy Franco, Brittany Jackson, Balamurugan Jagadeesan, Elizabeth Grasso, Jae Hoon Lee Mayra Marquez Gonzalez, Sara Gragg, So-ri Han, Leslie Hintz, Melissa Hughes, Ji-Yeon Hyeon, Damira Kanayeva, Setsuko Kamotani, Yen Te Liao, Gabriela Lopez, Jessica Maitland, Michele Manuzon, Vanessa Morton, Claudia Narvaez, Omar Niode, Rolf Nilsson, Amrita Pathania, Elizabeth Palmer, Diego Paiva, Corri Rekow, Ashley Rosenberg, Gabriel Sanglay, Daniela Rodrigues Silvia, Praveene Sunkara, Samwel Rao, Chris Theofel, Heather Totty, Akafete Teklu Fite, Jie Wei and Sundeep Yanamala.

Board and Staff Members Present: Gary Acuff, Stan Bailey, Jeff Farber, Vickie Lewandowski, Lee-Ann Jaykus, Isabell Walls, Roger Cook and Lisa Hovey.

Visitors Present: Richelle Beverly, Larry Cohen, Gale Prince, Indaue Mello-Hall, Paul Hall, Manan Sharma, Susan Sumner, Montserrat Ituriaga, Steve Kenney, Thilde Peterson, Peter Slade and Ethan Solomon.

Meeting Called to Order: 12:00 p.m.

Recording Secretary of Minutes: Andrea Laycock.

Old Business: Recognition of outgoing officers: outgoing Chair Brooke Whitney, outgoing Secretary Catie Simpson and outgoing Treasurer Jessica Butler.

New Business: Recognition of incoming officers by Hudaa Neetoo (incoming Vice Chair Kirsten Hirneisen, incoming Secretary Andrea Laycock, Incoming Treasurer Diego Paiva). Presentation of student activities for IAFP 2008 including the mentoring program (by Brooke Whitney), the student mixer and different networking opportunities for students (Hudaa Neetoo). Guest speaker from DuPont Chemical Solutions Enterprise, Dr. Ethan Solomon delivered a talk entitled: "What Do I Want to Be When I Grow Up? I Still Don't Know?" This was followed by a short presentation by Dr. Lee-Ann Jaykus on the importance of having students become more professionally involved with IAFP through, for example, doing a grammatical review and editing of manuscripts or undertaking an internship with IAFP to help with the setup of the Annual Meeting. It was suggested that the students propose new ways to become involved. Some suggestions included a summer internship opportunity for student(s) to work at planning the upcoming meeting, editing or translating papers, with an incentive program to help pay for the students' registration fee.

For the PDG meeting immediately following the luncheon, there were approximately 20 attendees. A group discussion of possible symposia topics was conducted.

A symposium and a debate were proposed; the symposium proposed was: "To What Extent Do Outbreaks Generate Positive Changes?" The debate was developed to address two polemical issues: (1) Is the zero tolerance policy with respect to *E. coli* O157:H7 a utopia or an achievable goal? (2) Is it feasible to enforce mandatory Good Agricultural Practices and HACCP on fresh produce? Potential speakers and titles of symposia were tabled for discussion by the SPDG executive committee members. During the PDG meeting, the idea of having a panel discussion in the future was also suggested.

Past officers also pointed out that the range of activities organized by the SPDG has greatly expanded since the SPDG was first brought to existence and it was proposed that due to the increased responsibilities falling on the chair and vice chair, an additional officer position within the SPDG could be created. Along that line it was proposed that a "Social chair" position could be created. This would also be a great opportunity to get more students involved in the SPDG Executive Committee.

Recommendations to Executive Board:

1. The SPDG is recommending that the mixer be scheduled for a Tuesday night rather than on Monday night for future IAFP meetings to give the general student population adequate time to be acclimated to the conference, to make new acquaintances and to get through most of their scientific presentations. It was thought that it would be more convenient to intercalate the Student PDG luncheon and mixer by one day to make it less overwhelming for the students and officers as well.
2. It is being recommended to the Board for approval that a new executive position be created, such as social chair.
3. Approve Kirsten Hirneisen as Vice Chair, Andrea Laycock as Secretary and Diego Paiva as Treasurer for a one-year term beginning at the 2008 PDG meeting.

Next Meeting Date: July 12, 2009.

Meeting Adjourned: 3:00 p.m.

Chairperson: Hudaa Neetoo.

Viral and Parasitic Foodborne Disease PDG

Members Present: Doris D'Souza, Kali Kniel, Stephen Grove, Jack Guzewich and Suresh Pillai.

New Members Present: Gabe Sanglay, Tim Dambaugh, Alvin Lee and S. Kim.

Board Liaison Present: Lee-Ann Jaykus.

Meeting Called to Order: 9:15 a.m.

Recording Secretary of Minutes: Kali Kniel.

Old Business: Current and new members were introduced. This year's roundtable on norovirus as public enemy #1 was discussed and all were reminded to attend. The Board Liaison, Lee-Ann Jaykus, updated the group on FAO and WHO joint efforts with regards to viruses in foods by Codex. She also informed the group that this work will be documented and presented to Codex in December and a decision will be made regarding formal risk assessment studies and guidelines. She discussed this on behalf of and as suggested by Peter Ben Embarek.

New Business: The PDG attending members were informed about the upcoming 1st Food and Environmental COST 929 meeting in Italy (October 2008) and the 7th International Conference on Molluscan Shellfish Safety in France (June 2009). Attendees were also informed about IAFP's 4th European Symposium on Food Safety in Portugal (November 2008). New symposium ideas were discussed. Lee-Ann Jaykus suggested developing a short symposium on the changing epidemiology of noroviruses. Alvin Lee suggested developing a symposium on novel processing technologies for fresh produce, and this will be discussed with the Fruit and Vegetable, and/or Water Quality PDGs. Stephen Grove suggested developing a symposium containing topics on virus survival from farm-to-fork.

Ways to increase communication within the PDG was discussed. Lee-Ann Jaykus reminded the PDG that IAFP is supportive of ongoing communication using webinars and conference calls. She encouraged submission to *Food Protection Trends*. She encouraged young researchers to take the lead and develop a white paper for submission. Kali Kniel suggested writing a white paper on the results and findings presented at this year's roundtable symposium on noroviruses. Accordingly, a conference call will be set up for this fall to include Lee-Ann Jaykus, Stephen Grove, Alvin Lee, and Gabe Sanglay or any other participants to discuss the paper submission along with the PDG chair and vice-chair.

Alvin Lee suggested that he will likely have information on virus transfer and survival from upcoming studies that can be presented at future IAFP meetings with possible support from the FDA. The PDG will work with him in developing this idea.

Recommendations to Executive Board: None.

Next Meeting Date: July 12, 2009.

Meeting Adjourned Time: 10:30 a.m.

Chairperson: Doris D'Souza.

Water Quality and Safety PDG

Members Present: Peter Kennedy, Dean Davidson, Larrry Cohen, Jack Guzewich, Wendy Maduff, Kenneth Malone, Sherri McGarry, Susan McKnight and Kathleen Rajkowski.

New Members: Bashir Yousif, Erin Harvey and Suresh Pillai.

Visitors Present: None.

Board Liaison Present: Vickie Lewandowski.

Meeting Called to Order: 9:05 a.m.

Recording Secretary of Minutes: Susan McKnight.

Old Business: Request for volunteers to draft white paper on water emergencies. Kathleen Rajkowski volunteered to head this activity along with help from Wendy Maduff and Larry Cohen. The group will use the notes the student PDG members took last year along with a paragraph from each presenter. Vicki Lewandowski said the *FPT* is looking for articles and this might fit that bill. Suresh Pillai suggested a creating a blog to go along with the white paper to keep it current and timely. A discussion ensued as to the best way to do this and the group will ask the Executive Board for guidance. Vickie Lewandowski encouraged us to hold meetings during the year and asked what the Executive Board can do to help our PDG. Next we talked about the upcoming potability roundtable this Wednesday and what questions would the PDG like to ask the speakers. Bashir Yousif asked if the group could discuss water issues outside of North America and gave examples of issues in Dubai (water distribution systems, using desalinated water and storage, etc). Another question was about potability mainly being viewed as microbial – what about the chemicals?

New Business: A roundtable and symposium ideas were discussed for 2009. An all international roundtable on issues in water used internally and for water used in products that are exported. A symposium on California Leafy Green experience – what was learned. A possible topic mentioned was global warming's effect on water and its impact on food safety. It was mentioned the Control of Foodborne Illiness was developing a symposium on environmental issues impacting food safety and this may fit it.

Recommendations to Executive Board:

1. To make a white paper more current and timely, can a blog be created to go along with the white paper on the Web site?

Next Meeting Date: Early November conference call.

Meeting Adjourned: 10:50 a.m.

Chairperson: Peter Kennedy.

Affiliate Council Minutes

IAFP 2008 – August 3–6, 2008
Held at the Hyatt Regency Columbus
Columbus, Ohio

Affiliates Present:

North America

Alabama	Tom McCaskey
Alberta	Gary Gensler
Associated Illinois	Dennis Gaalswyk
British Columbia	Terry Peters
California	John Bruhn
Capital Area	Carl Custer
Florida	Peter Hibbard
Georgia	Sid Camp
Illinois	Denis Gaalswyk
Indiana	Helene Uhlman
Michigan	Gene Paez
New York	Steve Murphy
Ohio	Gloria Swick-Brown
Ontario	Joseph Odumeru
Pennsylvania	Eugene Frey
Southern California	Margaret Burton
Texas	Fred Reimers
United Kingdom	David Lloyd
Upper Midwest	Dan Erickson
Washington	Stephanie Olmsted
Wisconsin	Kathy Glass

International

Australia	Deon Mahoney
Brazil	Maria Teresa Destro
Korea	Ki-jae Cho
New Zealand	Roger Cook

Board Members and Staff Present: Gary Acuff, Stan Bailey, Vickie Lewandowski, Lee-Ann Jaykus, Isabel Walls, Jeffrey Farber, David Tharp, Lisa Hovey and Leilani McDonald.

Guests: Ian Jensen, Australia; Christina Wilson, Ohio; Judy Greig, Ontario and Thilde Peterson, California (SCAFP).

Meeting Called to Order: 7:06 a.m.

Recording Secretary of Minutes: Roger Cook.

Call to Order: The meeting was called to order at 7:06 a.m. by Affiliate Council Chair Carl Custer. There were 30 members and guests present. The agenda was approved with two items added to new business (Indiana/Ontario).

The minutes of the 2007 Affiliate Council Meeting were reviewed and approved with one amendment: correction of "Murhpy" to "Murphy" (Texas, Georgia).

Report from Affiliate Council Chairperson: Carl Custer announced and acknowledged the 2008 Affiliate Award winners and announced new international Affiliates from Turkey, Spain and the United Arab Emirates (UAE). He noted the receipt of more Affiliate Annual Reports for 2007 than previously, and congratulated Affiliates for their pleasing and innovative membership recruitment activities. He thanked Leilani McDonald, Affiliate Staff Liaison, for her exceptional work with the Affiliate Report and administration over the year.

Report from IAFP President: Gary Acuff presented the 2008 President's report and asked that Affiliates encourage participation of students in their activities.

Report from the IAFP Office: David Tharp, Executive Director, presented the 2008 office report.

Report from the IAFP Affilate Liaison Staff: Leilani McDonald also thanked Affiliates for their Annual Reports, noting that she had received 33 for 43 Affiliates. She apologized for adding Delegates to the mailing list instead of just the President, but noted that this had improved communication.

Election of the Affiliate Council Secretary: Carl Custer announced that Dan Erickson of the Upper Midwest Dairy Industry Association received the sole nomination for Affiliate Council Secretary (Indiana, Washington). Dan Erickson was voted by acclamation.

