



## DEPARTMENT OF FOOD SCIENCE

2009 ANNUAL NEWSLETTER

**PURDUE**  
UNIVERSITY



DISCOVERY • LEARNING • ENGAGEMENT



## Note from the Department Head



Purdue Food Science has had another great year! A highlight was celebrating the 25<sup>th</sup> year anniversary of the Food Science Department and the 10<sup>th</sup> year anniversary of the Food Science Building. (We are still proud to call it our “new” building!) You’ll read more in this newsletter about the celebration and other exciting news about the past year.

Many of our faculty, staff, and current students, along with some of our alumni, were recognized over the past year with awards highlighted in the newsletter. One of the most exciting things we celebrate now is that both our College Bowl and Product Development Teams have qualified for the finals at the Institute of Food Technologists Annual Meeting in Anaheim, CA in June. If you attend the meeting, we hope you help cheer on our student teams.

Our undergraduate and graduate students continue to benefit from our industry partnerships. Our industry partners have been guest speakers in many of our classes, and helped our students practice their interviewing skills. Likewise, our students organized an excellent symposium focused on sustainability that benefited many of our industry partners.

Research and outreach efforts of a number of our faculty have been recognized in the media this past year. We continue work to strengthen our research signature areas: Chemistry Structure & Function; Food Safety & Microbiology; Food Processing & Technology Development; and Foods for Health. We know that graduate students are the lifeline for research progress in these areas. A focus for our Department this next year, as it is at the College level, is creating a more sustainable pool of funds to support these graduate students.

We invite you to keep up with department news throughout the year by visiting our newly designed website. Keep in touch!

A handwritten signature in black ink that reads "S. Suzanne Nielsen". The signature is written in a cursive, flowing style.

*Dr. S. Suzanne Nielsen, Head*



### ***Our Vision***

Our vision is to be recognized worldwide as the leading food science department.

### ***Our Mission***

Our mission is to develop human resources and to expand and transfer knowledge for continuous improvement of the safety, quality, and value of food products.

### ***E-news Keeps You Informed***

So that the Department can better keep you informed of events and happenings within the Department, please e-mail your current contact information to [foodsci@purdue.edu](mailto:foodsci@purdue.edu) and check our website [www.foodsci.purdue.edu](http://www.foodsci.purdue.edu).

### ***Our Newsletter***

The annual newsletter gives you only a glimpse of what's happening in the Department of Food Science at Purdue University. Though we'd like to mention all of our research and activities, there just isn't space for it all. For more information, comments or suggestions, please use the contact information below.

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It is the policy of the Purdue University Department of Food Science that all persons shall have equal opportunity and access to the programs and facilities without regard to race, color, sex, religion, national origin, age, marital status, parental status, sexual orientation, or disability. This material may be available in alternative formats. Purdue University is an Affirmative Action institution.

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# Department News

## Outstanding Food Science Awards



*Left to Right: Gary Chenoweth, Mona Baker Wolf, Kathleen Berry, Martin Berry*

In October 2008, the Department hosted four individuals selected to receive the Outstanding Food Science Award. This award was developed in 2000 to "recognize individuals who have significantly impacted the food science profession and the Department of Food Science at Purdue University." Records of the recipients must show evidence of excellence in industry, academia, government, or other endeavors related to food science.

Recipients of the 2008 awards were:

**Kathleen S. Berry** coordinates global sales and marketing for Pall Corporation, the world's leading filtration company. From 1983-1988, Kathleen worked in the Department of Food Science as the Pilot Plant Manager and Instructor of Food Science and Quality Control courses. She also participated in and helped develop the first five Aseptic Workshops given by the Department, and was involved on the Undergraduate Curriculum Committee.

**Martin F. Berry** is Senior Principal Research Engineer for Ocean Spray Cranberries, Inc., responsible for new beverage process technology and innovation. Martin has had numerous achievements throughout his career in industry. He developed the nutritional profile, formulation and process for Cycle™ Pet Foods, the first widely commercialized product line recognizing the different nutritional requirements for canines. Most recently he pioneered the development of White Cranberry Juice, recognized as the most unique juice industry innovation in the last decade. He holds patents in extrusion and equipment development. At Purdue University, Martin studied under Professor Philip E. Nelson doing research on aseptic technology, and earned a Ph.D. in 1988 in Food Science.

**Gary E. Chenoweth**, Vice President - Food Processor Sales for Bunge Oils, is responsible for the marketing, sales, and profit and loss of all bulk soybean and canola oils sold in the U.S. Since 2003, Gary has worked for Bunge Oils,

which provides food processors and food service companies with a full portfolio of edible oils, including bulk and packaged oils, shortenings and salad dressings. After graduating from Purdue in 1974 with a B.S. in Food Science, Gary began his career as a technical service representative with Durkee Foods, known worldwide for spices and seasonings. In 1980, Gary's career in processed oils began when he became a sales representative for Central Soya. Gary rose through the ranks with Central Soya and eventually served as Vice President of Refined Oils from 1999 to 2002.

**Mona Baker Wolf** founded the company The Wolf Group, an independent sensory evaluation consulting and research firm in 1988 in Cincinnati, Ohio. Since then, The Wolf Group has worked with clients across the United States, including Proctor and Gamble, Burger King, Wendy's, Sara Lee Foods, Ocean Spray, Chiquita, Rich SeaPak, Givaudan, and ConAgra. Mona earned a B.S. in Food Science from Purdue University in 1972. Before starting The Wolf Group, Mona gained professional expertise as a sensory scientist for the Kroger Company in Cincinnati, Ohio, and at R.T. French Company in Rochester, New York. Mona was named The Small Business Person of 2007 for the state of Ohio. The Wolf Group was selected in 2006 as The Best Place to Work for a small company in Cincinnati.



