



## DEPARTMENT OF FOOD SCIENCE

2008 ANNUAL NEWSLETTER

**PURDUE**  
UNIVERSITY



DISCOVERY • LEARNING • ENGAGEMENT



## Note from the Department Head



It has been an exciting year for the Food Science Department! Phil Nelson winning the World Food Prize, which we announced in last year's June newsletter, was celebrated last fall in Iowa, at Purdue, and at the Indiana Governor's mansion! Enjoy reading more about those events in this newsletter.

The year also has been eventful because of our department review, an event that comes about every five-six years. This review gave us a chance to examine where we've been, where we are now, and where we're going. The strategic plan we developed in 2002 served us well over the past six years, and guided us as we prepared for our department review. We've made a great deal of progress over the past six years in all of our mission areas: learning, discovery, and engagement. We've made significant improvements in our undergraduate and graduate curricula, and we've increased the number, quality, and diversity of our students. Our research capacity has increased with new faculty, and we have many cutting-edge research areas being pursued. Just this year we had two new faculty members begin, who have primary research appointments. Our extension/engagement efforts have greatly expanded in the past few years, with new faculty and with new programs. With input received from the external team that reviewed our department, we will finalize our strategic plan for 2008-2012.

In this newsletter, we celebrate the awards and success of many of our current and former students and those of our faculty and staff. Also, we look forward to the celebrations coming this fall — 25 year anniversary of the department and 10 year anniversary of the Food Science Building. We will keep you up to date on those events through our website ([www.foodsci.purdue.edu](http://www.foodsci.purdue.edu)) and with electronic news releases.

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-newsletter Keeps You Informed***

The Department recognizes that print media is inherently out of date by the time pieces go to print. Due to this, the Department has an electronic newsletter that keeps you current on events and happenings within the Department. To subscribe go to:

<http://www.foodsci.purdue.edu/alumni/update/>

This will also allow you to keep your mailing address current, so we know how to contact you. Please sign up and enjoy up-to-date news from Purdue Food Science!

### ***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.



# Department News

## Outstanding Food Science Awards



*Left to Right: David Park, Dr. James Jones, Dr. Yonas Gizaw and Dr. Oscar Pike*

In December 2007, the Department hosted four alumni selected to receive an 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, academic, government, or other endeavors related to food science. While not part of the criteria, all four of the 2007 recipients are alumni from Purdue University.

Recipients of the 2007 awards were:

**Dr. Yonas Gizaw** is currently a Principal Scientist for the Procter and Gamble’s Fabric and Home Care Technology Division, leading a program on using biodegradable and renewable biopolymers that will significantly reduce the use of petroleum-based polymers for detergents. Previously at P&G, he worked in the Snack and Beverage Technology Division and

the Family Care Upstream Technology Division. Dr. Gizaw, who is originally from Ethiopia, received his B.S. degree in Pharmacy from the University of Havana in Cuba in 1986. He came to Purdue to study carbohydrate chemistry with Dr. Jim BeMiller, and received his Ph.D. in Food Science from Purdue in 1996.

**Dr. James Jones** is the Vice President of Research and Development for Rich Products Corporation, for which he is responsible for growing the consumer brands of various products through innovation. Prior to beginning work for Rich Products in 2003, Dr. Jones worked for Kraft Foods, Gilardi Foods, Dorskocil Food Service, and Schwann’s.

After receiving his B.S. in Food Science and Nutrition at the University of Arizona, Dr. Jones came to Purdue to study Food Science with Dr. Phil Nelson, receiving his Ph.D. in 1988.

**Mr. David Park** is currently President of Food Defense, LLC, in which he

uses his thermal processing and risk management expertise to advise other food industry companies. After obtaining his B.S. degree from the College of Agriculture in 1972, Mr. Park worked first with the Food Products Association in Washington D.C. Later he served as Vice President for TechniCAL’s Process Technology Division, then as Technical Manager for FMC Corporation’s Madera, before starting his own consulting business.

**Dr. Oscar Pike** is Head of the Department of Nutrition, Dietetics, and Food Science at Brigham Young University (BYU). He received his B.S. and M.S. degrees in Food Science from BYU before coming to Purdue for his Ph.D. in Food Science, which he completed in 1986. Dr. Pike returned to BYU as an Assistant Professor, and rose through the ranks to Professor and then Department Head. Dr. Pike has been recognized for his teaching at BYU, and has mentored many undergraduate and graduate students in research.

*This award was developed to “recognize individuals who have significantly impacted the food science profession and the Department of Food Science at Purdue University.”*



### Springfest 2008

The Food Science Club and the Food Science Graduate Student Association had many interactive displays and sold products in the Food Science Tent at Purdue’s annual Springfest. Cold weather this year for the event didn’t dampen spirits!

## Hoosier Sunday Social at IFT

Due to a unanimous vote for a change during last year's "Hoosier Breakfast" at the annual meeting of the Institute of Food Technologists (IFT), this event has been replaced by a "Hoosier Sunday Social". This new event is a wine and cheese reception that will serve as THE Purdue event at the annual meeting. The event is open to all IFT attendees who have or would like to develop a connection with either the Department of Food Science or the Department of Foods & Nutrition at Purdue. The Hoosier Sunday Social begins at 5:30 p.m., on Sunday, June 29, in the Hilton Riverside, Prince of Wales Room. There

will be a short opening program, then the reception will continue until 7:30 p.m. If you're attending the IFT annual meeting, please join us at the Hoosier Sunday Social!

