

Food Science & Technology Newsletter
News for Students, Graduates, and Friends

Department Head's Message
By Dr. Charles Goan



In November 2003, an internal department head search within the university began and in February 2004, I was officially named as the department head for Food Science and Technology. In my comments, I will share some of my thoughts about the department and our plans for the future.

Our department faces a challenge to increase undergraduate students. In 2003, we had 31 undergraduate students; six graduated with their B.S. degree. To have an effective undergraduate program and to provide graduates, to meet food industry needs, we need 50-60 students majoring in Food Science and Technology each year. We need help in identifying and recruiting students interested in food science. If anyone knows of a potential food science student, please let us know. A new recruiting brochure is being sent with this newsletter. We can provide additional brochures if needed.

Another priority will be for the department to reach out to the food industry in Tennessee and the region. I plan to establish a Food Science Advisory Council, which will be composed of food and food-related industry leaders.

With declining state and federal appropriations for research, our faculty must submit a greater number of grant proposals each year searching for funds to support their research programs. I have challenged our faculty to search out research opportunities with the food industry. Let us know if there is an opportunity to collaborate in a research effort.

- Five laboratories in McLeod Hall have been renovated, and the food chemistry and food physics research programs will be moving to these labs.
- Graduate student offices in McLeod were upgraded with computers and better lighting conditions.
- In 2003, the faculty was successful in being awarded more than \$1.1 million for research and extension programs.
- A proposal to establish a food science computer laboratory for our teaching program was funded.
- If Governor Phil Bredesen's proposed budget for FY05 is passed, the higher education budget will be reduced by 0.8 percent, compared to a 9 percent reduction in FY04.

In summary, the past several months have been wonderful and rewarding. I have enjoyed working with the department's students, faculty and staff. Much progress has been made, and we look forward to the future. Any thoughts you have about the department, please share them with me (cgoan@utk.edu).

Our Trip “Down Under”

By Emily Curtis and Erika Bible

Last summer, I spent two months in beautiful Sydney, Australia. The trip was a wonderful experience, and I encourage anyone who has ever wanted to travel to Australia to do so because I guarantee it will be the journey of a lifetime!! For me, the preparations for the trip were completed in less than 2 months. I decided over Spring Break last March that I wanted to study abroad the following summer. While meeting with **Dr. David Golden** for an advising appointment, he informed me that **Erika Bible** was going to work in Australia, and I decided to see if she wanted a traveling partner. **Erika** agreed to have company so **Dr. Golden** and I quickly started working to plan the trip. About two months later, I said goodbye to my family and boarded the first plane for my flight to Sydney. The flight itself was an experience to be remembered because I was in the air for almost 24 hours!! After landing in Sydney, a bit disoriented from the time differences, I was taken to the “Palace” that I would call my home for the next eight weeks. The Billy Blue Palace was a student accommodation where many international students stayed while studying the English language, so staying there for two months was really a great opportunity to meet students from all over the world and an opportunity to hear approximately six languages being spoken at the same time.

While in Sydney, I worked at Food Science Australia in the Bacteriology Laboratory—my first real lab experience. I served as a research assistant for three different projects: one involving high pressure processing of milk, the other working with flow cytometry, and a third gathering information about the growth patterns of arctic sea-dwelling bacteria. Working in the lab was really an amazing opportunity for me because I gained so much experience and I loved both the work I did and the people I worked with. On the weekends, I traveled to the Blue Mountains, to some of the beaches around Sydney, and to the different parks and gardens in and around Sydney. I saw *Madame Butterfly* in the Opera House (see picture), spent several afternoons in the breathtaking Royal Botanical Gardens, and watched a few surfers braving the cool water of Bondi Beach to catch some waves. If it isn’t already evident, I had an amazing time in Australia and thoroughly enjoyed the scenery, the people, and the city of Sydney itself, and I would love to revisit the country again someday.

Emily

In early May of last year, I set out on what proved to be quite an adventure. While an internship as a food microbiologist might not seem that glamorous or exciting, the fact that my internship was in Sydney, Australia definitely gave merit in those categories. After enduring an approximately 21-hour plane ride, I landed in Sydney’s Bankstown airport on a lovely late-fall morning (remember, Australia is in the Southern hemisphere!) After I settled into the hostel where I was staying, and recovered somewhat from my jet lag, I went to my first day of work at Food Science Australia.

Food Science Australia is a government sponsored research organization that serves the Australian food industry in areas of microbiology, process engineering, sensory analysis, and flavor chemistry, among others. I worked with the microbiology group to help them design a method to use flow cytometry to detect viable *E. coli* cells.

Although I enjoyed the work I did with the group, the best part of my trip was definitely the opportunity to immerse in the Australian culture. I saw an opera at the world-famous Sydney Opera House, I saw koalas and kangaroos at the Taronga Zoo, and I watched surfers catching waves at Bondi beach. I also had the opportunity to travel to the Australian capital, Canberra, and to SCUBA dive on the Great Barrier Reef. Overall, I’d say I had a pretty exciting summer for a microbiologist! My trip was a wonderful chance for me not only to learn more about the food industry, but also to learn more about other people and cultures.

Erika



Erika Bible (left) and **Emily Curtis** (right) pose in front of the world-famous Sydney Opera House where they saw *Madame Butterfly*.

Honored Student Award

Sylvia Gaysinsky, a Masters student, was chosen as the recipient of the American Oil Chemists' Society Honored Student Award. This is an outstanding achievement for **Sylvia** as this award is normally awarded to PhD students. **Sylvia** will receive this award at the AOCS Annual Meeting held in Cincinnati, Ohio in May.