### Food Science Club Activities at Spring Fest

The Food Science Club members contributed greatly to the Food Science effort at the annual Spring Fest -- selling cotton candy (shown here), doing a taste test of beverages (for which the color did not match the flavor), and sealing cans to make banks.

## Food Science Department Celebrates 25<sup>th</sup> Anniversary

The Industrial Associate members joined Food Science faculty to kick off the celebration of the 25<sup>th</sup> anniversary at a dinner on October 8, 2008 where several key Purdue administrators reflected on the beginning of the Department. Vic Lechtenberg, Vice Provost of Engagement, shared his memories and involvement in helping make Phil Nelson's goal of creating a Food Science Building come true. Provost, Randy Woodson, and Dean of Agriculture, Jay Akridge, shared their roles and interactions with the Food Science Department through the years.

The next day, the Industrial Associates as well as many alumni and friends of the Department attended the Food Science Symposium, "Remembering the Past and Looking to the Future." Food Science Professor Rich Linton talked about how food safety has changed over the past 25 years. Associate Professor Mario Ferruzzi shared his views on foods for health and the need for the convergence of food and nutrition sciences.

Three food industry leaders focused on current trends in the industry and gave their perspectives on what the future holds.

The three industry speakers were:

**Elaine Wedral**, a Purdue alum with 36 years of food industry experience. Wedral is a Fellow of the Institute of Food Technologists and recently retired as head of Nestle's American research and development branch.

**Mary Wagner**, chief technology officer of Mars Botanical, a division of Mars, Inc. She helps lead research and development of food products containing flavanols, naturally occurring plant compounds with potential health benefits. Wagner has 25 years of industry experience, having worked for companies like E&J Gallo Winery, Taco Bell, General Mills, and Unilever.

**Neil Cracknell**, president of several divisions within Sensient Technologies Corp., one of the leading global producers of flavors and fragrances, based in Indianapolis. Prior to his career with Sensient, Cracknell worked in the financial and pharmaceutical industries.

### Hoosier Social at Annual IFT Meeting

Monday, June 8, 2009  
5:30-7:30 p.m.  
Hilton Anaheim Hotel  
San Simeon Room

## Distinguished Ag Alumni Award



**Dr. Glenn A. Armstrong**, a 1983 Ph.D. graduate in Food Science, received the 2009 Distinguished Agricultural Alumni (DAA) Award from the College of Agriculture. The DAA Award recognizes individuals for their "outstanding accomplishments and significant contributions to their profession and society." Dr. Armstrong is Vice President of Corporate and Business Innovations for Alticor, Inc., the parent company of Amway in Ada, Michigan. In his current position, Dr. Armstrong is working on re-vamping a 50-year-old business model to make Amway's products and sales force relevant to today's consumers. During his visit to campus, Dr. Armstrong told Food Science students that his education from Purdue allowed him to continue to grow in his career. Even if he didn't have the knowledge about a certain area of a business, he knew he could learn it and build a great team. He said, "I wear my passion for life on my sleeve, and when I hire people, I look for what intrigues or excites them. Job-related skills can be taught, but passion must be part of the soul."



### Phil Nelson Honored at Anniversary Celebration

Dr. Phil Nelson received a special gift from the Department at the 25-year anniversary celebration, to recognize his contributions and career. The unique gift was crafted by Anderson Tool & Eng. Co, Inc., an Industrial Associate member company.



# Department News - Faculty and Staff

## Bhunia Wins IFT Research and Development Award



Dr. Arun Bhunia

Dr. Arun Bhunia has been selected to receive the Institute of Food Technologists (IFT) Research and Development Award for 2009. He will receive this award at the annual IFT meeting in June 2009. The award recognizes an IFT member (or team) who has made a recent, significant research and development contribution to the understanding of food science, food technology, or nutrition.

Dr. Bhunia has advanced the profession through his research focused on reducing the risk of foodborne illnesses by developing novel rapid detection methods for pathogens. His work on the application of laser light for direct detection and identification of bacterial colonies growing on a Petri dish without any antibody or nucleic acid probe is a simple, easy-to-use technique that will revolutionize bacterial identification. In addition, his research team pioneered the development of an impedance-based micro fluidic biochip, mammalian cell-based sensor, and fiber-optic based biosensor for sensitive detection of *Listeria monocytogenes* and other foodborne pathogens.

## Board on Agriculture and Natural Resources Selects Nelson

Dr. Philip Nelson is one of only 23 members selected nationwide to serve on the Board on Agriculture and Natural Resources (BANR). This is the major program unit of the National Research Council (NRC) responsible for organizing and overseeing studies on issues of agricultural production and related matters of natural resource development.

## Nelson Keynote Speaker at Global Summit



Dr. Philip Nelson

Dr. Philip Nelson, former Food Science Department Head and 2007 World Food Prize Laureate, served as the keynote speaker at the 6<sup>th</sup> Global Knowledge Millennium Summit "BIO NANO: The Global War on Hunger" in February 2009 in New Delhi, India. The Associated Chambers of Commerce and Industry in India (ASSOCHAM) started the summits to address global agricultural issues, particularly those faced by developing countries.

## Hamaker Receives AACC Goeddes Award

The American Association of Cereal Chemists (AACC) International awarded Bruce Hamaker one of its highest honors, the William F. Goeddes Award. This award is given in recognition of the leadership and dedication of the late William F. Goeddes who served AACC International long and unselfishly as president, vice-president, and Cereal Chemistry editor-in-chief. In 1961, the Goeddes award was created to honor an individual member and to emphasize the importance of his or her contributions to the work of the Association.

## Mauer Selected as Faculty Scholar

Dr. Lisa Mauer was selected in spring 2009 as a Purdue University Faculty Scholar. The University Faculty Scholar program was started 10 years ago to help recognize the best and brightest of Purdue's faculty. Faculty eligibility is limited to Associate and Full Professors within five years of their promotion. The appointment is for five years, and provides funds for programmatic support and salary supplement. Dr. Mauer joins other Food Science faculty who were selected previously for this honor: Drs. Watkins, Hamaker, Linton and Bhunia.