### Hoosier Sunday Social

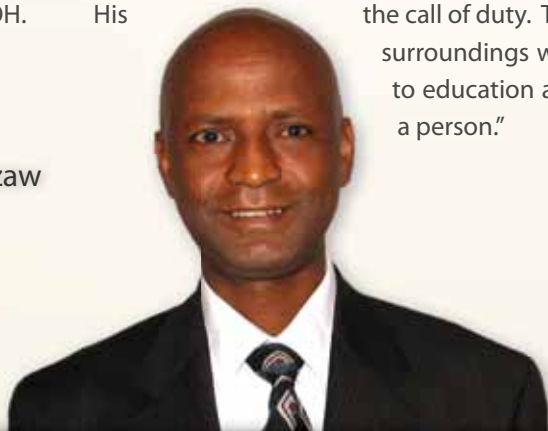
Begins at 5:30 p.m.  
Sunday, June 29  
Hilton Riverside  
Prince of Wales Room

## Distinguished Ag Alumni Award

Dr. Yonas Gizaw, a 1996 Ph.D. graduate in Food Science, was a winner of the 2008 Distinguished Agricultural Alumni (DAA) Award from the College of Agriculture, "in recognition of outstanding accomplishments and significant contributions to their profession and society." Dr. Gizaw is a Principal Scientist with the Procter and Gamble Company (P&G) in Cincinnati, OH. His

current position combines his skills of integrating technology and business with his passion for leadership and collaboration. Each DAA Award winner is asked to reflect on his/her time at Purdue. Dr. Gizaw's response was the following: "Academic excellence at Purdue University, a leading university in carbohydrate research, extended to faculty willing to mentor beyond the call of duty. The people and surroundings were conducive to education and learning as a person."

Dr. Yonas Gizaw



## New IFT Fellows Named

At the IFT meeting in New Orleans, Purdue will celebrate two particular new IFT Fellows. Dr. Richard Linton, Professor in the department, and Dr. James Wu, a Purdue alumnus. Dr. Linton is well known for his extension activities in food safety, and has also excelled in teaching and research. Dr. Wu, a former winner of our Outstanding Food Science Award, is a professor at National Taiwan University and the current President of the Taiwan IFT.

## Department Review



*External review team: Drs. Frank Busta, David Lineback, Ann Hollingsworth and Daryl Lund, Mr. Ram Rao.*

Departments at Purdue are subject to an external, comprehensive review generally every five years. Our review was held in March 2008, with a stellar review team (shown above). The team confirmed the validity of new goals proposed by the Department, and made specific recommendations that will be addressed as a new strategic plan is finalized. The Department greatly benefited from this review process, as we strive to continually improve. We are indebted to the Review Team for their time and effort in helping us become even a better department!



### FS 443 with Dr. Phil Nelson

Dr. Phil Nelson developed over 30 years ago the senior capstone course, FS 443, Food Processing III. Students in the class work in teams to develop a new food product, and make a presentation at the end of the semester to fellow students and to faculty.

# Department News - Faculty and Staff

## Hamaker named to Whistler Chair for Carbohydrate Research



In an action by Purdue University's Board of Trustees and Purdue's President, Dr. France Cordova, Dr. Bruce Hamaker was appointed in February 2008 to be the first Professor in the Roy Whistler Chair in Carbohydrate Research. Dr. Hamaker has been a faculty member in the Department of Food Science since 1993, and was named in 2003 as Director of the Whistler Center for Carbohydrate Research (WCCR). The Roy Whistler endowed chair is the culmination of efforts by Dr. James BeMiller, former

Director of the WCCR. With a lead gift from the namesake, Dr. Roy Whistler, a number of starch companies contributed gifts so the endowment grew to become fully funded.

After receiving his B.S. degree from Indiana University, Dr. Hamaker volunteered for the U.S. Peace Corps, working for two years in Liberia in West Africa. He received his M.S. (Nutrition) and his Ph.D. (Food Science) degrees from Purdue. After completing his graduate degrees, he became a Post-doctoral Fellow with a pediatric nutritionist, Dr. George Graham from the Johns Hopkins University, and was stationed in Lima, Peru at the Instituto de Investigacion Nutricional. He returned to the U.S. to take a position at the University of Arkansas, before becoming a professor at Purdue in the Department of Food Science.

## Whistler Center Workshops

Under the leadership of Dr. Bruce Hamaker as Director of the Whistler Center for Carbohydrate Research, the center has offered workshops to member companies of the center, annually for the past three years. The workshops include sessions on starch and non-starch polysaccharides, attracting an average of 80 participants per year.



*Dr. James BeMiller presents a lecture on starch.*

## Hamaker Wins IFT International Award

Dr. Bruce Hamaker will receive the Bor S. Luh International Award at the national meeting of the Institute of Food Technologists in New Orleans. This award "honors an IFT member or institution for outstanding efforts that promote the international exchange of ideas in the food technology field, and adds to the betterment of international understanding in this field."