Unfinished Business: There was no unfinished business.

New Business:

Educational Session: Unfortunately, Don Schaffner's flight to Columbus was cancelled and he was unable to present his Educational Session on development of Affiliate Web sites. Leilani was requested to post Don's presentation including PowerPoint slides to the IAFP Web site.

Instead, Delegates described their experiences with Web site development. Points of interest included:

- Commercial prohibitively expensive, but relatively easy to do oneself after completing online continuing education courses (9 weeks) using programs such as Front Page or Dream Weaver, or with help from students, kids or other volunteers with Web page development abilities. Might cost less than a meal or two. A platform called "Common Spot" should be avoided.

- Updating the Web site also commercially expensive at approximately $600, but easier to have an elected Webmaster from the Affiliate membership do it.
- Need to take precautions to prevent access by hackers.
- Increases the number of inquiries and facilitates membership subscription.
- Facilitates online monthly newsletter and reports.

Membership Growth Issues: Leilani McDonald and Dan Erickson opened discussion on the economic impact of the current economy on Affiliate membership and activities. While some noted staff cuts, new Affiliate establishments, and "sinking lid" policies at universities, others noted no change or an increase in membership. Strategies such as providing quality programs at an affordable rate in a "cool" place should minimize any losses. Adding adjuncts such as industry workshops to more general meetings will defray costs. Involving students will assist with membership continuity.

Sid Camp described how the Georgia Affiliate has started a new stipend award to enable food safety professionals from regulatory bodies to attend the IAFP Annual Meeting.

Dan Erickson, with full support from the Council, asked that the Board encourage IAFP Members to become members of their Affiliate, and that Affiliates be recommended to encourage their members to become IAFP Members, especially given the new, less financially onerous fees structure. Leilani McDonald was asked to also include a request in the *Affiliate View* newsletter, and to investigate a written proposal from John Bruhn to use membership postcards or E-cards.

Planning Issues: Several suggestions were provided for the 2009 Educational Session and *Affiliate View*. The Chair, Secretary and Leilani are to further investigate. Topics included:

1. Web site development for Affiliates, carried over from 2008
2. Affiliate award holders to describe their achievements and any novel programs to encourage membership
3. Tax requirements for non-profit organizations
4. Simple development of CEUs and CLUs for Affiliate workshops
5. Audiovisual equipment for Affiliates

To ensure that all Delegates have the opportunity to share their Affiliate's activities and successes (see agenda, Affiliate Reports) Leilani McDonald suggested that Affiliates could bring a one-page, tabulated summary for distribution to attendees of the 2009 Affiliate Council Meeting.

IAFP Requirements for Affiliates: Carl Custer and Leilani McDonald referred to Affiliate compliance with the requirements that Affiliates:

1. File an annual report with IAFP
2. Hold an annual meeting
3. Maintain President as IAFP Member
4. Maintain Delegate as IAFP Member
5. Have at least five IAFP Members within their membership

Many Affiliates have failed to meet all of these requirements. Tennessee and Mississippi Affiliates have been out of compliance for several years, have not communicated in that time, and hence face being removed from the list of recognized IAFP Affiliates.

Affilate Social Activity: Helene Uhlman suggested the possibility for a separate social event for the Affiliate Council to encourage networking. The suggestion was well received, but it was agreed that time for such an event during the IAFP Annual Meeting would be difficult to schedule.

Affiliate Reports: Delegates offered a summary of their Affiliate's activities and accomplishments in the past year.

Recommendations to Executive Board:

1. That the Board encourages IAFP Members to become members of their Affiliate, and that Affiliates be recommended to encourage their members to become IAFP Members, especially given the new, less financially onerous fees structure.
2. That the Board encourage Affiliates to take a greater role in intrastate communication during food safety issues such as outbreak investigations.
3. Approve Dan Erickson as the new Affiliate Council Secretary

Passing of the Gavel: Chairperson Carl Custer passed the gavel to Roger Cook, signifying the beginning of his term as Affiliate Council Chair.

Next Meeting Date: 7:00 a.m., Sunday, July 12, 2009 in Grapevine, Texas.

Adjourned: 9:40 a.m.

Chairperson: Carl Custer.

Recommendations to Executive Board as Taken from Committee Minutes of Meetings held in Columbus, Ohio

Executive Board Response as Discussed at the Executive Board Meeting

STANDING COMMITTEES

Food Protection Trends Management Committee

Recommendations to Executive Board:

1. Advertise *FPT* in Affiliate newsletters to increase submission of applied journal artilces and increase Affiliate involvement.
   Board Response: Agree.
2. Appoint a subcommittee to develop a plan to continually recruit manuscripts; The subcommittee members will include LeeAnne Jackson (Chair), George Baker and Patricia Rule.
   Board Response: Agree.
3. New instructions to authors have been reviewed and revised. Executive Board approval is needed to publish these instructions.
   Board Response: Agree.
4. Eliminate the position of Scientific News Editor, and thus the Science News section of the journal.
   Board Response: Agree.
5. Rapidly move towards an electronic version of *FPT*.
   Board Response: Agree.

Journal of Food Protection Management Committee

Recommendations to Executive Board:

1. Reappoint Michael Davidson as Scientific Editor for another 4-year term.
   Board Response: Agree.
2. Appoint a subcommittee to look at the potential impacts of implementing free open access (as defined by NIH) of *JFP* after 12 months of publication.
   Board Response: Agree, *JFP* Committee should appoint a subcommittee and begin work as soon as possible.
3. Consider the need for a change in the *JFP* cover design.
   Board Response: Will consider within the overall publishing plan for IAFP publications.
4. Approve Margaret Hardin as Vice Chair for a two-year term.

Program Committee

Recommendations to Executive Board: None.

SPECIAL COMMITTEES

3-A Committee on Sanitary Procedures

Recommendations to Executive Board:

1. The 3-A Sanitary Standards Inc. has identified a critical need to increase participation in their standards writing process by State Regulators and dairy equipment users.

   As a part of this effort CSP is proposing an IAFP workshop: "3-A 'Hands On' Workshop —Evaluating the Sanitary Design and Construction of Milk Handling and Processing Equipment."

   In the course of CSP discussions, a problem was identified in that State regulators seldom attend workshops because of State budget problems. It was noted that in other circumstances where state participation is critical to some larger purpose, government employed are offered a different registration rate in order to encourage the needed participation (in this case to meet a CSP/3-A goal).

   If this workshop is accepted, we are seeking approval of the IAFP Board to offer a differential registration rate. We suggest $100 for Government, $375 for other attendees. We are proposing this in conjunction with a proposed request to 3-A Inc. regarding use of symbol

council money dedicated for education be explored to use to assist regulators who may not be able to attend because of money.
Board Response: Program Committee will review the workshop proposal and make decisions related to acceptance. The Board agrees with overall concept of pricing to improve participation from the government sector.

Audiovisual Library Committee

Recommendations to Executive Board:

1. We would like the IAFP staff to help in publicizing the AV Library and in publicizing materials on file and the media formats we want to expand into. We also would like to ask for flexibility in how we use the budget to fund development of the IT formats for the AV Library link, and for prizes to heavy users of the library, and to those who donate new materials to the library. We would like to recognize the state chapter and college that donate the most new materials during the 2008–2009 year.
   Board Response: Flexibility in allocating the budget for the AV Library is approved. The Board advises against allocating budget funds to provide prizes to AV Library users.

Committee on Control of Foodborne Illness

Recommendations to Executive Board:

1. The Committee recommends that at least part of the 6th edition of the Procedures to Investigate Foodborne Illness Manual (tables) be provided for sale in an electronic format.
   Board Response: Agree. Staff will work toward this goal when the 6th edition revision is received from the Committee.
2. The Committee recommends that work begin on a revised Waterborne manual.
   Board Response: Agree. Board encourages this work to proceed.
3. The Committee recommends that the CDC pathogen list of foodborne agents should be updated to be a searchable electronic document with a CCFI lead.
   Board Response: Agree. Board encourages Committee Members to participate actively in this process.
4. The Committee recommends that the Infected Foodhandler papers be compiled into one volume available for purchase from IAFP.
   Board Response: Agree. When final paper is typeset for publication, a bound series publication will be made available.
5. Workshop and symposia suggestions.
   Board Response: Program Committee will review and act upon acceptance of workshop and symposia submissions.

Constitution and Bylaws Committee

Recommendations to Executive Board:

1. That Zeb Blanton be selected as Vice Chair of the Committee.
   Board Response: Agree.
2. Recommendations on the Constitution and Bylaws relative to this topic will follow [in the coming months]:

   The Committee discussed concerns related to Article IV. C. in the Constitution that states "The Executive Board must include, at all times, members officially connected with education, government, and industry. There must be at least one representative from each of the three categories at all times." Concerns are in regard to maintaining this representation in the event of a Board Member's change of employment status (i.e., change in "official" connection), a Board Member's resignation, or other circumstances. It was generally felt by the Committee that a smooth transition without loss of Board Members with experience and/or years of service on the Board was desirable. Current wording in the Constitution and Bylaws does not adequately address these situations, nor does it specifically address the succession of Board Members in the event of a loss of Board Member. The Committee generally agreed that changes in the Constitution and or Bylaws would be helpful in clarifying procedures in such circumstances. The Committee proposed solutions that need to be refined; these will be worked on through e-mail and conference calls during the next year.

   Board Response: Agree. The Board encourages this Committee to continue work on this topic.

Foundation Committee

Recommendations to Executive Board:

1. The Committee recommends that the Executive Board accept the revised budget reflecting an increase in the student travel budget to $20,000.
   Board Response: Agree.
2. The Committee recommends to the Executive Board that they consider innovative ways to offer state of the art food safety training and, if necessary, establish a separate Committee or task the Audiovisual Library Committee for the purpose. The Committee feels that it is particularly important to include student members in this effort. The Foundation Committee will consider funding a promising approach to this problem.
   Board Response: Agree. The Board encourages the Audiovisual Library Committee to pursue this effort.

3. The Committee recommends that the Executive Board increase the Ivan Parkin Lecture honorarium to $2,000 effective in 2009.
Board Response: Agree.

4. The Committee recommends that the Executive Board identify and contact at least 3 fundraising firms and explore the possibility of raising a significant amount of money ($5 million or more) for the IAFP foundation.
Board Response: Agree.

5. The Committee recommends that the Executive Board allow corporate sponsorship of student travel scholarships and that these travel scholarships be awarded using the same criteria and selection process as now employed for Foundation Fund student travel scholarships.
Board Response: Agree.

Membership Committee

Recommendations to Executive Board:

1. Recommend the approval and appointment of Don Schaffner to Committee Vice Chair for a two-year term (2008-2010).
Board Response: Agree.

2. Recommend that key International Members in Europe, Asia, Latin America and elsewhere be utilized to broaden international membership. Many are leaders in their respective industry, regulatory and academic areas. A leadership council by region could be established to recruit and promote IAFP membership.
Board Response: Agree. The Board encourages the Membership Committee to establish this "Leadership Council" to promote international membership.

3. Recommend that the Board create a list of experts from within IAFP membership by discipline and region. Avail this list to IAFP membership for contact and guidance by issue and/or area. This may provide added value to current IAFP membership and promote new membership.
Board Response: Agree. This list of experts already exists through the Committee and PDG list.

4. Recommend Board approval for the Committee to liaise with the Affiliate Council to promote IAFP membership. It is believed that less than 10% of Affiliate members are IAFP Members. Access to Affiliate membership lists through the Council will enable expanded promotional mailings.
Board Response: Agree. A marketing campaign aimed at Affiliate members should be initiated.