## Awards



### Food Science Department Outstanding Service Award

**Sheri Fell, Business Assistant**

Sheri received the 6<sup>th</sup> annual Outstanding Service Award for administrative, professional, clerical, and service staff. The award, initiated by the Staff Management Team, recognizes and encourages exceptional contributions, performance, accomplishments, and customer service by staff members. Sheri was recognized for her contributions, leadership and initiative in the Food Science Business Office.



### Food Science Outstanding Undergraduate Teaching Award

**Dr. David Nivens**  
Assistant Professor



### Food Science and College of Agriculture Outstanding Counselor Awards

**Dr. Lisa Mauer**  
Associate Professor



### Food Science Outstanding Service to Students Award

**Gwen Shoemaker**  
Placement Coordinator



### Food Science Outstanding Graduate Educator Award

**Dr. Bruce Hamaker**  
Professor

## Promotions

### » Staff Advancement

The following Food Science staff members will advance in rank with the College of Agriculture, effective in Summer 2009:

**Gwen Shoemaker**, Placement Coordinator, International Student Services Liaison, and Clerical Staff Supervisor

**Anton Terekhov**, Research Analytical Chemist, Whistler Center for Carbohydrate Research

## Years of Service

30 Years	Maribeth Cousin Steve Gauger Kiya Smith
10 Years	Malissa Allen Arun Bhunia Mike Budzik David Petros
5 Years	Mitzi Barnett Carlos Corvalan

# Department News - Faculty and Staff

## New Faculty



**Dr. Tameshia  
Ballard**

Dr. Tameshia Ballard joined us as a new assistant professor in August 2008. She is originally from Wilmington, NC. Dr. Ballard received her Ph.D. and M.S. degrees in Biological Systems Engineering from Virginia Polytechnic Institute and State University in 2008 and 2003, respectively. Dr. Ballard obtained a B.S. degree in Biological Engineering from North Carolina State University in 2001. She has

a primary teaching and secondary research appointment at Purdue. This past year, she taught the lab portions of Food Processing I and II in addition to an Introductory Food Processing elective course. She will be assuming complete responsibility for Food Processing II next fall. Dr. Ballard's current areas of research interest include the development of novel methods for the extraction of high value natural compounds (mainly phenolic antioxidants) from plant waste material for utilization as natural food preservatives and functional food ingredients. Extraction methods of interest include microwave-assisted, supercritical fluid and ultrasound-assisted extraction.



**Dr. Andrea  
Liceaga**

Dr. Andrea Liceaga joins Purdue Food Science as a food chemist for a teaching and research position. She received her B.S. in Biochemical Engineering from the Instituto Tecnológico de Estudios Superiores de

Monterrey in Mexico, and her M.S. and Ph.D. degrees in Food Science from the University of British Columbia in Canada. While completing her Ph.D. work, she served as an Adjunct Faculty Lecturer at the University of British Columbia, developing and teaching various Food Science courses. Dr. Liceaga's research interests include antifreeze proteins and fish muscle proteins. At Purdue, Dr. Liceaga will develop a research program and teach various undergraduate and graduate courses.

## New Staff



**Laurie  
Lambert  
Swift**

Laurie Lambert Swift joined the Department of Food Science in June 2008 as Administrative Director. Her primary responsibilities are alumni relations, to serve as the corporate liaison, and to administer the Industrial Associates Program. Previously, she had worked in the College of Agriculture as the Events and Ag Ambassador Program Coordinator for the Office of the Dean, and as the Director of Undergraduate Student Recruiting for Purdue's College of Science.



**Jean Jensen**

Jean Jensen joined the Department of Food Science in April 2009 as a Research Scientist and Lab Manager. She received her B.S. in Biochemistry from Purdue and has 15 plus years of experience in the areas of research and development, analytical chemistry, quality control and assurance, and engineering in private industry.



### Leadership & Professional Development Seminar Series

Eighteen graduate students and post docs participated in the General Mills Leadership & Professional Development Seminar Series in Spring 2009.



## Dr. Maribeth Cousin Retires after 30 Years



Dr. Maribeth  
Cousin

Dr. Maribeth Cousin retired from Purdue University in February 2009 after 30 years of service, and accepted a position with a private company in her home state of Wisconsin. Dr. Cousin was best known at Purdue for her teaching and counseling of undergraduate students. She taught undergraduate Food Microbiology lecture and laboratory courses and Food Plant Sanitation, and graduate-level courses in Food Fermentations and Scientific Writing in Food Science. In 2008, Dr. Cousin received the David C. Pfendler Outstanding Undergraduate Counselor Award for the College of Agriculture.

Dr. Cousin's research focus at Purdue was on rapid detection of molds

in foods. She worked with the International Commission on Food Mycology to help standardize the methods for the enumeration and detection of molds and yeasts in foods. She regularly taught food microbiology in workshops for food industry employees on the Purdue campus, at industry locations throughout the U.S., and at institutions around the world.

Dr. Cousin was named a Fellow of the American Academy of Microbiology in 1994 and a Fellow of the Institute of Food Technologists (IFT) in 2004. She has been very active in both of these organizations, and well known in the Food Science Department at Purdue for coaching the student team for the IFT College Bowl competition.

We thank Dr. Cousin for her years of service to the Food Science program at Purdue, and wish her the best in her new career path!

## Nielsen Receives Schleman Award

In April 2009, Suzanne Nielsen received the Helen B. Schleman Award, which is presented to a deserving faculty member or administrator for her/his contributions to Purdue, especially in the promotion and advancement of women students and women's issues. In 25 years at Purdue, Nielsen has been a role model and mentor for female students, including 25 of the 32 graduate students who have been supported by the \$3 million in research funding she has secured. She is an honored teacher and author of more than 90 peer-reviewed manuscripts and six books. She also was the principal organizer of Women Faculty in the College of Agriculture from 1992 to 2002, addressing concerns over day care, campus safety, promotion and tenure, and salary equity. Nielsen received a medallion and a \$1,500 award.