Dr. Hamaker's international research has been mostly through the International Sorghum and Millet Collaborative Research Support Program (INSORMIL), funded by the U.S. Agency for International Development. Examples of his achievement to date are: 1) discovery of how to make non-wheat cereal proteins behave like wheat in making bread products (i.e., so non-wheat grains can be used for breadmaking, in Africa and other countries that must import wheat), 2) discovery and characterization of a highly digestible sorghum grain, with improved nutritional quality for semi-arid regions of Africa, and 3) creation of "designer" starches that are digested slower (for use in countries with widespread diabetes and obesity problems) and fibers that target colonic disease.



## Awards



### Food Science Department Outstanding Service Award

**Mike Reckowsky, Administrative Director**

Mike received the 5th 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. Mike was recognized for his efforts in nominating Dr. Phil Nelson for the World Food Prize, and for all his other efforts in helping to nominate faculty for awards and assisting the department with industry interactions.



### Food Science Outstanding Teaching Award

**Dr. Mark Morgan**  
Associate Professor



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

**Dr. Maribeth Cousin**  
Professor



### Food Science Outstanding Service to Students Award

**Gwen Shoemaker**  
Placement Coordinator



### Food Science Outstanding Graduate Educator

**Dr. Philip Nelson**  
Professor

## Promotions

### » Faculty Promotions

The following faculty promotions will be effective in Summer 2008:

**Dr. Carlos Corvalan** has been promoted to Associate Professor and granted tenure. He held a faculty position in Argentina, then was a post-doctoral research associate at Purdue, before joining the Food Science faculty in July 2003.

**Dr. Mario Ferruzzi** has been promoted to Associate Professor and granted tenure. He joined the department in October 2004. He worked for Nestle for three years prior to coming to Purdue.

**Dr. Mark Morgan** has been promoted to Professor. He joined the Food Science Department in July 2003, coming from the Department of Agricultural & Biological Engineering, where he had been a faculty member since 1992.

### » Staff Advancement

The following Food Science staff members will advance in rank with the College of Agriculture, effective in Summer 2008:

**Angela Ranalli-Curtis**, Media Coordinator, International Omega-3 Learning and Education Consortium for Health and Medicine

**Jeanette Merritt**, Marketing & Public Relations Specialist, Indiana Wine Grape Program

**Mike Reckowsky**, Administrative Director

## Years of Service

30 Years	25 Years	20 Years	15 Years	10 Years
Dr. R. Chandrasekaran	Dr. Suzanne Nielsen	Steve Smith	Dr. Mark Morgan Dr. Bruce Hamaker	Marilyn Yundt Mike Reckowsky

# Department News - Faculty and Staff

## New Faculty



Dr. Kee-Hong Kim

Dr. Kee-Hong Kim joined the Department of Food Science in July 2007 as an Assistant Professor in food functional genomics and obesity. Prior to coming to Purdue University, he was an Assistant Professor in the Department of Medicine at the Medical College of Wisconsin in Milwaukee, WI.

Previously, Dr. Kim was a postdoctoral fellow in Nutritional Sciences at the University of California, Berkeley. He received his Ph.D. in 1999 from Rutgers University in Food Science. He received his M.S. and B.S. in Food Science and Technology at Seoul National University, Korea. His current areas of specialization are bioactive food components with emphasis on development of anti-obese food components, and transcriptional and signaling regulation of the differentiation program of adipose tissue and its function.



Dr. Fernanda San Martin-Gonzalez

Dr. Fernanda San Martin-Gonzalez recently joined the Department as Assistant Professor of Food Processing. Dr. San Martin-Gonzalez received her Ph.D. from Washington State University in Engineering Science – Food Engineering, and her B.S. degree from Universidad de las Americas-Puebla in Mexico.

Before coming to Purdue, Dr. San Martin-Gonzalez was an Associate Professor in the Department of

Food and Chemical Engineering in Universidad de las Americas Puebla. She also was a visiting scientist for one year in the Department of Food Science with the University of Tennessee in Knoxville, where she worked on the encapsulation of natural antimicrobial compounds by high pressure homogenization. Her industry experience includes positions with Cargill Meat Solutions, Maseca Group and Kerry Ingredients, in the U.S. and in Mexico.

Her research interests include the use of novel technologies for extraction, encapsulation and delivery of bioactive compounds, as well as continuous microwave/aseptic processing of fruit and vegetable products.

## Butzke to become President of Enology Society



Dr. Christian Butzke

Dr. Christian Butzke, Associate Professor and Enologist for the Indiana Wine Grape Program, was elected 2<sup>nd</sup> Vice President of the American Society for Enology and Viticulture (ASEV) last June, making him the society's President-elect for 2009. This marks the first time in the 60-year history of ASEV that an enologist from outside of California (which produces 90% of U.S. wine) has been elected to this leadership position. As 2<sup>nd</sup> VP and member of both the ASEV board of directors and the executive board, he bears responsibilities for the two largest wine industry trade shows and conferences, the annual Unified Wine and Grape Symposium in Sacramento (12,000 attendees in 2008) and the ASEV Annual Meeting (3,000 participants). Next year, Dr. Butzke will succeed Michael Silacci, the director of winemaking for Opus One, and he will act as the program chair for the 60<sup>th</sup> Annual Meeting held in Napa Valley. As ASEV president, he follows in the footsteps of wine industry legends like Louis Martini, Maynard Amerine, Joe Heitz and John Franzia.