5. Recommend the Board to survey Annual Meeting exhibitors to assess sensitivity around a $50 membership fee assigned to exhibit staff. Currently, exhibitors are allowed 3 gratis booth staff; many are not current IAFP Members. This could expand the IAFP membership roll by more than 100.
Board Response: Agree. IAFP membership should be promoted to non-member exhibitors.

Nominating Committee

Recommendations to Executive Board: None.

Past Presidents'

Recommendations to Executive Board:

1. Change meeting time from 4:00 p.m. to 5:00 p.m. [on Saturday].
Board Response: Agree.

2. Reprint "*Listeria* Prevention Practices for Small Cheese Operations," Meunier-Goddick, et al., *FPT* 28:473 for distribution in industry, etc.
Board Response: Agree. Paper is available for reprinting.

3. Contact Greg Hooper to write microwave paper from Timely Topics symposium on Prepared, but Not Ready-to-Eat Foods for *FPT*.
Board Response: Agree. Ask Jenny Scott to contact Greg Hooper for paper.

4. Confer with International Affiliates to get hot topic symposium suggestions (start with Mexico).
Board Response: Will monitor. New, International Food Safety PDG to address this issue.

5. Provide complimentary IAFP journals subscription [for one-year] to university libraries of student travel scholarship winners from developing countries.
Board Response: Agree. Will provide one-year subscription in honor of the student.

PROFESSIONAL DEVELOPMENT GROUPS

Applied Laboratory Methods PDG

Recommendations to Executive Board:

1. Periodically change the PDG Committee Meeting Schedule so people can get to different PDG meetings starting next year.
Board Response: Agree. Will change the Applied Laboratory Methods PDG meeting to other times in future.

2. We would like a projector and screen to help improve our Applied Laboratory Methods PDG Committee Meeting next year.
Board Response: Agree. Make your request to the IAFP office staff a minimum of one-week prior to the meeting date.

3. We would like IAFP to host a discussion Board/electronic communication tool for our Applied Laboratory Methods PDG to help improve member communication.
Board Response: Agree. IAFP staff is exploring options to allow for this type of communication.

4. Continued support for yearly teleconference and web-based presentations to be determined.
Board Response: Agree. The Board encourages continuation of this communication and is willing to support these efforts.

5. Support our taping of our Educational Series calls and webinars by posting them on our Applied Laboratory Methods PDG IAFP Web site.
Board Response: Agree. The Board encourages this activity and suggests contacting the IAFP office staff to coordinate this posting.

6. Conduct and publish a Member survey, which includes a salary section.
Board Response: Because of the diversity of job positions covered by IAFP Members, it is not feasible to conduct a salary survey.

7. Reserve a one day meeting room on Saturday at the IAFP 2009 Annual Meeting for purpose of the Sample Prep Working Group meeting to include lunch and refreshments, if possible.
Board Response: Agree. IAFP staff will reserve a room for this purpose.

Beverage PDG

Recommendations to Executive Board: None.

Dairy Quality and Safety PDG

Recommendations to Executive Board:

1. Booklet on Control of *Listeria* for Small Cheese Manufacturers. Future booklet for small milk and ice cream manufacturers.
Board Response: Agree. The Board encourages the PDG to begin work on this booklet.

2. 2009 Proposal Recommendations
   a. Third Party Certification: Does This Improve Food Safety
   b. 2009 NCIMS Outcomes & Updates
   c. RTE Foods Displayed at Room Temperatures – Food Safety Implications
   d. *Listeria monocytogenes* Update
   Board Response: Program Committee will review and act upon acceptance of symposia submissions.

3. Endorse DQS PDG establishment of subcommittee on human raw milk consumption.
Board Response: Agree. PDG may establish this subcommittee.

4. Approve Joseph Odumeru as Vice Chair, beginning his term at the 2009 Annual Meeting.
Board Response: Agree.

Food Chemical Hazards and Food Allergy

Recommendations to Executive Board:

1. Recommendation/Question: Would there be an interest to developing a PDG dedicated to packaging?
Board Response: If there are Members from your PDG interested in beginning a PDG dedicated to packaging, form a group and request permission from the Board to meet at IAFP 2009.

2. Approve Linda Leake as Vice Chair from 2008 – 2010.
Board Response: Agree.

Food Hygiene and Sanitation PDG

Recommendations to Executive Board: None.

Food Law PDG

Recommendations to Executive Board:

1. The membership recommends appointment of Caroline Smith DeWaal as Vice Chair 2008-09 to assume the Chair position at the 2009 meeting.
Board Response: Agree.

2. The membership recommends appointment of Jenny Scott as Vice Chair of the Food Law PDG in 2009.
Board Response: Agree.

3. The membership also recommends that these be two-year appointments.
Board Response: Agree.

Food Safety Education

Recommendations to Executive Board:

1. The FSE PDG informs the Board that we will be piloting a project to improve the evidence-based food safety information on Wikipedia.
Board Response: Agree. Encourage Members to pursue this and monitor stringently.

2. Request approval of Renee Boyer for a one-year term as Vice Chair.
Board Response: Agree.

Fruit and Vegetable Quality and Safety PDG

Recommendations to Executive Board:

1. Approve Jack Guzewich for a two-year term as Vice Chair.
Board Response: Agree.

International Food Protection Issues

Recommendations to Executive Board:

1. To establish a PDG to allow for in-depth discussion of international food protection issues.
Board Response: Agree.
2. To appoint Isabel Walls as Chair and Jeff Farber as Vice Chair for a two-year term (2008-2010).
Board Response: Agree with appointments but for a one-year period due to Isabel Walls' position on the Executive Board.

Meat and Poultry Safety and Quality PDG

Recommendations to Executive Board:

1. The Committee recommends that the aforementioned symposia be considered.
Board Response: Program Committee will review and act upon acceptance of symposia submissions.

Microbial Risk Analysis/Predictive Modelling in Foods PDG

Recommendations to Executive Board:

1. Merge the two PDGs into one. The new name is Microbial Modelling and Risk Analysis PDG.
   Board Response: Agree.
2. Mickey Parish and George Nychas to serve as co-chairs for a two year term. Deon Mahoney to serve as vice chair.
   Board Response: Agree.

Retail Food Safety and Quality PDG

Recommendations to Executive Board:

1. IAFP needs to foster marketing of PDGs to broaden membership. It is difficult for new members to determine if they wish to join a PDG without more information on the groups.
   Board Response: Agree.
2. The IAFP also needs to facilitate communications by the PDG throughout the year. The Committee believed that it is the responsibility of IAFP and not the PDG chairs to create an environment for communications, such as conference calls, Web-based electronic meetings, and list-serves.
   Board Response: IAFP staff can facilitate scheduling of teleconferences, Web-based meetings and list-serves. It is up to the PDG Chairs to initiate this action. IAFP is willing to pay the expense to enable these communications to take place.
3. Approve Ann Marie McNamara for a two-year term as Vice Chair.
   Board Response: Agree.

Seafood Safety and Quality PDG

Recommendations to Executive Board: None.

Student PDG

Recommendations to Executive Board:

1. The SPDG is recommending that the mixer be scheduled for a Tuesday night rather than on Monday night for future IAFP meetings to give the general student population adequate time to be acclimated to the conference, to make new acquaintances and to get through most of their scientific presentations. It was thought that it would be more convenient to intercalate the Student PDG luncheon and mixer by one day to make it less overwhelming for the students and officers as well.
   Board Response: Agree.
2. It is being recommended to the Board for approval that a new executive position [within the Student PDG] be created, such as social chair.
   Board Response: Agree. This is for the Student PDG to decide.
3. Approve Kirsten Hirneisen as Vice Chair, Andrea Laycock as Secretary and Diego Paiva as Treasurer for a one-year term beginning at the 2008 PDG meeting.
   Board Response: Agree.

Viral and Parasitic Foodborne Disease PDG

Recommendations to Executive Board: None.

Water Safety and Quality PDG

Recommendations to Executive Board:

1. To make a white paper more current and timely, can a blog be created to go along with the white paper on the Web site?
   Board Response: Agree. IAFP staff is working to establish computer-based communication vehicles for use by Committees and PDGs.

Affiliate Council

Recommendations to Executive Board:

1. That the Board encourages IAFP Members to become members of their Affiliate, and that Affiliates be recommended to encourage their members to become IAFP Members, especially given the new, less financially onerous fees structure.
   Board Response: The IAFP Board and staff will study ways to improve this communication to IAFP Affiliate members.
2. That the Board encourages Affiliates to take a greater role in intrastate communication during food safety issues such as outbreak investigations.
   Board Response: Affiliates are encouraged to undertake this effort to communicate between organizations when outbreaks occur.
3. Approve Dan Erickson as the Affiliate Council Secretary.
   Board Response: Agree.

IAFP Foundation Silent Auction Results

Over $6,400 Raised!

Donated by	Item	High Bidder
3M Microbiology	3M Gift Box	Lisa Hovey
	3M Gift Box	Deon Mahoney
Advanced Instruments, Inc.	Chelsea Clock–US Presidents Give to Visiting Dignitaries	Andrew Maccabe
AMI Foundation	Signed Baseball	Hidemasa Kodaka
	Signed Baseball	John Rushing
ASM Press	Food Microbiology: An Introduction, 2nd Edition	Claudia Narvaez
	The Invisible ABCs	Phillipa Ross-James
Associated Illinois Milk, Food and Environmental Sanitarians	"Taste of Chicago" Gift Certificate	Fred Reimers
	"Taste of Chicago" Gift Certificate	Shari Shea
Stan Bailey	Bird Oil Painting	Susan McCarthy
David Blomquist	Creative Confectionaire Truffles	Steve Murphy
Brazil Association for Food Protection	The Splendor of Opposites	Ian Sellick
British Columbia Food Protection Association	Native Indian Carving by Matthew Baker	Jack Guzewich
British Food Journal	12 Months Online Access to *British Food Journal*	Gordon Hayburn
	Signed Copy of the *British Food Journal*	Phillipa Ross-James
California Association Dairy and Milk Sanitarians	Disneyland Hotel Lapel Pin	Alessandra Chiareli
	UC Davis Lapel Pin	Patricia Gehlen
	Yes Michigan Pin	Debra Henyon
	Illinois '90 Pin	Reid Ivy
Chemstar	Experience Atlanta Gift Basket	Patricia White
Experience Columbus	Charging Stand for iPod, Blackberry, Cell Phone Photo Key Chain	Steve Baie
		Lisa Hovey
CRC Press–Taylor & Francis Group LLC	Microbial Food Contamination–Second Edition	Ki-Hwan Park
	Handbook of Food Preservation–Second Edition	Peter Slade
Creative Confectionaire	Creative Confectionaire Truffles	Jerry Erdman
Beth Ann Crozier-Dodson	Rosemary's Garden Bath & Body Products	Anne Sofie Torp
Michelle Danyluk	Pearl Necklace and Earrings	John Iams
Dubai Municipality	Tomorrow's City Today	Gloria Swick-Brown
DuPont Qualicon	Alibi 3 Inch Webcam/Speaker & Microphone	Peter Ben Embarek
Food Diagnostics:Norway	The Vikings with Viking Ship	Karl Olson
	The Vikings with Viking Ship	William Schwartz
	Vikings, The Discovery of America with Viking Ship	Miranda Warner
Georgia Association for Food Protection	Georgia Gift Basket	Anna Lammerding
Grocery Manufacturers Association	Advances in Food Research	Elizabeth Andress
	The History of Wisconsin's Great Canning Industry	Lorene Evans
	Methods of Plant Breeding	Bob Sanderson
Highfield Company	HACCP4U	Kyung Ryu
	Hygiene for Management	Khalid Mohammed Sharif
	Hygiene for Management	Craig Yoder
Indiana Environmental Health Association	Indianapolis, Indiana Snow Globe	Ji Ha
International Association for Food Protection	2009 Annual Meeting Registration	George Paez
	Foodborne/Waterborne Booklets	Monica Ponder
	Food Safety Icons	Phillipa Ross-James
Korea Association of Milk, Food and Environmental Specialists	The Divine Bell of Songdok the Great Small Decorative Case	Luiz Fischmann Kathleen Rajkowski
Bobby Krishna	Dubai Paper Weight	Paul Brown
Anna Lammerding	Alice Cooper, Golf Monster	Steve Murphy
Linda Leake	Package of Eraser Caps	John Ha
	Oh Deer! Super Dooper Reindeer Pooper	Indaue Mello-Hall
	Deluxe Dairyland Picnic Set	Jennifer Quinlan
Didi Loynachan	IAFP Shirt	Miranda Warner
Margaritaville Enterprises, LLC	"A Salty Piece of Land" – Signed by Jimmy Buffett	Susan McCarthy
	Margartaville Frozen Concoction Maker	Kathleen Shartner
Metropolitan Association for Food Protection	Springsteen–Darkness on the Edge	Mark Berrang
	Springsteen Greetings from Asbury Park, New Jersey	Mark Berrang