This award was started by the class of 1968 in honor of Dean Helen B. Schleman, who retired that year. Helen B. Schleman began her Purdue career in 1934 as director of the university's first women's residence hall. After a stint in the U.S. Coast Guard Reserves during World War II, she returned to the West Lafayette campus as Dean of Women from 1947 to 1968. Schleman Hall on the Purdue campus is named for her.

## Nelson Receives Harris Award from OSU

Phil Nelson, the Scholle Chair Professor in Food Processing, was recently named as the recipient of the 2009 Harris Award for Excellence in Food Science and Technology from The Ohio State University. The award is given every year to an individual who shows excellence and contributions to

the discipline of food science. Nelson was chosen for the award because of his accomplishments in food science, including being the winner of the 2007 World Food Prize, the first department head in food science when the department was first created, and co-authoring three textbooks.



### Non-Newtonian Fluid a Big Hit at Spring Fest

Food Science graduate student Melanie Wyche showed children at Spring Fest how to "play" with a non-Newtonian fluid made from cornstarch. Earlier in the day, Purdue's President, Dr. France Cordova, stopped by this popular display!

# Department News: Alumni Entrepreneurs

**“A Taste of Boiler Spirit” By Melanie A. Hahn**



*Brett Canaday (A'96 Food Science) and Tia Agnew (A'96). Photo by Purdue Alumni/Chris Bucher*

**By assisting an alum, the Food Science Department and the Indiana Wine Grape Team worked toward one of the University's goals:**

*“Purdue is dedicated to linking the university's assets to entrepreneurship activities and societal economic growth.”*

- Purdue University Strategic Plan 2008-2014

## **An old tradition sees a new day**

After pursuing separate careers and enduring a long-distance relationship for several years, Tia Agnew (A'96) and Brett Canaday (A'96 Food Science) finally found themselves back in Indiana at the same time. Without further adieu, they got married and started their two hobbies — beekeeping and winemaking.

The two hobbies soon melded together when the couple used extra honey from their bees to replace sugar in their wine's fermentation process. After further research, they discovered that

this method of wine making had been around awhile.

“Brett told me, ‘We're making mead!’” Agnew (who kept her maiden name) says. “And I said, ‘Hey, I remember Beowulf!’” (Anyone who has read this Old English epic poem will remember the “mead halls,” named after the warriors' favorite fermented honey drink.)

The couple's passion for making the perfect mead soon got a bit out of hand.

“At one point, I had 25 carboy containers bubbling away in my bedroom,” Agnew

recalls. "We started to wonder if maybe this could be more than just a hobby."

After some soul searching and further research, with the help of Purdue's Wine Grape Team where they sent samples for quality analysis and sensory testing, the two decided to turn their hobby into a business, and in 2004, New Day Meadery was born. Located near Canaday's family farm, New Day is just a few blocks south of downtown Elwood, Indiana.

The meadery's offerings are not restricted to the traditional sweet, golden drink that most people think of as mead.

"Our goal is to make a full line of different meads, from completely dry to sweet varieties," Agnew says. "It's definitely a niche in the winemaking industry — most wineries might produce a single mead, but most don't offer a whole line." The couple produced their first vintage in 2006, with six varieties featuring fruit such as raspberries, peaches, and blueberries. "We have since learned that there are more than 60 meaderies like ours in the United States," Agnew says, "so we know we're not totally crazy."

### **Wine Grape Team**

This team pulls together members from Purdue's Department of Food Science and the Department of Horticulture to help in all facets of the industry, including winemaking, growing, quality testing, and marketing. Services include lectures, workshops, direct consulting, and even teaching a wine appreciation class at Purdue to create more customer awareness. All of these resources help

industry newcomers and longtime experts alike.

Prof. Bruce Bordelon, viticulture, serves on the team to help growers like Mallow Run plant the right grapes and address their particular issues. "Purdue's grape expertise is a big help," says John Richardson (EDU '61), owner of Mallow Run Winery & Vineyard. "If you have something wrong with a vine, you can take a photo of it and send it to Purdue and they'll tell you what's wrong and how to fix it."

Prof. Christian Butzke, enology, serves on Purdue's Wine Grape Team to assist with the entire process of winemaking, offering tips on fermentation, recipe ratios, and many other techniques. In addition, Butzke will also help a new winery set up equipment.

Jill Blume (LA'90), enology associate, works with Butzke to do quality analyses. Evaluations such as those performed for New Day Meadery involve not only lab testing but also sensory analyses — taste, smell, etc.

Once the right ingredients are in the bottle, the Wine Grape Team helps get the right customers into the tasting room. Jeanette Merritt (A'97), marketing specialist, advises individual wineries on all types of marketing functions, such as event planning, writing news releases, and many others.

Merritt also helps the Wine Grape Team partner with the Indiana Wine Grape Council to market Indiana's wine industry as a whole, improving success for all its members.

Most of that challenge, she says, is in changing people's perceptions.

"A lot of people still think the only 'good' wine comes from Italy, France, or California," she says. "But Indiana has 35 wineries, and they produce a lot of good wine."

To educate the public about Indiana wine, Wine Grape Team and the Indiana Wine Grape Council promote networking and hold events such as the Indy International Wine Competition, which is open to entrants from all over the world (see sidebar).

If numbers mean anything, their efforts are paying off. According to Merritt, Indiana wineries' combined production totaled more than 804,000 gallons in 2007. That's more than 20 times the 38,000–40,000 gallons produced in 1989, when the two organizations began their roles.