### Indy International Wine Competition

The *Indy International Wine Competition* is one of the largest in the U.S. Distinguished judges meet every summer to judge over 3,000 wines from around the world. The event is hosted by the *Purdue Wine Grape Team*.



# Department News - In Memoriam

## Dr. William J. Stadelman



1917 - 2007

The Department of Food Science celebrated the life and career of Dr. William J. Stadelman at a memorial service in January 2008, held at the Purdue Memorial Union. Dr. Stadelman passed away on November 24, 2007. We celebrated his 90th birthday in the department in August, shortly before he became ill.

After receiving his graduate degrees and serving in the U.S. Navy Reserve, Dr. Stadelman was a faculty member at Washington State University before coming to Purdue. In 1955, Dr. Stadelman joined the Poultry Science Department at Purdue, which later became a part of the Department of Animal Sciences. Along with doing research, Dr. Stadelman taught poultry science, animal science, and food science until his retirement in 1983. Following retirement and as an Emeritus Professor, Dr. Stadelman kept active as a consultant to the poultry industry and in the Institute of Food Technologists.

Stadelman is known as the "father of poultry products technology" because many of his former students have emerged as leaders in industry,

government, and academic poultry programs. He played a major role in the science-based evolution of the U.S. poultry industry, and contributed greatly to the phenomenal rise in worldwide poultry meat consumption during the past two decades. Dr. Stadelman published widely and received many, many awards for his work.

From his work in academia, Dr. Stadelman was probably most proud of his former students. Four of his former graduate students attended the memorial service in January 2008 when we celebrated his life and career. Dr. Stadelman's continual support of graduate students was clear from the endowment he created for this specific purpose.

*"From his work in academia, Dr. Stadelman was probably most proud of his former students."*

## Benedict Odum



1975 - 2007

One of our graduate students, Benedict Odum, unexpectedly passed away in a drowning accident on June 27, 2007. Benedict was one of our stars and his death is a huge loss to us all.

Benedict graduated from the University of Ghana in 2000 with a B.S. in Food Science and Nutrition. He worked as a teaching assistant and later as a data clerk at the University of Ghana, where he was instrumental in developing a database for foods in Ghana, West Africa and Africa. In 2004 he obtained a M.S. degree in Food Technology in Process Engineering from Wageningen University in the Netherlands. Benedict joined Dr. Narsimhan's and Dr. Campanella's labs in June 2005, where he researched the effect of processing on starch granular structure. For his Ph.D. studies in Food Science at Purdue, including his completion of coursework, preliminary exam and research adequate for a submitted manuscript, Benedict will receive a posthumous Ph.D. degree from Purdue in August 2008.



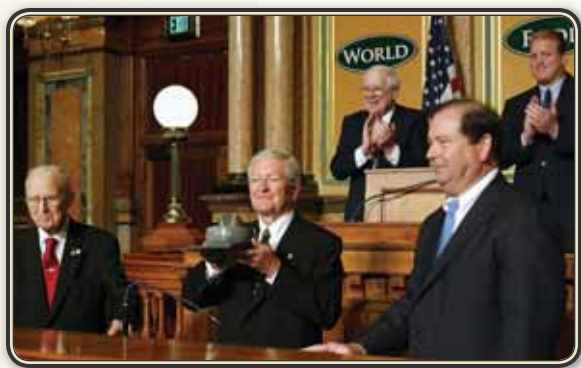
### Vintage Indiana

The 9<sup>th</sup> Annual Vintage Indiana Wine & Food Festival will be held in Indianapolis in June. This event features wine from over 20 Indiana wineries and is organized by Jeanette Merritt, Marketing Specialist on the Purdue Wine Grape Team.

# Department News - World Food Prize

## “What a Difference a Day Makes”

by Phil Nelson



*Phil Nelson holding the World Food Prize. Top row: Ambassador Kenneth Quinn and Iowa Governor Chet Culver. Bottom row: Dr. Norman Borlaugh, Dr. Phil Nelson and Mr. John Ruan III.*



*Iowa State Capitol House Chamber during World Food Prize ceremony.*



*Phil and Sue Nelson in the press box, when Phil was honored at a Purdue football game, leading the crowd in the “Shout”.*

What a difference a day makes! I received a call in mid May 2007 that has changed my life. When I answered a phone call, the person on the other end was Ambassador Kenneth Quinn, President of the World Food Prize (WFP) Foundation. He indicated that I had been selected to receive the 2007 WFP. Of course, I was excited but little did I know what would follow. The formal announcement in June at the State Department opened a wonderful version of Pandora’s Box. For the first two days, I was constantly on the phone receiving congratulations from many people. Next came the e-mails from all over the world. At last count they exceeded over 500. The neat part was that I heard from individuals that I had not heard from for several years. Finally, the letters and cards came for weeks. I could not believe the out pouring. IFT and the Department celebrated this at our Annual Meeting in Chicago.