Donated by	Item	High Bidder
Metropolitan Association for Food Protection	Springsteen–Greatest Hits	Stefano Colombo
	4th of July, Ashby Park	Don Schaffner
	The Pine Barrens	Fred Weber
	Down the Shore–A Photo Tour of Jersey	Barb Masters
	Backroads of New Jersey	Bobby Meeker
	Living on the Edge of the World	Fred Weber
Michigan Environmental Health Association	Cherrie's Jubilee Gift Basket	Peggy Trommater
MicroBiologics, Inc.	MicroBiologics Stanley T-Shirt	Margaret Binkley
	MicroBiologics Stanley T-Shirt	John Castner
	MicroBiologics Stanley T-Shirt	Shari Shea
Missouri Milk, Food & Environmental Health Association	Taste of Missouri Gift Basket	Wendy Fanaselle
Nasco	Cuisinart Classic Waffle Iron	Henry Atherton
Nestle USA	10 lb. Nestle Crunch Bar	Paula Cray
	10 lb. Nestle Crunch Bar	Indaue Mello-Hall
New York State Association for Food Protection	Cornell Dairy Shirt and Hat	Denise Eblen
	New York Maple Syrup and Pancake Mix	Robin Hamm
	Hermann J. Wiemer Riesling 2006	Zerlind Johnson
	3 Pounds New York Cheese Delivered	Kathleen Rajkowski
	Cornell Sweatshirt	Lou Tortorello
Ohio Association of Food and Environmental Sanitarians	T-Shirt	Deon Mahoney
	T-Shirt	Lilia Santiago
Online Master of Science in Food Safety–Michigan State University	Picnic/Gift Basket Michigan State University	Debra Henyon
Ontario Food Protection Association	Ontario Canada Ice Wine	Alessandra Chiareli
	Ontario Canada Ice Wine	Shari Shea
	Magnotta Ice Wine	Eric Willinghan
Orkin Commercial Services	Orkin Bobblehead	Elizabeth Andress
	Spinning Clock & Photo Frame	Emily Rotich
Partnership for Food Safety Education	BAC Puppet and Curriculum Kit	Margaret Binkley
Smithfield	Autographed Herschel Walker Helmet	Gary Acuff
	Autographed Paula Deen Cookbook and Gift Basket	Frances Dever
South Dakota Environmental Health Association	South Dakota T-Shirt	Tracy Clark-Stovall
	South Dakota Sweatshirt	Randy Worobo
Gloria Swick-Brown and Paul Brown	Paul Brown Wines–White Zinfandel	Anna Lammerding
	Paul Brown Wines–Chardonay	Monica Ponder
Texas A&M University	*JFP* On-A-Stick	Dan Brown
	JFP On-A-Stick	Dale Grinstead
	JFP On-A-Stick	Debra Henyon
	Texas A&M Student Microscope	Don Zink
David and Connie Tharp	Cultured Freshwater Pearl Necklace w/ Sapphire and Silver Clasp	Dave Larson
The Tetley Group	Scotland Football Jersey	Mark Pratt
United Kingdom Association for Food Protection	Penderyn Welsh Whiskey	Ann Puskaric
Weber Scientific	Packaging, Policy and the Environment	Barbara Blakistone
	Food Safety and Security Cap	Denise Eblen
	Liberty Cow Figurine	Nancy Eggink
	1GB Flash Drive	Peter Ben Embarek
	Food Safety and Security Cap	Andrew Hudson
	Santa Cow Figurine	Lori Ledenbach
	Food Safety and Security Jacket–Medium	Greg Orman
	Food Safety and Security Jacket–Large	Greg Orman
	Moodolph Cow Figurine	Ki Hwan Park
	Food Industry and the Environment in the European Union	Carole Peet
	Father Christmas Cow Figurine	Kyung Ryu
	Moodolph Cow Figurine	Allen Saylor
	Cow Lab Coat–XXL	Aaron Uesugi
Wegmans Food Markets	Y'all Come Eat–Signed by the author	Michelle Danyluk
	The Best Life Diet–Signed by the author	Tamara Ford
	Big Papi–Signed by the author	Vickie Lewandowski
	Never Give Up–Signed by the author	Shari Shea
Wiley-Blackwell	Nondestructive Testing of Food Quality	Carole Peet
Wisconsin Milk Marketing Board	The Great Big Butter Cookbook	Elaine Berry
	The Great Big Butter Cookbook	Vickie Lewandowski
	The Great Big Butter Cookbook	Suzanne Mailman
Wyoming Environmental Health Association	You Know You're a Health Inspector T-Shirt	Miranda Warner

95th Annual Meeting
IAFP 2008
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http://www.aid-diagnostika.com

American Proficiency Institute
1159 Business Park Drive
Traverse City, MI 49686, USA
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http://www.api-pt.com

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Des Moines, IA 50322, USA
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International Food Hygiene
P.O. Box 4
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http://www.positiveaction.co.uk

International Food Information Council Foundation
1100 Connecticut Ave. NW, Suite 430
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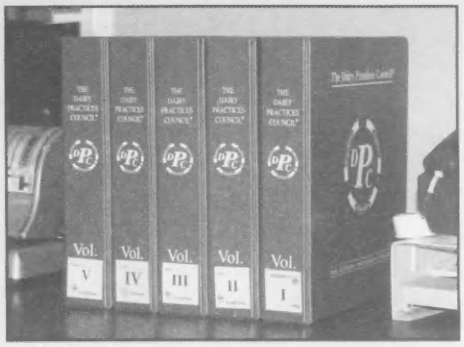

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IAFP has agreed with The Dairy Practices Council to distribute their guidelines. DPC is a non-profit organization of education, industry and regulatory personnel concerned with milk quality and sanitation throughout the United States. In addition, its membership roster lists individuals and organizations throughout the world.

For the past 38 years, DPC's primary mission has been the development and distribution of educational guidelines directed to proper and improved sanitation practices in the production, processing, and distribution of high quality milk and milk products.

The DPC Guidelines are written by professionals who comprise six permanent task forces. Prior to distribution, every guideline is submitted for approval to the state regulatory agencies in each member state. Should any official have an exception to a section of a proposed guideline, that exception is noted in the final document.

The guidelines are renown for their common sense and useful approach to proper and improved sanitation practices. We think they will be a valuable addition to your professional reference library.

If purchased individually, the entire set would cost $442.00. We are offering the set, packaged in five looseleaf binders for $330.00.

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To purchase this important source of information, complete the order form below and mail or fax (515-276-8655) to IAFP.

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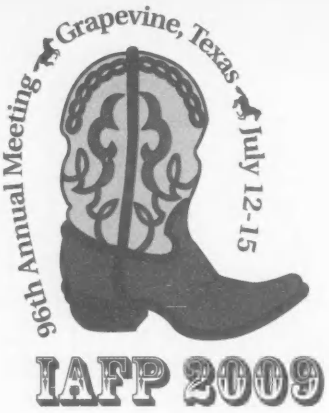
IAFP Plans Next International Symposium

Participants at the planning meeting for IAFP's next International Symposium on Food Safety included (front, left to right) Dong-Hwa Shin, David Tharp, Stan Bailey, Duck-Hwa Chung, (back, left to right) Ki-jae Cho, Deog-Hwan Oh, Hyang Sook Chun and Jin-Ho Cnung.

On Monday, September 29, President Stan Bailey and Executive Director David Tharp met with representatives of the Korea Association of Milk, Food and Environmental Specialists to discuss plans for the next IAFP International Symposium. Tentative dates were selected as 12–13 November 2009 with an optional workshop to be offered on 11 November. More information will be released as it becomes confirmed, so watch *Food Protection Trends*, the *IAFP Report* and your E-mail correspondence.

IAFP President Stan Bailey, IAFP Executive Director David Tharp and Korean Affiliate President Deog-Hwan Oh discuss plans for a November 2009 International Symposium on Food Safety scheduled for Seoul, South Korea.



AWARD NOMINATIONS

The International Association for Food Protection welcomes your nominations for our Association Awards. Nominate your colleagues for one of the Awards listed below. You do not have to be an IAFP Member to nominate a deserving professional. Nomination criteria is available at:

www.foodprotection.org

Nominations deadline is February 3, 2009

You may make multiple nominations. All nominations must be received at the IAFP office by February 3, 2009.

- Persons nominated for individual awards must be current IAFP Members. Black Pearl Award nominees must be companies employing current IAFP Members. GMA Food Safety Award nominees do not have to be IAFP Members.
- Previous award winners are not eligible for the same award.
- Executive Board Members and Awards Committee Members are not eligible for nomination.
- Presentation of awards will be during the Awards Banquet at IAFP 2009 – the Association's 96th Annual Meeting in Grapevine, Texas on July 15, 2009.

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Nominations will be accepted for the following Awards:

Black Pearl Award

Award Showcasing the Black Pearl, *Sponsored by Wilbur Feagan and F&H Food Equipment Company*

Presented in recognition of a company's outstanding commitment to, and achievement in, corporate excellence in food safety and quality.

Fellow Award

Distinguished Plaque

Presented to Member(s) who have contributed to IAFP and its Affiliates with distinction over an extended period of time.

Honorary Life Membership Award

Plaque and Lifetime Membership in IAFP

Presented to Member(s) for their dedication to the high ideals and objectives of IAFP and for their service to the Association.

Harry Haverland Citation Award

Plaque and $1,500 Honorarium, *Sponsored by ConAgra Foods, Inc.*

Presented to an individual for many years of dedication and devotion to the Association ideals and its objectives.

Food Safety Innovation Award

Plaque and $2,500 Honorarium, *Sponsored by 3M Microbiology*

Presented to a Member or organization for creating a new idea, practice or product that has had a positive impact on food safety, thus, improving public health and the quality of life.

International Leadership Award

Plaque, $1,500 Honorarium and Reimbursement to attend IAFP 2009, *Sponsored by Cargill, Inc.*

Presented to an individual for dedication to the high ideals and objectives of IAFP and for promotion of the mission of the Association in countries outside of the United States and Canada.

GMA Food Safety Award

Plaque and $3,000 Honorarium, *Sponsored by GMA*

This Award alternates between individuals and groups or organizations. In 2009, the award will be presented to an individual in recognition of a long history of outstanding contributions to food safety research and education.

Maurice Weber Laboratorian Award

Plaque and $1,500 Honorarium, *Sponsored by Weber Scientific*

Presented to an individual for outstanding contributions in the laboratory, recognizing a commitment to the development of innovative and practical analytical approaches in support of food safety.