And it's still rising. "By 2010, I predict production will hit the one million gallons," Merritt says.

*"A lot of people still think the only 'good' wine comes from Italy, France, or California," [Jeanette Merritt] says. "But Indiana has 35 wineries, and they produce a lot of good wine."*



# Engagement

## New Center to Assist Food Processors with Environmental Sustainability

Dr. Kevin Keener, Dr. Mark Morgan, and Dr. Martin Okos have received funding from the Environmental Protection Agency in the amount of \$533,914 to develop a Food Processing Environmental Assistance Center (FPEAC) at Purdue University. The goal of this center is to become a primary provider of environmental information, resources and training to assist small and medium sized food processors in achieving environmental compliance. FPEAC activities will include development of a web portal with fact sheets and related educational materials on environmental regulations and compliance, development and delivery of environmental workshops at professional technical meetings, and on-site environmental audits. These materials and activities will be developed with input and support from the food industry and regulatory agencies represented on the FPEAC Advisory Board. Environmental information and training will be provided through the FPEAC website, fact sheets, newsletters, workshops,

environmental audits, and customized environmental training programs.

The FPEAC is committed to developing and promoting innovative strategies that achieve better environmental results, reduce costs, and promote environmental stewardship throughout the Food Processing Industry. Please visit the Food Processing Environmental Assistance Center at [www.fpeac.org](http://www.fpeac.org) for more information. For questions or comments concerning the Food Processing Environmental Assistance Center contact the FPEAC Coordinator, Angie Honeywell, at 765-494-7997 or [ahoneywe@purdue.edu](mailto:ahoneywe@purdue.edu).

*“The FPEAC is committed to developing and promoting innovative strategies...”*

## FDA Selects Purdue as Workshop Site

FDA workshops join the list of other workshops offered at Purdue. The FDA has chosen the Food Science Department to conduct food processing training programs for their inspectors. Five 5-day workshops

will be held this coming year, and 20 more workshops will be held over the next three years. Each workshop will train 20-25 inspectors using the Department's Pilot Plant and classrooms.

## Pilot Plant Acquires Microwave Generator



*Left to Right: Dr. Fernanda San Martin, Steve Smith and Ben Paxson*

Industrial Microwave Systems, LLC of Morrisville, North Carolina has loaned the Food Science Pilot Plant a 100-Kilowatt microwave generator valued at \$320,000. The system is designed to heat food products pumped continuously through a 1½ inch sanitary tube at 2-5 gallons per minute. The research focus with the unit will be on aseptically processing and packaging particulate food products. Initial trials have been performed on strawberries and tomatoes. The finished quality (color, integrity and flavor) has been very well accepted. Companies interested in conducting projects using the microwave system should contact Steve Smith, Pilot Plant Manager, 765-494-7706, [smithrs@purdue.edu](mailto:smithrs@purdue.edu).



### Zamorano Students

Five senior-level students from Zamorano University in Honduras spent three months in the research laboratories of Food Science faculty. This is the 11<sup>th</sup> year of having Zamorano students do internships at Purdue Food Science.

## “Retail Food Safety Programs in Indiana” Team Recognized



*State-wide Leadership Team: Scott Gilliam (ISDH), John Livengood (RHAI), Richard Linton (PU) and David McSwane (IUPUI)*

Dr. Richard Linton’s, “Retail Food Safety Programs in Indiana” team was recognized in October 2008 with the Purdue University Cooperative Extension Service Association (PUCESA) Team Award. The award recognized their innovative Extension programming, and excellence in Extension leadership, program development and public education outreach. The team included over 85 members including Purdue Extension Educators from across the state, the Indiana Restaurant and Hospitality Association, the Indiana Retail Grocers Association, the Indiana State Department of Health, county health departments, and the Consumer and Family Sciences Department at Purdue. Within our Food Science Department, Dr. Linton, Kiya Smith, and Kevin Hamstra were recognized for their leadership roles.

Indiana retail food managers (RFMs), including those that work in foodservice and supermarkets, are

required to pass a nationally recognized RFMs certification food safety exam every five years. This impacts over 20,000 Indiana businesses. To meet Indiana needs, Dr. Linton developed a novel approach and team to develop and deliver Extension-based programs. Linton coordinated food safety train-the-trainer programs for Extension Educators and state/local health departments, who in turn, delivered public education to RFM’s statewide. “*Food Safety Day*” (2-hour) was developed for new employees, “*ServSafe*” (16-hour) was developed for food managers, and *Food Safety Recertification* was targeted for those needing to be certified after the 5-year expiration. Since 1998, 486 RFM certification programs have been offered (~ 1 program/week) to over 13,700 Indiana citizens. Over 140 people have been involved in helping teach the program, including Extension Educators in 71 of the 92 Indiana counties.

## Sustainability in the Food Industry Symposium

The 32<sup>nd</sup> annual Food Science Club Symposium was held on April 1, 2009 with the topic, “Sustainability in the Food Industry.” Symposium speakers included Ken Laverdure, Packaging Research & Development Sustainability & Advanced Materials Group, Frito Lay; Dan Pettit, Research, Development & Quality Sustainability Division, Kraft Foods; Gary Reding, President, Langeland Farms, Inc.; and Otto Doering, Professor, Purdue Agricultural Economics. In addition to the Industrial Associates members who attended the symposium as part of their spring meeting, roughly 100 Purdue faculty, staff, and students attended the symposium. Following the symposium, the speakers joined the Industrial Associate members, and food science faculty, staff, and students for dinner and a poster session presented by the Indiana Section of the Institute of Food Technologists. Drs. Lisa Mauer and Kee-Hong Kim coordinated the poster session. Aaron Pleitner, a senior in Food Science and symposium organizer, with the help from other Food Science Club members (Marie Loewen, Willis Yu, Josh Beedle, Kristin Burkenpas, Anne Hamilton, Hayley Steinberger, Alyssa Beatty, Katrina Roseland, Jessica Lee and Allie Clemons), coordinated and hosted the symposium, with assistance from Dr. Mario Ferruzzi, Gwen Shoemaker, and Laurie Swift.