“The Event” occurred on October 18. I had been told that this would be a day I would never forget, but I had not fully comprehended this. The evening was magical and almost seemed surreal. Could this be happening to me?? Heralding trumpets, 65 countries represented, my family, siblings and granddaughters, Suzanne Nielsen, Mike Reckowsky, Steve Smith and Bruce Hamaker from the Department of Food Science, the President, and Trustees, the Dean and several others from Purdue University, and current and past Presidents

of IFT were all there in the House Chamber of the beautiful Iowa State Capitol. If that wasn't enough, they surprised me with the Glee Club to culminate the evening. What a night for Purdue, Food Science, my family and me.

In November, the College of Agriculture, Department of Food Science and the University honored me with a reception and dinner. To be honored by my own University was the "icing on the cake". A few weeks later, Governor Mitch Daniels held a luncheon in my honor and announced that the State had established an annual award called the "Philip E. Nelson Innovation Prize". This is to stimulate and recognize other innovative advances in science.

Being the 2007 Laureate meant a great deal of recognition but also carries responsibilities. Thus, the speaking tour has begun and continues. I have and will continue to give numerous speeches all over the U.S., and in fact, around the world. Scheduled speeches include Milan, Shanghai, Delhi, and Taipei, and I look forward to them all.

This all started with Mike and Suzanne and IFT deciding to put my name forward for this award. I was sure they were crazy. Boy was I wrong and am I thankful!

*"I received a call in mid May 2007 that has changed my life."*





# Engagement

## 25<sup>th</sup> Annual Aseptic Processing and Packaging Workshop



*Left: Ben Paxson and Mark Morgan teaching Processing lab. Top Right: Phil Nelson and Steve Smith teaching Equipment Features lab. Bottom Right: Cake to celebrate 25<sup>th</sup> anniversary.*

Technology transfer can take place in many forms. One that has proven to be successful for us has been the aseptic workshop that is marking its 25<sup>th</sup> anniversary. Training individuals in the principles of aseptic processing and packaging began in 1983, just a year after FDA approved the use of hydrogen peroxide to sterilize food packages. This opened the door for aseptic fillers for the consumer market to begin operations in the U.S. We felt the need then to train our work force to properly use this “new” technology. Originally, we thought this would be a one year workshop but the response has been so large in the U.S. and

around the world that we have taught to a full house each year since the beginning. It is also interesting to note that in order to meet our customer needs, we have modified the annual program to a workshop that can be taken on the road to plant sites. This has proven to be another good way to reach plant personnel. Our faculty can say they have trained thousands in this important technology that has especially impacted the developing parts of the world, where the cold chain is not in place. This is another great example of industry and university working together and achieving a win-win situation.

## New Center to Assist Food Processors with Environmental Sustainability

Drs. Kevin Keener, Mark Morgan, and Martin Okos have received a five-year grant from the United States Environmental Protection Agency to develop a Food Processing Environmental Compliance Assistance Center (FPECAC) 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. Center activities will include development of a web portal with educational materials on environmental regulations and regulatory compliance, delivery of environmental workshops, and on-site environmental audits.

The Food Processing Environmental Compliance Assistance Center is committed to developing and promoting innovative strategies that support environmental stewardship throughout the Food Processing Industry. For questions, comments, or technical assistance please contact:

- Kevin M. Keener  
[kkeener@purdue.edu](mailto:kkeener@purdue.edu)
- Angie Honeywell  
[ahoneywe@purdue.edu](mailto:ahoneywe@purdue.edu)



### Landscaping

The Food Science Building is finally going to get some landscaping! On the 10-year anniversary of the building, we're very excited to have landscaping planned for around the building during summer 2008.

## European Hygienic Engineering & Design: Certification & Workshop

As a member of the European Hygienic Engineering and Design Group (EHEDG) since 2003, the Center for Integrated Food Manufacturing (CIFM) has made significant progress toward becoming an official equipment testing laboratory in the United States. EHEDG consists of research centers, equipment manufacturers, food processors, and universities that provide practical guidance on hygienic engineering aspects of manufacturing safe and wholesome foods. The EHEDG Test Methods Subgroup certifies that equipment meets established hygienic guidelines by reviewing the equipment's design features and evaluating the equipment with standardized tests.

Manufacturers of food processing equipment will be able to have their equipment tested at Purdue's facility for in-place cleanability. If the equipment successfully passes the testing and design review, it can obtain an "EL logo", demonstrating that it meets the cleanability criteria required for sale and use in the EU.

The CIFM hosted this year's EHEDG Test Methods Subgroup's annual meeting at the Department of Food Science, with members attending from Germany, Great Britain, Denmark, and

Spain. During the meeting, the CIFM participated in an EHEDG proficiency test that was evaluated by the chair of the Test Methods Subgroup and a member of the EHEDG Executive Committee. In conjunction with the EHEDG annual meeting, the CIFM co-sponsored an equipment sanitization workshop. This workshop covered basic hygienic design principles of food processing equipment, the process of equipment certification to EHEDG criteria, and a comparison of the 3A and EHEDG organizations.

In February 2008, the CIFM obtained ISO/IEC 17025 accreditation, a requirement of EHEDG testing laboratories. Along with the accreditation, other necessary equipment and training have been attained, which allows Purdue to become the only EHEDG testing laboratory in the U.S.

We have been in contact with a number of equipment companies interested in having their products tested and/or certified, and anticipate an equipment certification service to begin in August 2008. If you have any questions regarding EHEDG or have equipment certification needs, please contact Dr. Morgan at (765) 494-1180 or via email at [mmorgan@purdue.edu](mailto:mmorgan@purdue.edu).