Sanitarian Award

Plaque and $1,500 Honorarium, *Sponsored by Ecolab Inc.*

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Elmer Marth Educator Award

Plaque and $1,500 Honorarium, *Sponsored by Nelson-Jameson, Inc.*

Presented to an individual for dedicated and exceptional contributions to the profession of the Educator.

Harold Barnum Industry Award

Plaque and $1,500 Honorarium, *Sponsored by Nasco International, Inc.*

Presented to an individual for dedication and exceptional service to IAFP, the public, and the food industry.

Larry Beuchat Young Researcher Award

Plaque and $2,000 Honorarium, *Sponsored by bioMérieux, Inc.*

Presented to a young researcher who has shown outstanding ability and professional promise in the early years of their career.

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Neogen
Lansing

MINNESOTA

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Land O'Lakes/rtech Laboratories
St. Paul

Denise R. Busse
Ohly Americas
Hutchinson

Mary Poul
3M Medical Division
St. Paul

Carrie E. Rigdon
University of Minnesota
Minneapolis

MISSISSIPPI

Sally F. Yoder
Mississippi State University
Mississippi State

MISSOURI

Richard Ding
bioMérieux, Inc.
Hazelwood

James Kropp
bioMérieux, Inc.
Hazelwood

NEBRASKA

Craig L. Stevenson
Papillion

NEW JERSEY

Di Li
Rutgers University
New Brunswick

Ishai Nir
HORIBA Jobin Yvon
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Columbus

Philip Engler
Laboratory Automation Solutions Inc.
Dublin

Connie Freese
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Dayton

Jim Gilbride
Quality Assurance & Food Safety
Richfield

Lynn Knipe
The Ohio State University
Columbus

Kelly Maxson
Dole
Springfield

Sommer Mueller
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Citterio U.S.A. Corp.
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Obie Pigeon
McKee Foods Corp.
Collegedale

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Keila Perez
Texas A&M University
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VIRGINIA

Karleigh Huff
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Rick Zahalka
Snohomish Health District
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Steven R. Wnuk
JohnsonDiversey, Inc.
Sturtevant

WHAT'S HAPPENING IN FOOD SAFETY

3-A SSI Introduces First New Pharmaceutical (P3-A) Equipment Standards

3-A Sanitary Standards, Inc. (3-A SSI) announces the availability of the first three American National Standards for equipment and systems used to produce and package active pharmaceutical ingredient (APIs).

The new pharmaceutical 3-A equipment (P3-A) standards include:

- General Glossary of Terminology Used In Pharmaceutical 3-A® Standards, P3-A 001 – This reference document is intended to support and facilitate the use of other P3-A Standards. Specifically, this standard provides users of P3-A standards and accepted practices with definitions of acronyms and terms widely used in these documents.
- Pharmaceutical 3-A® Sanitary/Hygienic Standards for Materials for Use in Process Equipment and Systems, P3-A 002 – These standards provide minimum materials and surface property requirements, including minimum fabrication related materials and surface property requirements for equipment and components utilized in the pharmaceutical manufacturing environment whereby those material and surface properties may directly, indirectly, or incidentally impact the strength, identity, safety, purity or quality of the active pharmaceutical ingredient, excipient, or drug product.
- P3-A® End Suction Centrifugal Pumps for Active Pharmaceutical Ingredients, P3-A 003 – This standard covers the sanitary design requirements of mechanically sealed end-suction centrifugal pumps, conforming to ANSI/ASME B73.1, whereby those design criteria may directly, indirectly, or incidentally impact to the strength, identity, safety, purity or quality of the active pharmaceutical ingredient, excipient, or drug product.

The new standards were developed by the Pharmaceutical Equipment Standards (P3-A) Steering Committee of 3-A SSI. The committee oversees the development of new standards for equipment used in the production of APIs.

Four other new standards for API equipment are currently under development, including Agitated Filter Dryers, Vessels and Agitators, Mills and Classification Equipment, Process Heat Exchangers. P3-A invites all interested stakeholders to participate in the new standards development.

Copies of the new standards are now available for purchase in electronic format or printed version through the 3-A SSI web site at http://www.3-a.org/.

New Mexico Down-Graded as Modified Accredited-Advanced Status from USDA

The US Department of Agriculture's Animal and Plant Health Inspection Service (APHIS) is reclassifying New Mexico as modified accredited advanced for bovine tuberculosis (TB).

Although this action is consistent with the reclassification of other accredited-free states with two or more TB-affected herds during a 48-month period, intact heifers still can be shipped interstate if moved directly to a feedlot or in feeder channels. Also, the movement of spayed heifers and steers, cattle from a TB-accredited free herd and cattle or bison less than 6 months of age, can continue.

APHIS is working closely with New Mexico animal health officials to conduct a comprehensive risk assessment to further examine the state's TB status. APHIS will evaluate thoroughly and consider all scientific information collected during the assessment. This information will be used when deciding any future actions that should be taken in New Mexico, which could result in less restrictive measures.

New Mexico officials took immediate action to stop the spread of the disease and have worked cooperatively with APHIS to maintain normal movement of cattle while taking appropriate steps to stop the spread of TB. APHIS will continue to work closely with the State to further test for TB and revise the restrictions as necessary.

APHIS had divided the state of New Mexico into two zones for the purpose of TB status classification, with an accredited-free zone and a modified accredited advanced zone. In April 2007, New Mexico officials confirmed an affected dairy herd in the accredited-free zone during an epidemiological investigation of a TB-positive cow found through

slaughter surveillance. Recently, a second affected herd was identified in the same zone. The finding of the second affected herd within a 48-month period means that the zone no longer meets the requirements for accredited-free status.

Bovine TB is a contagious and infectious disease caused by *Mycobacterium bovis*. It affects cattle, bison, deer, elk, goats and other warm-blooded species and can be fatal. The disease can be transmitted to humans through direct contact with infected animals or consumption of raw milk. It is not transmitted through consumption of pasteurized milk. If a producer suspects TB in their herd, they should isolate the animal immediately and contact their veterinarian for a proper diagnosis.

Premium Waters Receives SQF 2000 Certification

NSF International has announced that Premium Waters, Inc. (PWI) is among the first bottled water companies to receive Safe Quality Food (SQF) Code 2000 certification. SQF certification highlights PWI's commitment to produce safe, quality products.

The following PWI plants have received SQF certification: Kansas City, Kansas; Fort Worth, Texas; Chippewa Falls, Wisconsin; Quincy, Illinois; Greeneville, Tennessee; and Douglas, Georgia. In order to receive SQF certification, each of these plants were audited by NSF to reassure customers that the product has been produced, processed, prepared and handled according to internationally-recognized standards.

PWI just completed SQF Level II certification, which includes HACCP Food Safety Plans. PWI is also on plan to complete SQF Level III certification, which includes Comprehensive Food Safety and Quality Management Development, by the end of this year.

"SQF certification is consistent with our organization's commitment to produce quality products and assure customer and consumers confidence," as stated by Mark Reynolds, PWI director of quality assurance and Greg Nemec, PWI president.

PWI views SQF as the most comprehensive food safety and quality certification program available for the marketplace. The application of HACCP principles to quality practices separates SQF from prior audit schemes. PWI views SQF as a superior program that establishes a new standard of excellence. Marketplace acceptance of SQF will validate commitment to quality and eliminate redundant costs throughout the supply chain.

SQF certification ensures that suppliers use science-based methods to minimize food safety risks, assure product quality and comply with the SQF Code. The SQF Code provides guidance for companies seeking to enter the global food market, addressing their needs and the needs of their clients. The SQF 2000 Code applies to food manufacturing and distribution sectors. It outlines requirements for suppliers of raw materials, ingredients, food products and processed or prepared foods, beverages or services.

"By achieving SQF certification, Premium Waters, Inc. is setting the example for others to follow," said Jim Bail of NSF International, a public health organization accredited by the American National Standards Institute to provide Safe Quality Food 1000 (producers and farmers) and 2000 (food manufacturing and distribution sectors) certifications. "I congratulate them on achieving this major milestone in the bottled water industry."

The SQF Program is administered by the SQF Institute (SQFI), a division of the Food Marketing Institute (FMi), and is the culmination of more than 15 years of development. To date, more than 10,000 certificates have been issued to companies operating in Asia-Pacific, Europe, Middle East and North and South America. The SQF certification program is recognized by the Global Food Safety Initiative (GFSI), part of a landmark agreement among global food retailers and food manufacturers on mutual acceptance of international food safety and quality systems.

Christine Aleski Joins Matrix MicroScience as Vice President of Sales

Matrix MicroScience Inc., has announced that Christine Aleski has joined the company as vice president of sales. Christine comes to Matrix with over 25 years food safety leadership experience in the industry. Prior to joining Matrix, Christine has held leading sales positions in several competitor diagnostic companies.

Christine comments that, "I am extremely excited to bring my background and experience to the Matrix team, especially with Pathatrix being the only commercially available system successfully addressing the up-front selection and concentration of target organisms. The Pathatrix system is extremely flexible in that it is compatible with

a number of existing rapid microbiological methods, and, when applied in a sample pooling format, can literally save a company thousands of dollars in testing costs. I believe that my experience as a practicing industry food microbiologist will help the industry embrace this technology as an integral part of their environmental, ingredient, and finished product testing programs."

Silliker Announces New General Manager

Dr. Cynthia Stewart has joined the Silliker Food Science Center as general manager. Possessing over a decade of industry experience, she most recently served as director of scientific affairs at the National Center for Food Safety and Technology.

Ann Marie McNamara and Derek Walker Join Jack in the Box

Jack in the Box Inc. has announced that David M. Theno, Ph.D., has retired as senior vice president and chief product safety officer, effective Sept. 2008. Assuming Theno's responsibilities at Jack in the Box® are Ann Marie McNamara, Ph.D., who joined the company in Sept. 2008 as division vice president, food safety, and Derek Walker, Ph.D., who joined the company in May 2008 as division vice president, research and development.

"We're fortunate to have in Ann Marie McNamara and Derek Walker such seasoned experts in their respective fields to maintain the integrity of our food-safety and R&D programs. They have big shoes to fill, but we're looking forward to the tremendous contributions that they'll be making to the organization."

Ms. McNamara was previously vice president of food safety and scientific affairs at Silliker, Inc. A renowned scientist with nearly two decades of industry and regulatory experience, Ms. McNamara joined Silliker in 2003 after serving as corporate vice president of food safety and technology for Sara Lee Corporation, where she developed their first corporate food-safety division. From 1992 to 1999 she served as director of microbiology for the food safety and inspection service of USDA. She is a co-author of several major US food-safety initiatives including the USDA's "Pathogen Reduction/HACCP Rule," President Clinton's Food Safety Initiative, and FDA's "Healthy People 2010." She received the Secretary of Agriculture's Superior Service Award five times in her seven-year career at USDA. She was appointed by three secretaries of agriculture to serve nine years on the National Advisory Committee on Microbiological Criteria for Foods, which provides impartial, scientific advice to federal food-safety agencies for use in the development of an integrated national systems approach from farm to consumption to assure the safety of domestic, imported, and exported foods.

Mr. Walker has nearly two decades of experience in the restaurant, foodservice and consumer packaged goods industries. He was previously global vice president of research and development and quality management at Papa John's International, Inc. Prior to joining Papa John's in 2007, Mr. Walker had a 10-year career at Sara Lee Corporation, where he held several positions of increasing responsibility, including director of continuous improvement (process), director of marketing development (specialty brands team), director of business development (retail launch group) and vice president of research and development (State Fair Foods Inc., a packaged-meats manufacturing division of the company). Mr. Walker's career also included positions at Pizza Hut Inc., where he developed and launched several products, including its namesake chain's popular Buffalo Wings. He began his career at General Mills Inc. as a research food scientist.