### Graduate Students Preparing for Spring Fest

Ashley Hiatt and Melanie Goering were among the graduate students who did a “practice run” with the donut machine in the Food Science Pilot Plant, to prepare for the Food Science Graduate Student Association selling donuts at Spring Fest.



# Discovery

## CFSE Builds Collaboration with USDA-ARS Scientists and with China



*A group photograph with our new colleagues and friends from China.*

Since the inception of the Center for Food Safety Engineering (CFSE) at Purdue, there has been a strong emphasis on interaction and collaboration with scientists from the USDA-ARS Eastern Regional Research Center (ERRC) in Philadelphia, PA. This collaboration has been fostered through interaction between scientists during annual Purdue-CFSE/ARS-ERRC research planning workshops, and annual participation by Purdue-CFSE and ARS-ERRC scientists in the Molecular Detection Symposium during the International Workshop on Rapid Methods and Automation in Microbiology at Kansas State University.

Drs. Andrew Gehring and Arun Bhunia are working on multiplexed antibody-based microarray for detection of pathogenic bacteria from food. Dr. Bhunia has developed and characterized a number of monoclonal antibodies against *Listeria*

*monocytogenes*, and Dr. Paoli has applied antibody phage display to select a single-chain antibody specific to *L. monocytogenes*.

More recently, Purdue-CFSE scientists were invited to participate in an ARS-FSIS (Food Safety Inspection Service) research planning workshop, aimed at identifying specific FSIS needs. In addition, ARS scientists have hosted Purdue students and post-doctoral fellows at ERRC who are conducting collaborative research. These collaborative research efforts have been presented at scientific meetings and have resulted in several publications in peer-reviewed journals.

Following meetings that CFSE and USDA-ARS scientists attended in China, plans are in place to work in the near future with scientists from Jiao-Tong University. A research group from China will be joining the annual CFSE meeting at Purdue this fall.

## Faculty in the News

Several faculty and their research were highlighted in the news this year. **Dr. Kevin Keener** partnered with Anderson Tool and Engineering Co. to build a prototype of a radiant fryer, which quickly produces foods that appear and taste identical to those that were fried, but unlike traditional fryers, uses no additional oil. Keener has also developed an in-bag ozonation method that creates ozone in packaged foods by using high-voltage coils to charge the gas inside sealed food packages, effectively killing any bacteria inside them.

**Dr. Arun Bhunia** developed an advancement in biochips using human cell receptors to quickly detect harmful bacteria in food. The tiny chips send a signal to a computer when harmful bacteria are present.

**Dr. Mario Ferruzzi** partnered with the North American Miller's Association and the National Corn Growers Association to research the health benefits of corn. The study found that carotenoids from milled corn products are highly bioaccessible. The consumption of carotenoid-containing foods is associated with decreased risk of several chronic diseases.

For details about these news articles and others, contact the Food Science Department or visit our website [www.foodsci.purdue.edu](http://www.foodsci.purdue.edu).



### Food Science Competition at National FFA Convention

Food Science faculty, students, and alums assisted with the Food Science Competition at the National FFA Convention in Indianapolis in October 2008. High school FFA members develop and packaged creative snack foods.



## Whistler Center for Carbohydrate Research Update



*Dr. Hamaker with Dr. Eric Bertoft (2008 Belfort Lecturer) and Dr. George John (guest speaker).*

The Whistler Center member companies met twice this year with the Center's faculty to obtain updates on research activities, and to give their input on research priorities from their industry perspective. Member companies continue to value the three-day shortcourse taught by the Center's multidisciplinary faculty. Approximately 80 shortcourse participants learned about carbohydrate chemistry, structure, and rheology, and attended advanced sessions on applications to processing, carbohydrates and nutrition, dietary fiber and colon health, and cutting-edge research areas, such as nanoscience.

On May 13, 2009, The Whistler Center had their yearly Industrial Board Meeting and Technical Conference. A highlight was the annual Belfort Lecture, presented by Dr. Glyn Phillips of the Phillips Hydrocolloid Centre in Wrexham, Wales. Dr. Phillips is internationally known for his work in

hydrocolloid chemistry, particularly on gum arabic structure and function. He is the founding editor of the Elsevier journal *Food Hydrocolloids*. Other speakers included Dr. Madhav Yadav, Research Chemist, USDA Eastern Regional Research Center; Dr. Devin Rose, USDA ARS NCAUR, Peoria; and Drs. Mario Ferruzzi and Fernanda San Martin, Food Science Department, Purdue University.

To continue to meet the needs of its member companies and industry, The Whistler Center has acquired some new equipment which has allowed expansion of their analytical services, particularly in the area of complex carbohydrate analysis.

*“Member companies continue to value the three-day shortcourse taught by the Center’s multidisciplinary faculty.”*

## Center for Integrated Food Manufacturing

The Center for Integrated Food Manufacturing (CIFM) has officially become certified as a European Hygienic Engineering and Design Group (EHEDG) equipment testing laboratory -- the only one in the United States. EHEDG is a consortium of equipment manufacturers, food industries, research institutes as well as public health authorities. The principal goal of EHEDG is the promotion of safe food by improving hygienic engineering and design in all aspects of food manufacturing. Equipment sold for use in Europe is required to be of hygienic design (EHEDG certification is one method of demonstrating hygienic design).

CIFM Director, Dr. Mark Morgan, has been appointed as the chair of the U.S. EHEDG Section. One of Dr. Morgan's goals in this new role is to serve as the liaison between EHEDG and 3-A Sanitary Standards, Inc. (3-A SSI). The 3-A group develops standards for hygienic equipment design and certifies equipment used in the United States. Companies that would like more information about hygienic design or need their equipment tested for cleanability and EHDGE certification can contact the CIFM, (765) 496-7224, cifmc@purdue.edu. A new resource website will be online soon, [www.ehedg.us](http://www.ehedg.us).