*CIFM Manager, Ben Paxson, preparing for an EHEDG Test.*



**Center for Integrated  
Food Manufacturing**  
*Purdue University*



### Sensory Lab

The sensory evaluation laboratory has been in near constant use this past school year for the newly required Food Sensory Science class, evaluation of products in other classes and from research projects, and the testing of products for food companies.

# Discovery

## New Research Focus in Department: Deliquescence

In a collaborative effort, Drs. Lynne Taylor, Lisa Mauer, and David Nivens have received a USDA-NRI grant entitled “Fundamentals, Effects, and Consequences of Deliquescence in Multicomponent Food Systems”.

Deliquescence is a first-order phase transition from solid to solution that occurs at a relative humidity (RH) that is characteristic to the solid ingredient. When the environmental RH exceeds the deliquescence RH of an ingredient, water condenses and the ingredient dissolves. Deliquescence is a familiar process in pure powders; consider the caking of salt in a salt shaker in the humid summer months. However, little consideration has been given to deliquescence in more complex mixtures.

Drs. Taylor and Mauer have shown that, in food blends containing more than one component with deliquescent behavior, the RH of the solid-solution transition will be lowered, leading to some level of dissolution at relatively low RH conditions. The phenomenon of deliquescence lowering in blends of common food ingredients and the implications of this moisture-induced phase transformation on product quality is not well understood, even though numerous common food ingredients exhibit this behavior. Examples include common sugars, salts, organic acids, and vitamins.

Dissolution arising as a result of a lowered deliquescence RH will influence the chemical and physical stability of complex food systems. Thus the chemical efficacy of a given additive such as a vitamin can be decreased by blending with the wrong additives. Additionally, this phenomenon is probably responsible for many instances of powder caking, leading to product wastage and consumer dissatisfaction.

By studying the effects of deliquescence and deliquescence lowering on powder blends of common food ingredients, the investigators will provide a fundamental understanding of the mechanism of interactions between deliquescent food ingredients and resultant impacts on food product quality. This information can be used to control rates of changes that occur during food processing, to develop food products that are less sensitive to detrimental changes during food storage, and to develop appropriate processing, packaging, and storage conditions to maintain product quality.

### *“Fundamentals, Effects, and Consequences of Deliquescence in Multicomponent Food Systems”*

## Teaching Award Complements Research on Water-Solids Interactions

To complement the new research effort by Dr. Lisa Mauer in deliquescence, she worked with others (Dr. Osvaldo Campanella, Agricultural & Biological Engineering; Dr. Lynne Taylor, Industrial & Physical Pharmacy) to obtain a Purdue Instructional Innovation Award focused on water-solid interactions. The award allowed for the purchase of a gravimetric moisture sorption balance to enhance teaching laboratory experiments covering water-solid interactions in both Food Science and in Agricultural & Biological Engineering. The award also allowed Drs. Mauer and Taylor to develop a new course of interest to both Food Science and Pharmacy students, “Water-Solids Interactions.”



*Adam Stoklosa, PhD student, loading a sample into a gravimetric moisture sorption balance to gather information on water-solid interactions.*



### New Artwork in the Building

A new addition to artwork in the Food Science Building is a painting by Cathy Denton, “Pineapple & Pitcher”. Cathy and Bud Denton have been long-time supporters of the Food Science Department.



## Zamorano Students Intern at Purdue



*Lilian Ochoa (Guatemala), Suzanne Nielsen, Miguel Gonzales (Bolivia), Jennifer Franco (Dominican Republic), Alvaro Arteta (Ecuador), Jose Bobeda (Bolivia) and Phil Nelson*

One of our Department's strongest interactions internationally is with Zamorano University, located outside of Tegucigalpa, Honduras. This private international, agriculture-based university for undergraduates attracts students from all over Central and South America, and is well known for its hallmark "Learning by Doing" practical education component. Zamorano is known throughout the Americas for the quality, leadership and impact of its more than 5000 graduates.

*"[Zamorano University] is well known for its hallmark 'Learning by Doing' practical education component."*

Since 1999, we have had several students each year come to the Food Science Department at Purdue for a 3-6 month internship, just before or after completion of their B.S. degree from Zamorano. These students work in the laboratories of our faculty, often assisting graduate students with their research projects. Many of these students from Zamorano have returned to Purdue to complete graduate degrees.

In addition to students coming from Zamorano to Purdue, our Purdue Food Science undergraduates have participated in spring break and summer study abroad programs to Zamorano. Several faculty members from Purdue Food Science have visited Zamorano, and faculty from Zamorano did study leaves at Purdue when the Food Technology program at Zamorano was being expanded. This summer, Dr. Suzanne Nielsen will be part of an external team from the U.S. reviewing the curriculum at Zamorano.