NSF Appoints New Director of Business Development

Mike Chaudron has been named director of business development for NSF International. Mr. Chaudron will focus on global client relations for NSF's water systems and food equipment businesses.

"Mike is an innovative leader who brings a broad range of management and people skills to his new position," said David Kirkpatrick, director of NSF's Customer Management Group. "With his extensive experience in sales strategy and safety/environmental management, he will continue to leverage his outstanding insights to lead our customer-focused initiatives both domestically and abroad."

Mr. Chaudron started at NSF in 2006 as the national sales manager for NSF International Strategic Registrations (ISR), an NSF International Company that provides management system registrations worldwide. He supervised NSF-ISR sales teams in North America, including

registration services in Canada and Mexico, and developed and executed targeted sales initiatives. He also substantially increased registration sales, moving NSF-ISR from the eleventh largest to sixth largest US management systems registrar.

Prior to his appointment at NSF-ISR, Mr. Chaudron served as the national sales and marketing manager for Centrus International, a subsidiary of Eastman Chemical Company in Ann Arbor, MI. He also served as president and director of business development for MSE Environmental and Safety, Inc., an international environmental science and engineering company. Mr. Chaudron has a bachelor's degree in political science from the University of Alabama.

In his new role, Mr. Chaudron will be responsible for directing global sales and business development functions. This will include developing sales initiatives for all regions and managing NSF's sales staff worldwide.

UV Disinfection Specialist Aquionics Appoints New President

UV disinfection specialist Aquionics has appointed Bill Decker as its new president. Bill has extensive experience in the wastewater treatment industry, having spent 14 years with Ashbrook-Hartley Operations L.P. He held various positions with Ashbrook-Hartley, most recently vice president of biosolids. He also spent two years as an operations director at the company's United Kingdom manufacturing facility.

Bill has a BSc in civil engineering from the US Air Force Academy and is a member of both the Water Environment Federation (WEF) and the Water and Wastewater Equipment Manufacturers Association (WWEMA).

Eric Mittenthal Joins International Food Information Council (IFIC), Three Named to Executive Board

Eric Mittenthal, a former television news reporter and producer joined the International Food Information Council (IFIC) as director of media relations, effective August 1, 2008. Eric can direct journalists to IFIC and IFIC Foundation resources and our numerous experts around the country. With a decade of experience in the media, he will be a great asset for anyone looking for science-based food safety and nutrition information for their stories.

Eric comes to IFIC from WAGA-TV, the Fox affiliate in Atlanta. Prior to that, he had experience with ABC affiliates in Idaho and North Carolina.

Eric earned a bachelor of science degree in psychology from Cornell University and a master of biomedical sciences degree from Eastern Virginia Medical School.

Three Public Health Leaders Named to NACCHO Executive Board Gary Cox, director of the Tulsa City-County Health Department, formally assumed the duties of president of the National Association of County and City Health Officials (NACCHO) at the Association's annual meeting in Sacramento, CA. Also assuming office were Bruce Dart, director of the Lincoln-Lancaster County Health Department in Lincoln, NE, as president-elect, and Carol Moehrle, district director of the North Central District Health Department in Lewiston, Idaho, as vice president.

A longtime advocate for pressing public health issues, Mr. Cox has led the Tulsa Health Dept. since 1994. He has dedicated his career to improving public health, raising the level of awareness about health issues and seeking broad-based support for public health initiatives. He is a past president of several organizations, including the Oklahoma Public Health Association, the Indian Nations Council of Governments, and Community Health Net. Mr. Cox also served on the Oklahoma City National Memorial Institute for the Prevention of Terrorism (MIPT) Emergency Responder Advisory Panel. Additionally, Mr. Cox served on the Community-Based Participatory Prevention Research Grant Review Panel for the Centers for Disease Control and Prevention (CDC). He also serves on the Steering Committee for the Healthiest Nation Alliance.

"It is an honor and privilege to serve as president of such a highly regarded association dedicated to providing national leadership to work with local health departments and others to improve health outcomes in our country," said Mr. Cox.

Mr. Cox received his law degree from the University of Tulsa and was previously legal counsel for the Health Department, as well as adjunct professor of environmental law at the University of Tulsa. He is also a visiting Associate Professor at the University of Oklahoma, College of Public Health.

During the 14 years that Mr. Cox has been Tulsa's health director, his goals have been to promote good health for the county's 570,000 residents. His priorities have been

to form and support partnerships to achieve optimal health for all, advocate for a comprehensive system that prioritizes prevention, protects people and communities from emerging threats and provides health care for every member of the community.

As director of the Lincoln-Lancaster County Health Dept., NACCHO president-elect Bruce Dart manages a local public health agency serving over 275,000 Nebraskans. He has served as president of Nebraska's public health association and on numerous state and local public health/health services committees focusing on community health and health care access issues. He is a registered environmental health specialist and was formerly Nebraska Environmental Health Administrator of the Year. Mr. Dart received his MS in administration (health services) from Central Michigan University and his Ph.D. in health services from Walden University.

Idaho's Carol Moehrle has led her five-county Public health district in North central Idaho, which covers a population of approximately 110,000 for 16 years. She has been active with NACCHO since 1992, serving as County Forum chair and sitting on the NACCHO Executive Board and Board of Directors. Ms Moehrle also serves on the Public Health Accreditation Board (PHAB), as well as the Board of the National Association of Counties (NACo), where she is chair of NACo's Public Health and Environment subcommittee.

Congratulations . . .

At IAFP 2008, we offered a drawing for a one-year membership with our Association and a free registration to our Annual Meeting. We are pleased to announce the following winners of the drawing:

IAFP Membership

Philippa Ross-James
New Zealand Food Safety Authority
Wellington, New Zealand

IAFP 2009 Annual Meeting Registration

Emily T. Chlebowski
VETCOM Food Analysis and Diagnostic Laboratories
Fort Sam Houston, Texas

INDUSTRY PRODUCTS

bioMérieux

bioMérieux's Automated TEMPO® Range Now Covers the Major Quality Indicators with Two New Kits for the Enumeration of *Staphylococcus* and Lactic Acid Bacteria

bioMérieux has enhanced its line of food quality solutions with the launch of two new TEMPO® kits: TEMPO STA, for the enumeration of coagulase-positive staphylococci (*S. aureus*) and TEMPO LAB, for the enumeration of Lactic Acid Bacteria.

"With our expanded TEMPO menu, bioMérieux now covers all of the major quality indicators," stated Alexandre Mérieux, bioMérieux corporate vice president, industrial microbiology. "The automated TEMPO system meets the needs of our customers in the food industry with a cost-effective solution that is less time-consuming and labor-intensive than traditional methods."

Growth of *Staphylococcus aureus* in food products is a public health risk since certain strains produce enterotoxins, which if ingested can cause staphylococcal food poisoning.

The enumeration of *Staphylococcus aureus* in food samples is critical to monitoring product quality throughout the manufacturing process, identifying risks and assessing the effectiveness of sanitation measures.

TEMPO STA delivers results within 24 hours instead of up to 48 hours for the ISO reference methods and up to 4 days for the BAM method. No confirmation step is needed, contrary to most of the other methods.

Some lactic acid bacteria are used in the production of fermented foods such as yogurt. However, certain species can cause spoilage and degrade the organoleptic quality of a product (its taste, color, texture and/or smell). Therefore, the level of lactic acid bacteria in a product has an important role in determining its shelf life.

TEMPO LAB provides lactic acid bacteria counts within 40–48 hours, compared to 3 days for the reference methods, which also require time-consuming plating techniques.

The fully automated TEMPO system offers ease of use and fast turnaround time for accurate and standardized results. TEMPO STA and TEMPO LAB complete the system's menu covering most quality indicator testing needs: TEMPO TVC (total viable count), TEMPO EC (*Escherichia coli*), TEMPO TC (total coliforms), TEMPO CC (coliforms count) and TEMPO EB (*Enterobacteriaceae*).

bioMérieux
314.731.8500
Hazelwood, MO
www.biomerieux-usa.com

Romer Labs® Introduces Rapid and Chromatographic Analytical Methods for Melamine

Romer Labs® highlights its expertise in food- and feed safety analysis and proudly introduces new validations for its AgraQuant® Melamine ELISA. The test kit has been proven to be a reliable screening method for melamine in feed and dairy products, including pet food, milk and milk-powder. Furthermore the company launched a straight forward chromatographic method for the analysis of melamine using a MycoSep® 224 for sample purification. The method has been validated for dry and wet petfood commodities, glutens, milk powder, and baby formulas.

Romer Labs® full analytical service laboratories in the US, Singapore and Austria offer melamine testing for highly demanding customers on a global scale.

Melamine is an organic base with the chemical formula $C_3H_6N_6$. Most industrial manufacturers use urea to produce the substance. Melamine is used as a raw material for a series of products, including glues, colorants, housewares and because of its high nitrogen content, fertilizers. The use of melamine in food production is banned in most countries. Melamine by itself is nontoxic in low doses, but when combined with cyanuric acid it can cause fatal kidney stones.

Romer Labs Inc.
636.583.8600
Union, MO
www.romerlabs.com

Matrix MicroScience Has Gained AOAC-RI Approval for Its "Pathatrix® *Salmonella* 10 Pooling Test Kit"

Matrix MicroScience has gained AOAC-RI approval (Cert. No 090302C) for its novel *Salmonella* Pathatrix® "10 Pooling" product.

Pathatrix® 10 Pooling is unique in that it relies on "post-enrichment pooling" as opposed to conventional pre-enrichment sample compositing, the key point being that the Pathatrix® pooling approach maintains 100% sample integrity. A number of significant benefits that the Pathatrix® Pooling Strategy provides to all microbiological laboratories can be summarized;

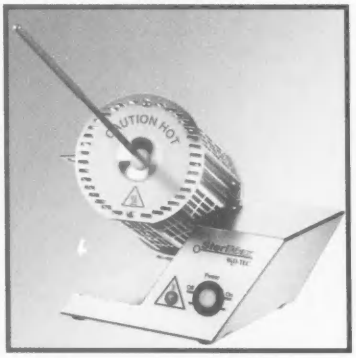
- Increased sample throughput, i.e. up to 10 times
- 90% cost savings associated with end point detection, e.g. PCR
- Significant labor savings, i.e. >80%
- Compatible with a wide range of end-point detection technologies
- Post enrichment pooling maintains original sample integrity 100%

The Pathatrix® Pooling principle relies on the pooling of either 10 × 5 ml or 10 × 25-ml sub-samples to create a single 50 ml (mini-ULTRA Format) or 250-ml (ULTRA format) wet composite sample, which can be analyzed by a range of end-point detection technologies. In this way negative samples can be screened out very efficiently and if a positive-pooled sample is obtained then the original post enriched samples, where complete sample integrity has been maintained, can be very quickly re-analyzed to achieve rapid results. This can be a very effective tool for investigating contamination incidents and/or positive release scenarios.

As the majority of companies find that 99+% of all routine food samples tested for pathogens are negative this new technique offers great opportunities for cost savings, increased laboratory efficiency or the ability to increase the number of sample tested with the current laboratory facilities. For example, a company who carries out approximately 100 *Salmonella* tests per day can reduce this to just 10 samples using the "10 pooling" test format.

Dr. Adrian Parton, C.E.O. of Matrix MicroScience said, "We are excited by the latest *Salmonella* 10 pooling AOAC-RI approval that builds on our existing range of Pathatrix® 5 Pooling products. Pathatrix® is the only high volume IMS system commercially available."

Matrix MicroScience Inc.
303.277.9613
Golden, CO
www.matrixmsci.com



WLD-TEC

Now Sterilize Without Flame from WLD-TEC

The electrical sterilization system SteriMax is ideal for the sterilization of inoculation loops, needles and instruments.