### Seniors in Product Development Class

Students in the capstone Food Science course, FS 443, have a new food product ready to taste! The course, developed and taught for over 30 years by Dr. Phil Nelson, was taught for the first time by Dr. Mario Ferruzzi.

# Student News

## Melt-A-Way Cupcake Liners Invention Reaps Cash from Corn Soy Competition



*Team members are Marci Colglazier, Victoria Horton, Anna Verseman and Erin Rosswurm. (Purdue Agricultural Communications photo/Tom Campbell)*

A student in the Department of Food Science, Marci Colglazier of Mitchell, Indiana (a Food Manufacturing Operations major), was part of the team that took top honors in the Student Soybean and Corn Innovation Contests in March 2009. The competition, sponsored by the Indiana Soybean Alliance and the Indiana Corn Marketing Council, focuses on teaching students how to become innovative entrepreneurs. This year's competition drew a record 33 students on 12 teams—nine of which competed in both corn and soybean categories, reported Dr. Bernie Tao, Indiana Soybean Alliance Professor of Soybean Utilization in

the Department of Agricultural and Biological Engineering at Purdue. The group worked with faculty advisor Lisa Mauer, Associate Professor of Food Science, to conceptualize, create and market the product.

The Melt-A-Way Cupcake Liners and TerraMat teams tied for top honors, earning \$17,500 each. TerraMat, a cork product that can be made of both soybeans and corn, was created by Jacob Smoker and Mohamad Abiad. Faculty advisor Osvaldo Campanella, Professor of Agricultural and Biological Engineering, assisted the TerraMat team.

## Graduate Teaching Assistant Honored

Kristin Burkholder, a Ph.D. student who works with Dr. Bhunia, was honored in April at the "Celebration of Graduate Student Teaching". This program

recognizes outstanding graduate student teaching assistants across the Purdue campus.

## Grand Cru Award for Academic Excellence

This Medal is a symbol of Food Science academic excellence. It was initiated by the Department in 1986 to demonstrate the commitment, dedication and success of those students attaining the consistency of a grade point average of at least 3.5 over the previous two successive semesters.

**Medal Initiates:** Katy Baughman, Martina Buchholz, Yeon Gee Chae, Morgan Goodall, Ahmad (Enosh) Kazem, Marie Loewen, Vindriani Lukito, Kartika Luntung, Jaclyn Piet, Tika The, Katie Veenhuizen, Sarah Verkamp and Xiomeng Wu. **2nd year Grand Cru Medal** (4 consecutive semesters): Jason Mueller and Anne Secor.

## Product Development Team in IFT Finals

Three of our undergraduate students, Marie Loewen, Jason Mueller, and Stacey Hirt, and their faculty advisor, Dr. Mario Ferruzzi, will be among the six teams in the finals of the competition at the Institute of Food Technologists (IFT) annual meeting. The Purdue entry, "Stack 'n Snack," is an interactive children's snack incorporating a serving of vegetables. Our sincere thanks to Kellogg's for sponsoring the team and helping with travel expenses.



### Freshmen Exposure to Product Development

The final class period in FS 162, Introduction to Food Processing, involves group presentations and sampling of new products developed. This popular elective class taken by many freshmen was taught in 2009 by Dr. Tameshia Ballard.

## Graduate Student Teaching Award

The Bernie J. Liska Outstanding Graduate Teaching Award for Fall semester 2008 went to **Jameson Auer**. She was a teaching assistant for Food Microbiology taught by Dr. Maribeth Cousin. Jameson is pursuing a Ph.D. degree with Dr. Bruce Applegate focusing on chlorine dioxide mechanism of bacterial inactivation.

For Spring semester 2009, **Andrew Neilson** was selected for the award. He was a teaching assistant for Food Analysis (FS 467) taught by Dr. Nielsen and Dr. Nivens. Andrew is pursuing a Ph.D. degree with Dr. Mario Ferruzzi focusing on digestive behavior and bioavailability of polyphenols.

Dr. Bernie Liska (1931-2002) began supporting the award in 1999 to recognize graduate students who excel in teaching. Liska joined the Purdue faculty in 1959 as an Assistant Professor of Food Science. He was named Director of the newly formed Food Science Institute in 1968 and became Director of the Agriculture Experiment Station in 1975. After serving as Dean of Agriculture from 1980-85, Liska moved to the Food Science Department and retired in 1997. Family and friends, along with matching gifts from the ExxonMobile Foundation, endowed the award to ensure that Dr. Liska's memory and his wishes continue.

## Food Science Graduate Student Association Activities

by Melanie Goering, President

The Food Science Graduate Student Association had a fun and productive year in 2008-2009. Officers for the year were: Melanie Goering – President; Lisa Lamothe – Secretary; Richa Vaid – Treasurer; Ashley Hiatt – Activities Chair; Jennifer Cholewinski – Continue Lecture Series Chair; Like Yan and Min-Wen Cheng – Co-Fundraising Chairs; Patti Tanner – Photographer; and Ok Kyung Koo – Purdue Graduate Student Government Senator. In addition to monthly lunches and annual traditions, the group enjoyed some new events. The year started with a spaghetti lunch in September to support the local Hunger Hike held in Lafayette. Dr. Phil Nelson was the honorary chairperson for the 2008 Hunger Hike. We were happy to support him and bring home a trophy for raising the second highest funds among Purdue groups. In November, the annual International

Dinner showcased the diversity of our department through – what else – food! Attendees brought a dish from their home country or state, which gave us the opportunity to try a wide variety of foods. February brought another successful Valentine's Day bake sale. Spring Fest in April was a great time to teach the public, especially young children, about what it means to be a food scientist. FSGSA and the Food Science Club worked together to host a tent full of activities, including making gummy worms from alginates, potting small herb plants, and the ever-popular non-Newtonian pool. Kids and adults alike also enjoyed trying fresh, homemade doughnuts. The FSCSA group thanks everyone who supported their efforts and activities throughout the year, and looks forward to another successful year in 2009-2010!