## Zamorano Students in the Department

by Prof. Bruce Applegate

As the 2008 Spring semester ends, students will graduate, go home for the summer, or take a break before Summer semester starts. However, five students doing internships in the Food Science Department will return to Zamorano University near Tegucigalpa, Honduras after a 4-month stay at Purdue. Since joining the Food Science Department in 2001, I have had the pleasure of hosting four of these students: Alvaro Salinas Roca (Bolivia), Eileen Enid Duarte Gomez (Honduras), Francisco Lino (El Salvador) and Miguel Angel Alvarez Gonzales (Bolivia). One of my first graduate students was Zamorano graduate Wilfredo Dominguez, who was previously an intern with Dr. Nielsen, then returned to Purdue to complete his M.S. degree in my laboratory. After graduation he returned to Zamorano as an instructor and is currently pursuing a Doctorate degree in the Food Science Department at the University of Minnesota. My second Zamorano intern, Eileen Gomez, will return to begin her graduate work under my supervision in January 2009. This program fostered by Dr. Nielsen has greatly benefited the participants, the department, and my research program.



### **Wilfredo Dominguez**

Wilfredo Dominguez, a native of Honduras and graduate of Zamorano University, did his M.S. degree with Dr. Bruce Applegate. Wil's research was on detection of foodborne pathogens.

# Student News

## Graduate Students Win 3<sup>rd</sup> Place in AACC Product Development Competition

The Department of Food Science at Purdue University placed third in the seventh annual AACC International Student Division Product Development Competition in San Antonio, Texas, in October 2007. Team members were the graduate students Yanyun Chen from China, Cynthia Machado from Ecuador, and Shriram Paranjpe from India. The team's faculty advisor was Dr. Maribeth Cousin. The 2007 AACC International Annual Meeting was looking for new, original and innovative products with one cereal product as the main ingredient. Thirteen teams submitted initial reports that included a description of the product, target market, processing/packaging procedures and shelf life. Purdue and five other teams were

selected as finalists to present their products to the judges at the AACC International Annual Meeting. The product developed by the Purdue team was named Hi-Be bread, which was a natural, healthy, and innovative bread with major ingredients of black beans powder, whole wheat flour, and milled flax seeds. The bread was made by a standard baking procedure, wrapped and packed in polypropylene, and sold frozen to extend its shelf life. This product was targeted for health conscious people. It was a good source of fiber, contained more protein than whole wheat bread, and contained omega-3 fatty acids and phytonutrients. It has a darker color and softer texture than whole wheat bread.

In the final competition, the team presented a 10-minute oral presentation, a poster, and samples for sensory evaluation by the judges who were from various companies. The poster covered the market opportunity, formulation, processing, packaging, shelf life, sensory analysis, nutritional information and marketing for Hi-Be Bread. The award for the third place was \$1,000. This project was carried out thanks to the support of the Department of Food Science and Archer Daniel Midland Co. Finally, attendance at the competition was made possible by AACC travel awards granted to the team members, and by funds from a department endowment created by Dr. Bill Stadelman.

## 2007-08 Grand Cru Award Recipients



*Allison Clemons, Jevlyn Widjaja, Jason Mueller, Yang Gao, Dennis Sugijanto, Qingruisi Li, Shea Richhart, Allison Bechman*

Food Science has always been proud of the academic success of its students. To recognize the outstanding achievements of the undergraduate students, a program called the Grand Cru was created. As the name implies,

it's a way to recognize the "best of the best". Students must maintain a 3.5 GPA for two consecutive semesters to be a part of the Grand Cru Class. A ceremony is held in which students receive a medal for their efforts.

### Initiate Medal winners:

Allison Clemons, Yungyuang Chen, Yang Gao, Ashley Feil, Margaret Kunkel, Qingruisi Li, Rebecca Lipasek, Jason Mueller, Shea Richhart, Anne Secor, Elizabeth Sloffer, Dennis Sugijanto and Jevlyn Widjaja

### Member Medal:

Allison Bechman, Alexander Blomeke, Bethany Landis and Sigit Suharta

### Academic Distinction Award:

Jessica Wiersma



### 3<sup>rd</sup> Place Winners in AACC Competition

Team members were the graduate students Yanyun Chen from China, Cynthia Machado from Ecuador, and Shriram Paranjpe from India. The team's faculty advisor was Dr. Maribeth Cousin.

## Graduate Student Teaching Award

The Bernie J. Liska Outstanding Graduate Student Teaching award for Fall 2007 went to **David Schroeder**. David was a TA during Fall semester for FS 442, Food Processing II, taught by Dr. Mark Morgan. David is pursuing his Ph.D. with Dr. David Nivens, focusing on food biosecurity.

For Spring semester 2008, **Kristen Burkholder** was selected for the TA award. Kristen was a teaching assistant for FS 566 Microbial Techniques, taught by Dr. Arun Bhunia. Dr. Bhunia is also Kristen's major professor for her Ph.D. research, which is focused on microbial pathogens.

Dr. Bernie Liska began supporting the award in 1999 to recognize graduate students who excel in teaching. Family and friends, along with matching gifts from the ExxonMobile Foundation, endowed the award to ensure that his memory and his wishes continue. Students winning the award receive a monetary award and a plaque, and have their names placed on a large plaque in the Food Science Building.