The SteriMax is ideal for laboratories and safety cabinets where the use of gases and open flames is not permitted or unavailable.

The sterilizing tube into which the items are inserted is made of wear-resistant quartz glass, reaches its optimal temperature of 900°C (1650°F) after only a few minutes.

To sterilize the inoculation loop, simply insert it into the quartz tube. After 5–7 seconds, the inoculation loop is sterilized.

A 100% stainless steel design makes the SteriMax resistant to even the most extreme laboratory conditions.

The low and stable housing facilitates ergonomic operation; the unique design protects the working surface from contamination.

After prolonged use, the residual heat display signals that the surface of the sterilization tube is hot in order to protect the user from burns.

WLD-TEC
310.589.3709
Chicago, IL
www.WLD-TEC.com

Nilfisk CFM Replacement Filters Keep Industrial Vacuums Running Strong

Investing in a Nilfisk CFM industrial vacuum is an important step in reducing potential contamination threats, but superior filtration is also critical in maintaining safe levels of cleanliness in food manufacturing and processing facilities. Regularly replacing your vacuum's main filter will help protect your investment and insure your plant continues to surpass cleanliness standards.

Depending on the application, vacuum filters should be changed when the performance of the vacuum has noticeably decreased

or when the vacuum's manometer moves to the "red zone." To ensure that your Nilfisk CFM vacuum cleaner meets the dust-control requirements for your specific cleaning application, Nilfisk CFM offers a complete line of filters that include:

The Nilfisk CFM Standard Main filter is composed of polyester and retains 99.1% efficiency at 1.5 microns. Star-shaped pleats add surface area, lowering the air-to-cloth ratio and increasing filtration efficiency.

A PVC Membrane filter is ideal for fine powders like flour. Because debris does not penetrate the filter's surface, it is capable of quick release during purging. Retains 99.9% of particles down to 1.5 microns.

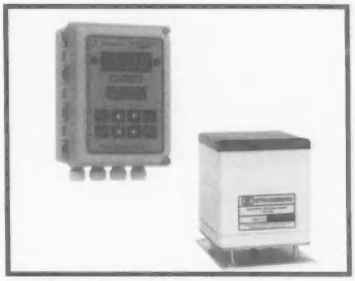
A Nomex filter withstands temperatures up to 428°F, making it ideal for use in bakery environments and oven cleaning. This filter retains 98.4% of particles down to 1.5 microns.

An Anti-Static filter prevents static build-up and eliminates the risk of explosion when collecting materials such as sugar dust and other combustible materials. This filter retains 99.7% of particles down to 1.5 microns.

Nilfisk CFM
610.647.6420
Malvern, PA
www.nilfiskcfm.com

Strandberg Engineering Laboratories Introduces the Microwave Moisture Sensor

The Microwave Moisture Sensor, Type 9900, utilizes the latest microwave-sensing technology to produce a non-contact moisture sensor that covers the full range of moisture measurement, zero percent to full saturation. The 9900 sensor provides a linear output signal that can be connected to the Moisture Monitor Model 7701 Indicating Controller (shown in photo above) or to PLCs or other instrumentation.



Strandberg Engineering Laboratories, Inc.

Applications for the 9900 moisture sensor include measurement of moisture in webs and sheets, bulk solids, and slurries, water-based coating pickup measurements, and measurements of materials before and after drying. The 9900 sensor can be mounted above or below materials to be measured, above and below conveyors, and can sense moisture in materials flowing in pipes and ducts through a non-metallic window.

The optional Moisture Monitor Model 7701 provides LED display for moisture and LCD display with keyboard fo entry of process parameters such as moisture set point and alarm and control limits. The Model 7701 includes high and low alarm outputs, step-correction relay control outputs and PID proportional control output. Strandberg also offers the Series 1600 Indicating Controllers for multi-channel measurement and control applications.

Strandberg Engineering Laboratories, Inc.
336.274.3775
Greensboro, NC
www.strandberg.com

Eriez® Magnetic Humps Provide Exceptional Removal of Tramp Contaminants

Eriez® Magnetic Humps provide simple and efficient removal of tramp iron contaminants from free flowing, gravity or pneumatically conveyed materials. These powerful Humps are highly effective in separating contaminants from feed, grain, wood chips, food stuffs or plastic.

Magnetic Humps from Eriez are long-lasting and durable. Available for gravity, horizontal or vertical pneumatic installations, they are designed for use in a wide range of applications, regardless of the operational requirements.

Eriez's Magnetic Humps feature continuously welded, mild or stainless steel construction. The unique dog-leg design includes two powerful plate magnets strategically placed in housings to capture metal contaminants as they flow through the Hump.

In addition to standard models, a wide range of custom designs are available to enable optimum performance for specific application challenges. Various magnet strengths are available, including *Xtreme*™ Rare Earth, Rare Earth, Superpower and Maxipower.

Eriez
888.300.3743
Erie, PA
www.eriez.com

Cleaning Verification: Repeatability, Coefficient of Variation, and Your $$$ from 3M Microbiology

The repeatability of a test is a key aspect to consider when determining which ATP monitoring

system a company should choose for its routine hygiene and sanitation verification. Repeatability is really a measure of how reliable a particular measurement is in making operational decisions. In the food processing environment, the data collected from ATP systems is most frequently used to determine whether equipment is clean enough to begin production or if re-cleaning the equipment is necessary to prevent contamination of the manufactured product with microbes and/or food product residue.

Repeatability is often expressed as a Coefficient of Variation (CV). The CV is calculated by dividing the standard deviation by the mean and then expressing this as a percentage. The higher the CV, the more variability that can be expected in results from a given sample.

To demonstrate the impact of the CV of an ATP test on the day-to-day operation of a food plant, consider the following example:

Imagine that a pass/fail limit is set for a manufacturing plant at 100 RLU. Any result above 100 RLU is a FAIL requiring re-cleaning while any result less than 100 RLU is considered a PASS where production can continue without re-cleaning.

Now imagine that a surface was adequately cleaned to a level that is equivalent to 75 RLU. As with any test there will be a range of test results around 75 RLU. Graphing the number of tests that give each RLU result produces a bell-shaped curve.

A test with a CV of 10% would have most of the results around 75 RLU and 99.96% of the time the results will be under the 100 RLU Pass/Fail limit. In contrast, a test with a CV of 40% (blue dotted line) would give the accurate pass result (<100 RLU) only 80% of the time and a false positive result requiring re-cleaning 20% of the time. This unnecessary cleaning results in wasted time, materials, and production capacity. With productivity losses often accruing at a rate of thousands of dollars per minute, these false positives can be very costly.

Now consider the same plant with the same pass/fail criteria, only this time with a dirty surface that should give a 150 RLU result.

The test with a CV of 10% will accurately give a FAIL result over 99.9% of the time and has a very low false negative result (~0.04%). In contrast, a test with a CV of 40% will correctly give a FAIL result < 80% of the time and has a false negative rate of over 20%.

In the food processing environment, a false negative ATP test result leads to the start of production when the equipment has not been cleaned effectively. Manufacturing food on dirty equipment results in risk to the product, the brand, and the consumer.

These examples illustrate the importance of a low CV in reducing false positive and false negative results. It is important to understand that the shape of the histograms are determined by the CV of the test and is the same regardless of what RLU scale is used by the manufacturer of the ATP test and equipment. If a surface is cleaned to 75% of the pass/fail limit and the test used has a 40% CV, it will give the same ~20% false positive rates for each CV regardless of whether the pass/fail limit is 10 RLU, 100 RLU, or 1000 RLU. Similarly, if a surface is 50% dirtier than the pass/fail limit and the test has a 40% CV, it will give the same ~20% false negative rate regardless of the actual RLU value of the pass/fail limit.

The Coefficient of Variation is a very useful tool to objectively identify how repeatable and reliable test results from ATP system – and other test systems – are in making operational decisions in the plant. As can be seen from the examples presented, having a low CV is important to avoid false positive and false negatives which would result in unnecessary cost and unnecessary risk.

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COMING EVENTS

DECEMBER

- **1, British Columbia Food Protection Association Annual General Meeting,** Hilton Vancouver Metrotown, Burnaby, B.C. Featuring speaker Vickie Lewandowski. Contact Terry Peters at 604.666.1080 or terry_peters@telus.net, or visit bcfpa.net.
- **7, Evaluating the Human Relevance of Modes of Action in Animals – An ILSI Research Workshop,** Boston, MA. For more information, go to http://rsi.ilsi.org/Projects/MOA+Boston.htm.
- **9–10, Implementing SQF 2000 Systems Training Course,** Venue TBA. For more information, E-mail: foodsafety@ecolab.com.
- **10, Whey Processing Workshop,** University of Idaho, Food Science and Toxicology Dept., Twin Falls, ID. For more information, contact Paula Peterman at 208.364.6188; E-mail: paulap@uidaho.edu.
- **15, Decision Making for Recommendations and Communication Based on Totality of Food-Related Research Workshop,** Washington, D.C. For more information, go to www.ilsina.org/events/Epidemiologyworkshop.htm.

JANUARY

- **4–10, Ice Cream Short Course**, Penn State University, University Park, PA. For more information, call 814.865.8237, or go to http://conferences.cas.psu.edu/.
- **18–24, ILSI 2008 Annual Meeting,** Wyndham Rio Mar Beach Resort and Spa, Rio Mar, Puerto Rico. For more information, contact Donna Tschiffely at 202.659.0074 ext. 114; E-mail: dtschiffely@ilsi.org.
- **22–23, An International Meeting on *Cronobacter* (*Enterobacter sakazakii*),** O'Reilly Hall, University of Dublin, Ireland. For more information, go to www.ucd.ie/crono09.
- **24–25, Ice Cream 101**, Penn State University, University Park, PA. For more information, call 814.865.8237, or go to http://conferences.cas.psu.edu/.
- **25–28, NMC 48th Annual Meeting,** Westin Hotel, Charlotte, NC. For more information, go to www.nmconline.org/meetings.html.
- **27, Silliker Scientific Seminar – Assessment and Perspectives for European Union Regulations,** Lyon, France. For more information, contact Catherine Macret at Catherine.Macret@silliker.fr.
- **28–30, IPE/IFE 2009,** Georgia World Congress Center, Atlanta, GA. For more information, go to www.ipe08.org.

FEBRUARY

- **3–4, Industrial Cheese Making Workshop,** University of Idaho, Food Science and Toxicology Dept., Twin Falls, ID. For more information, contact Paula Peterman at 208.364.6188; E-mail: paulap@uidaho.edu.
- **4–6, CIES International Food Safety Conference,** Barcelona, Spain. For more information, contact Marjo Jarvinen at 33.1.44.69.84.82 or go to www.ciesfoodsafety.com.
- **9–12, Dairy Technology Workshop,** Birmingham, AL. For more information, contact Randolph Associates, Inc. at 205.595.6455; E-mail: henry.randolph@raiconsult.com.
- **21–25, 2009 AFFI Frozen Food Convention,** Monterey, CA. For more information, go to www.affi.com.
- **24–26, Dubai International Food Safety Conference,** Dubai Convention and Exhibition Centre, Dubai. For more information, go to www.foodsafetydubai.com.
- **24–26, GMA Food Claims and Litigation Conference: Emerging Issues in Food-Related Litigation,** Rancho Mirage, CA. For more information, contact Mary Olsen at 202.639.5968; Web site: www.gmalitigationconference.com.
- **24–27, 6th ASM Biodefense and Emerging Disease Research Meeting,** Baltimore, MD. For more information, go to www.asm.org.

MARCH

- **25, Advanced Artisan Cheese Making Workshop,** University of Idaho, Food Science and Toxicology Dept., Gooding, ID. For more information, contact Paula Peterman at 208.364.6188; E-mail: paulap@uidaho.edu.