## College Bowl Team Competing in IFT Finals



Congratulations to the Food Science College Bowl Team! The regional competition was at Michigan State University, Lansing, MI in April 2009. Now the team will compete in the final competition at the IFT annual meeting to be held in Anaheim, California in early June. The team members include

the following graduate students -- Madhuvanti Kale, Nirupama Vaidya, Richa Vaid, and Mandar Patel; and undergraduate students -- Marie Loewen and Willis Yu. The team is coached by Dr. Fernanda San Martin, Assistant Professor of Food Science.



### Study Commons a Busy Place

A favorite place to study between classes, especially for Food Science juniors and seniors, is the commons area on 1st floor of the Food Science Building.



# Student News

## 2009 B.S. Graduates



**First Row:** Jaehan Joo, Willis Yu, Juan Du, Hayley Steinbarger **Second Row:** Sarah Sutanty, Stephany Suparno, Tike The, Tom Grantner, Jaclyn Piet, Louis Santoso, Dr. Suzanne Nielsen **Third Row:** Anne Hamilton, Gisheilla Costa, Kartika Luntung, Katy Baughman, Tracey Waltz, Jessica Bergdall, Marie Loewen **Fourth Row:** Jennifer Yoo, Ifueko Osemwota, Aaron Pleitner, Josh Beedle, Allie Clemons, Jessica Lee, Heidi Wilson **Not Pictured:** Kristin Burkenpas, Marcianne Colglazier, Rui Ma, Xiaomeng Wu

### Outstanding Food Science Undergraduates

Outstanding Food Science Undergraduates are selected based on academics, campus activities, and community service.

**Freshman:**

Catherine Shehan

**Sophomore:**

Sarah Verkamp

**Junior:**

Anne Secor

**Senior:**

Marie Loewen

### 2008-09 Student Scholarship Recipients

**Alumni & Friends**

Catherine Anslinger  
Christopher Cheng

**Babel**

Catherine Anslinger  
Katy Baughman  
Carolyn Benages  
Ashley Broady  
James Brooks  
Kristin Burkenpas  
Jonathan Burton  
Emma Cambalik  
Ellen Carrell  
Christopher Chen  
Allison Clemons  
Stephen Cook  
Ruth Enas  
Ashley Feil  
Jennifer Farrell  
Kirsten Fletter  
Morgan Goodall  
Anne Hamilton  
Stacey Hirt  
Patrick Hodge  
Kallen Hovland  
Samuel Hutt  
Charlotte Kalish  
Stacey Konkle  
Elizabeth Kryger  
Emily McKenzie  
Gina LaRose  
La Vash Miller  
Jason Mueller  
Emily Neuenschwander  
Benjamin O'Neil  
Courtney Osborn  
Rachel Pfister  
Aaron Pleitner  
Rebecca Plontke  
Sarah Princehorn  
Chelsea Ramsey  
Rebecca Samuels  
Catherine Shehan  
Aaron Simmons  
Elizabeth Sloffer  
Katherine Veenhuizen  
Sarah Verkamp  
Laura Willis  
Willis Yu  
Justin Zanno

Stephanie Zeider

**Denton**

Emma Cambalik  
Christopher Cheng  
Allison Clemons  
Stacey Hirt  
Kallen Hovland  
Samuel Hutt  
Jason Mueller  
Benjamin O'Neil  
Aaron Pleitner  
Catherine Shehan  
Elizabeth Sloffer  
Katherine Veenhuizen

**IFT**

Christopher Cheng  
Stacey Hirt  
Marie Loewen  
Jason Mueller  
Rachel Pfister  
Anne Secor  
Katherine Veenhuizen

**ISBT**

Rachel Pfister

**IDDBA**

Ashley Broady

**Kellogg**

Stacey Hirt  
Katherine Veenhuizen

**Kroger**

Catherine Anslinger  
Christopher Cheng

**Mid-America Food Processors**

Ashley Broady  
Morgan Goodall  
Emily McKenzie

**Red Gold**

Catherine Shehan

**Rice**

Marcianne Colglazier  
Aaron Simmons  
Tika The

**Sensient**

Kallen Hovland  
Samuel Hutt

### Senior Luncheon

Gwen Shoemaker, Placement Coordinator, gives a graduation gift (a group photo of seniors) to Jackie Piet following the lunch to honor seniors in the Department of Food Science.



# Thank You

## Alumni & Friends Donor List

The faculty, staff, and students of the Department of Food Science sincerely thank you for your support.

Your financial contributions have made Purdue Food Science one of the premiere departments in the world. Annual gifts help the department attract new faculty, recruit the best students, and add new technologies in the classroom. In the 2008-2009 academic year, the Department received gifts from over 100 families.

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Juan Gutierrez	Kristine Hyman	Patrick & Melinda O'Neil	Robert & Anne Wotzak
Steven & Mary Dale	Karra James	Mark Ousley	

## Endowment to Honor Dr. Jack Long

The Department of Food Science sincerely thanks siblings Jan Davis (husband Myron), Roger Long, and Kathryn Long for their generous donation of \$25,000 to establish an endowment in honor of their father Jack Long, retired Purdue College of Agriculture professor. The endowment will establish, support, and maintain one or more annual awards to recognize, support, and enhance excellence in undergraduate teaching in the Department. The undergraduate teaching award will be named the Dr. Jack Long Undergraduate Teaching Award in Food Science.

## Industrial Associates

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