## Food Science Graduate Student Association Activities

by Kelsey Ryan, President

The Food Science Graduate Student Association (FSGSA) has had a successful academic year filled with social activities, educational opportunities, and philanthropic endeavors. This year we saw the return of the International Dinner where we feasted on native dishes from Korea, Ecuador, Italy, and more. Also making a return this year was the Continuing Lecture Series. We heard Dave Parks, president of Food Defense, LLC, and one of this year's Outstanding Food Science Award winners, speak about food biosecurity and we heard Nick Rozzi of Roquette America speak on business aspects of the food industry. We also heard from one of our new faculty members on her research and background. We continued our FSGSA monthly lunches, often prepared by members of FSGSA, held a social for graduate students and undergraduates working in the Food Science Department, and participated in a campus-wide food drive for a local food bank. This year we also participated in

the Purdue Relay for Life, a fundraiser for the American Cancer Society, which is an overnight walking relay to raise money and awareness for cancer research. We participated in Purdue's annual Spring Fest, where we had a great range of activities, including an interactive non-Newtonian fluid pool.

As President of FSGSA, I was asked to represent Purdue Food Science and Purdue College of Agriculture at the first ever Graduate Education Day at the Indiana Statehouse on March 5. This day was dedicated to showcasing graduate student research being carried out at Purdue and Indiana University. Two agronomy graduate students and I prepared a display highlighting the research we do in our disciplines and how it impacts the state of Indiana. Legislators were invited to the event and we were able to share our research and convey the importance of graduate education in Indiana to local legislators who visited.

## Food Science Club Symposium



*Joshua Beedle, Marie Loewen, Dr. David Cai, Jessica Rombach, Erin Gramza, Dr. Kee-Hong Kim, Jessica Lee and Jennifer Crandall*

The 31st annual Food Science Club Symposium was held on April 9, with the topic, "Obesity in America: What Is the Food Industry Doing?" The symposium featured one of our current faculty, Dr. Kee-Hong Kim, and three Purdue alumni: Erin Gramza, Kraft; Jennifer Crandall, Kroger; and David Cai, Cognis Nutrition & Health.

The symposium was coordinated with the spring meeting of the Industrial Associates group. The symposium was part of the program for members of the Industrial Associates, who then participated in a dinner with symposium speakers and the Food Science Club members who organized the symposium.



### FSGSA Participates in Fundraiser

They participated in the Purdue Relay for Life, a fundraiser for the American Cancer Society, which is an overnight walking relay to raise money and awareness for cancer research.



# Student News

## 2008 B.S. Graduates



**First Row:** Jessica Wiersma, Yang Gao, Samana Tejani, Rebecca Lipasek, Miranda Ulrey, Whitney Peters, Bethany Landis, Qingruisi Li, Megan Burton **Second Row:** Allison Bechman, Ryan Coombes, Theodore Beyer, Shea Richhart, Katie Gregory, Yunguang Chen, Erin Stefanutti, Sigit Suharta, Bridget McClatchey, Jefvlyn Widjaja, Dr. Suzanne Nielsen, Winnie Tansil, Yunica Halim, Jessica Brown, Alex Blomeke, Kyle Probst, Kirsten Diekman, Kyle Gibson, Kipp Bingham, Austin Driscoll, Amy Porter, Adam Holley, Margaret Kunkel, Nasser Ligutam, Jade Phichitkul, I-Hsien Chen **Not Pictured:** Todd Case and Olivia Klose

## Outstanding Food Science Undergraduates

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

### Freshman:

Katherine Veenhuizen

### Sophomore:

Anne Secor

### Junior:

Allison Clemons

### Senior:

Bethany Landis

## 2008 B.S. Student Scholarship Recipients

### IFT:

Gisheilla Costa  
Rachel Pfister  
Anne Secor

### Kellogg:

Anne Secor  
Jason Mueller

### Sensient:

Rebecca Samuels  
Moises Navarro

### Kroger:

Moises Navarro  
Katrina Roseland

### Mid-America:

Marie Loewen  
Aaron Pleitner  
Willis Yu

### ISBT:

Rachel Pfister

### Babel:

Kipp Bingham  
Bethany Landis

### Rebecca Lipasek

Marie Loewen  
Elizabeth Sloffer  
Aaron Pleitner  
Anne Hamilton  
Katie Baughman  
Allison Clemons  
Morgan Goodall  
Jason Mueller  
Krystin Carlson  
Anne Secor  
Gishella Costa  
Sigit Suharta  
Yang Gao  
Winnie Tansil  
Yunguang Chen  
Emma Cambalik  
Lauren Ewer  
Kirsten Fletter  
Rebecca Getts  
Stacey Hirt  
Patrick Hodge  
John Kasang  
Moises Navarro

### Mary O'Shea

Katrina Roseland  
Rebecca Samuels  
Thomas Stokes  
Katherine Veenhuizen  
Victoria Rumble

### Denton:

Allison Bechman  
Elizabeth Sloffer  
Aaron Pleitner  
Allison Clemons  
Jason Mueller  
Katherine Veenhuizen  
Emma Cambalik  
Benjamin O'Neil  
Stacey Hirt

### Rice:

Alisha Lowry  
Adam Holley  
Kartika Luntung

### Alumni & Friends:

Rachel Pfister  
Sarah Verkamp



### FS 162 with Dr. Amy Devitt

"Introduction to Food Processing", FS 162, has become a popular elective course for freshmen and sophomore Food Science students. They are exposed to much of the equipment in the pilot plant, and get their first "taste" of product development.

# 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 classrooms. In the 2007 -2008 fiscal year, the Department received gifts from 150 families.

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