APRIL

- **22, SfAM Spring Meeting,** Aston University, Birmingham, UK. For more information, go to www.sfam.org.uk/spring_meetings.php.
- **26–28, 2009 ADPI/ABI Annual Conference,** Hyatt Regency, Chicago, IL. For more information, go to www.adpi.org/Events/tabid/83/Default.aspx.
- **27–29, 2009 Food Safety Summit,** Washington D.C. Convention Center, Washington, D.C. For more information, go to www.foodsafetysummit.com.

MAY

- **4–6, Food Marketing Institute Futue Connect Conference,** Hyatt Regency, Dallas, TX. For more information, go to www.fmifutureconnect.com.
- **10–13, VTEC 2009 7th International Symposium on Shiga Toxin (Verocytotoxin) Producing *Escherichia coli* Infections,** Centro Cultural Borges, Bueno Aires, Argentina. For more information, go to www.vtec2009.com.ar/.

IAFP UPCOMING MEETINGS

JULY 12-15, 2009
Grapevine, Texas

AUGUST 1-4, 2010
Anaheim, California

FOOD AND ENVIRONMENTAL HYGIENE DEPARTMENT
(Non-civil Service Vacancy)

Food Safety Officer (Salary: HK $80,920/about US $10,370 per month)

Entry Requirements:

(a) A university degree and higher qualification(s) in Food Science, Food Technology, Nutritional Science, Dietetics, Food Toxicology, Food Microbiology, Food Biotechnology, or related subjects from a Hong Kong University, or equivalent;

(b) at least 10 years' relevant post-graduate experience in food safety and related field, including exposure assessment, risk assessment and food safety standard setting; 5 years of which should be in a position with supervisory responsibilities; and

(c) have Level 2 or above in English Language in the Hong Kong Certificate of Education Examination (HKCEE), or equivalent.

(Note: Preference will be given to candidates with a Master of Public Health or related discipline with training in Epidemiology and Biostatistics at a post-graduate level and Chinese language proficiency.)

Duties: Reviewing and updating food safety standards with reference to international and national standards and guidelines; liaising with the Food and Health Bureau and government departments concerned on proposed legislative amendments in relation to food safety standards; organizing and conducting public consultation and technical meetings with the trade and other stakeholders pertaining to food standards setting; and enhancing liaison with international and national food authorities, government departments and food industry on food standards setting.

Terms of Appointment: Successful candidates will be appointed on non-civil service contract terms for a period of three years.

Gratuity: A gratuity up to about HK $400,968/US $51,400 may be granted upon satisfactory completion of the contract with consistently high standard of performance and conduct. The amount of gratuity will be the sum which, when added together with the Government's contribution to the Mandatory Provident Fund Scheme, equals to 15% of the total basic salary drawn during the contract period. (Note: At current rates, salaries tax does not exceed 15% of gross income.)

Fringe Benefits: In addition to rest days, statutory holidays (or substituted holidays), maternity leave and sickness allowance granted in accordance with the provisions in the Employment Ordinance, 14 days of paid annual leave will be granted under a continuous contract of employment for every 12 months.

How to Apply: Application forms [G.F. 340 (Rev. 3/2008)] are obtainable from any Public Enquiry Service Centre of District Office, Home Affairs Department or any Job Centres of the Employment Services Division, Labour Department. The said form can also be downloaded from the Civil Service Bureau's Internet web site (http://www.csb.gov.hk). Completed forms with copies of relevant documents including certificates and transcripts of studies should be sent by mail or by hand to the specified address below **on or before 21 November 2008**. Online application can also be made through the Civil Service Bureau's website (http://www.csb.gov.hk). Candidates who apply online should submit the above documents by mail or by hand to the specified address below **on or before 21 November 2008**. Please clearly mark on the envelope "Application for Food Safety Officer". Applications which are incomplete or without such documents will not be considered. Candidates who are selected for interview will normally receive an invitation in about four to eight weeks after the closing date for application. Those who are not invited for interview may assume that their applications are unsuccessful.

Address and Enquiry Tel.: Executive Officer (Appointments 2) 1, Appointments Section, Food and Environmental Hygiene Department, 44/F., Queensway Government Offices, 66 Queensway, Hong Kong (Fax: (852) 2869 0015). For enquiries, please call (852) 2867 5044 or e-mail to susansslau@fehd.gov.hk.

Closing Date for Application: 21 November 2008.

General Notes:

(a) Non-civil service vacancies are not posts on the civil service establishment. Candidates appointed are not on civil service terms of appointment and conditions of service. Candidates appointed are not civil servants and will not be eligible for posting, promotion or transfer to any posts in the Civil Service.

(b) Permanent or non-permanent residents of the HKSAR will both be considered for this post. Persons who are not permanent residents of the HKSAR will be appointed only when no suitable and qualified candidates who are permanent residents of the HKSAR are available.

(c) The entry pay, terms of appointment and conditions of service to be offered are subject to the provisions prevailing at the time the offer of appointment is made.

(d) It is Government policy to place people with a disability in appropriate jobs wherever possible. If a disabled candidate meets the entry requirements, he/she will be invited to attend the selection interview without being subject to any further shortlisting criteria.

(e) Holders of academic qualifications other than those obtained from Hong Kong institutions/Hong Kong Examinations and Assessment Authority may also apply but their qualifications will be subject to assessments on equivalence with the required entry qualifications. They should submit copies of their official transcripts and certificates by mail to the above specified address, by fax to (852) 2869 0015 or by e-mail to susansslau@fehd.gov.hk.

(f) Non-civil service vacancies information contained in this column is also available on the following Internet web sites: http://www.gov.hk of the GovHK and http://www.fehd.gov.hk of the Food and Environmental Hygiene Department.

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Please specify: ❑ Home ❑ Work

City _____ State or Province _____

Postal Code/Zip + 4 _____ Country _____

Telephone # _____ Fax # _____

E-Mail _____

❑ IAFP occasionally provides Members' addresses (excluding phone and E-mail) to vendors supplying products and services for the food safety industry. If you prefer NOT to be included in these lists, please check the box.

MEMBERSHIPS		US	Canada/Mexico	International
❑ **IAFP Membership** (Member dues are based on a 12-month period and includes the *IAFP Report*)		**$ 50.00**	**$ 50.00**	**$ 50.00**
Optional Benefits:				
❑ *Food Protection Trends*	Add	$ 60.00	$ 75.00	$ 90.00
❑ *Journal of Food Protection*	Add	$150.00	$170.00	$200.00
❑ *Journal of Food Protection* Online	Add	$ 36.00	$ 36.00	$ 36.00
❑ All Optional Benefits – ***BEST VALUE!***	Add	$200.00	$235.00	$280.00
❑ **Student Membership** (Full-time student verification required)		**$ 25.00**	**$ 25.00**	**$ 25.00**
Optional Benefits:				
❑ Student Membership with *FPT*	Add	$ 30.00	$ 45.00	$ 60.00
❑ Student Membership with *JFP*	Add	$ 75.00	$ 95.00	$125.00
❑ Student Membership with *JFP* Online	Add	$ 18.00	$ 18.00	$ 18.00
❑ All Optional Benefits – ***BEST VALUE!***	Add	$100.00	$135.00	$180.00

SUSTAINING MEMBERSHIPS

Recognition for your organization and many other benefits.

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❑ **SILVER**	$2,500.00
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Contact the IAFP office for more information on the Sustaining Membership Program.

Payment must be enclosed for order to be processed • US FUNDS on US BANK

❑ Check Enclosed ❑ Visa ❑ Mastercard ❑ American Express ❑ Discover **TOTAL MEMBERSHIP PAYMENT $** _____

CREDIT CARD # _____

CARD ID #* _____ EXP. DATE _____

SIGNATURE _____

*Visa, Mastercard and Discover: See 3-digit Card ID number on the back of the card after account number.
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All prices include shipping and handling
Prices effective through August 31, 2009

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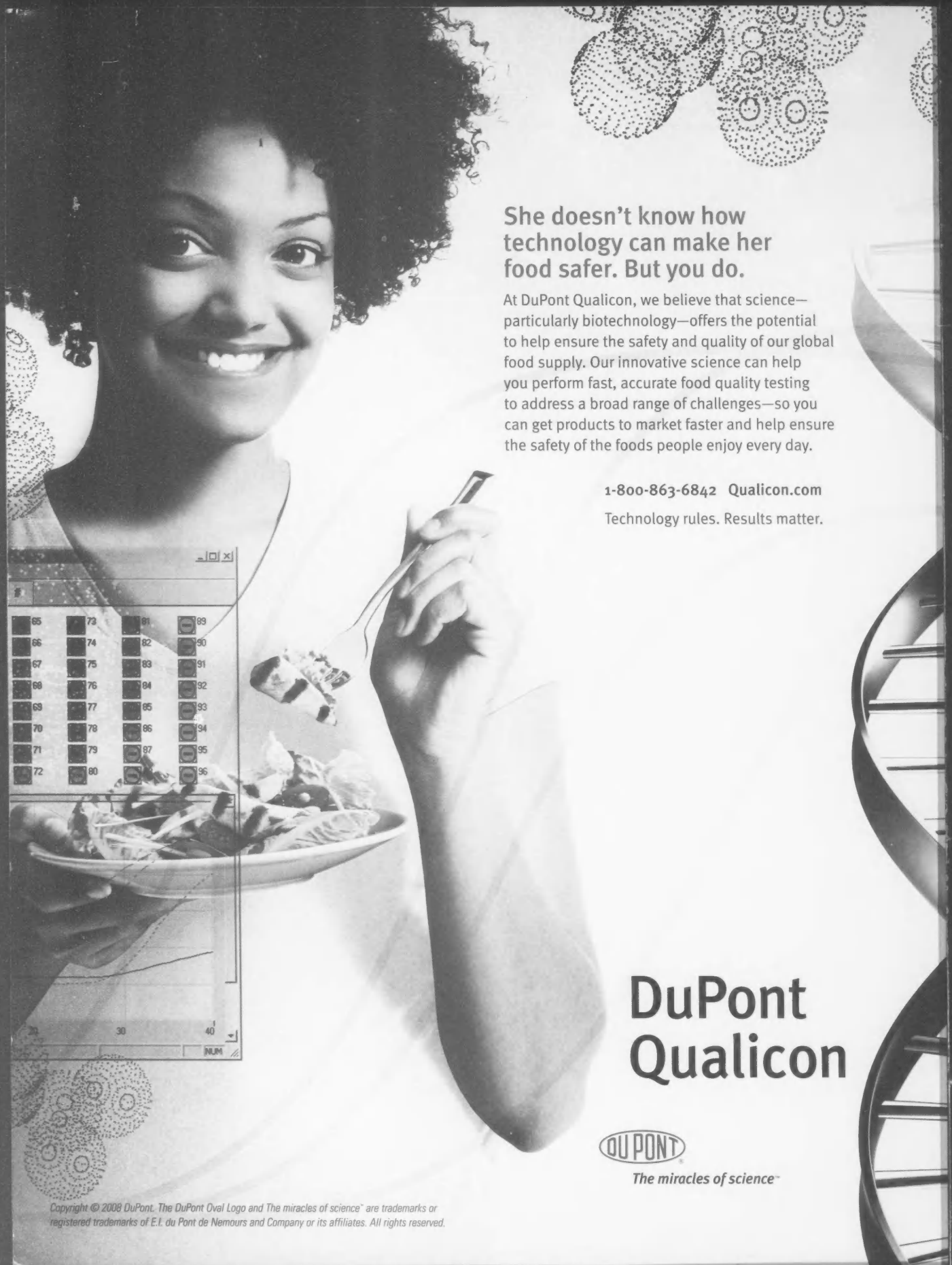
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