Food Science Club Productive Spring Semester By Shari Baxter

Cheese sale profits nearly tripled from last year! Thanks to everyone who supported the Club and helped to make the cheese sale successful.

The Club sponsored a bowling competition. Congratulations to **Drs. Mount** and **Davidson** who were the highest scorers of the evening followed by second place held by **Shuang Chi** and **Mekong Kim**.

Other activities of the Club include cleaning McLeod Hall and the Food Safety and Processing building and sponsoring monthly International lunches.

The Club sponsored the IFT Southeast regional College Bowl on March 26 and 27. Congratulations to the University of Georgia for winning the competition. North Carolina State University, Virginia Tech, and the University of Florida also participated. Tennessee finished third in the contest. The club provided dinner for the group at Dr. Davidson's house on Friday night, breakfast before the contest, lunch after the contest, and departmental tours. That afternoon the group boarded the Star of Knoxville for a river boat tour sponsored by Bush Brothers and the UT Sensory Lab. The club appreciates the generous support of many individuals and companies including Bush Brothers, the UT Sensory Lab, BiLo, Krispy Kreme, Flav-o-Rich, Tom's Snack Foods, Oscar Mayer, Kraft, Sweetwater Valley Cheese, Coca Cola Company, Purity Dairies, Mayfield Dairies, Tyson, Monterey Mushrooms, Frito Lay, and Vietti.

Congratulations to newly elected officers:

Faith Johnson (President); **Erin Lawless** (Vice President); **Jason Noh** (Secretary); **Carolina Naar** (Treasurer); **Lilia Santiago** (Historian); **Carol White** (CASNR Representative); **Coesha Fairley** and **Mark Jarrard** (Fundraising Chairs); **Matt Taylor** (Social Chair); **Suzanne Morris** (Fundraising Chair); **Drs. Mount** and **Davidson** (Club Advisors). Best of luck in your next year of office!

CASNR Honors and Creative Achievement Projects Awarded Fall 2003 Competition

Bryan Combs, Mushroom Drying and the Benefit to Industry, **Dr. Svetlana Zivanovic**.

Mark Jarrard, Jr., Development and Setup of a Quartz Crystal Microbalance Based Electronic Nose to Detect Aroma Development of Wines Stored in Different Glasses, **Dr. Jochen Weiss.**, and **Dr. W.C. Morris**.

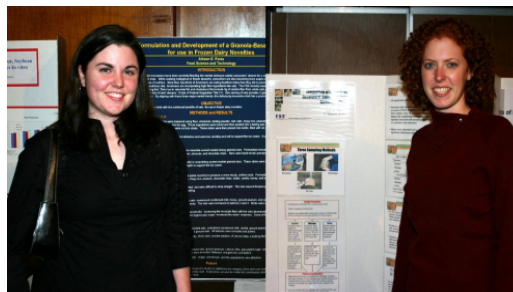
Allison Ricks, The Formulation and Development of Nutritious Frozen Novelty Incorporating a Chocolate-Covered Ice Cream Bar Supported by a Granola Stick, **Dr. M. P. Penfield**.

Carol White, A Multi-Faceted Approach to Improve Food Safety for Child Care Providers, **Dr. P. M. Davidson**.

FST Students Win Undergraduate Research Competition by Dr. David Golden

Erika Bible and **Allison Ricks**, both seniors in Food Science and Technology, won top honors among College of Agricultural Sciences and Natural Resources (CASNR) entrants in the annual UT Exhibition of Undergraduate Research and Creative Achievement competition held on April 1st and 2nd.

Erika's research project was entitled "Comparison of methods for recovery of *Salmonella* from cantaloupe rinds;" her research advisor was **Dr. David Golden**. **Allison's** project "Formulation and development of a granola-based stick for use in frozen dairy novelties" was conducted under the supervision of **Dr. Marjorie Penfield**.



Allison Ricks (left) and Erika Bible (right)

Faculty Recognition



Mike Davidson, professor of food microbiology was elected a Fellow of the Institute of Food Technologists (IFT).

Election as an IFT Fellow is the highest recognition that the IFT bestows on food science professionals. **Dr. Davidson** has received the honor due to his commitment to serve and promote the field of food science through teaching, research and extension.

Dr. Davidson received the award at the 2003 IFT Annual Meeting in

Dr. Mike Davidson currently serves as the Chair of the newly formed IFT Committee on Divisions.

Dr. Clark Brekke served as Chair of the IFT Constitution and By-Laws Committee for 2003.

Dr. John R. Mount has served on the IFT awards committee for the “Industrial Scientist Award” for the past two years.

Dr. Jochen Weiss has been elected to be a Member-at-Large of the Executive Committee of the International Division of IFT. His term is 2003-2006. The International Division is a Division of IFT that serves all International Members of IFT and provides a forum for global food science issues.

Dr. Ann Draughon has been elected to serve as the Center Director for the National Alliance for Food Safety and Security Center for Microbial Physiology and Ecology.

NRI USDA Food Safety Grant Awarded to Drs. Weiss, Davidson and Bruce

By Dr. Jochen Weiss

Drs. Jochen Weiss, P. Michael Davidson and Dr. Barry D. Bruce (Biochemistry) are using newly gained insights into the biophysical mechanism of food component and microorganism interaction to improve the activity of antimicrobials.

Three different technologies are employed to produce capsules with properties suitable for application in liquid, semisolid or solid foods. This breakthrough in antimicrobial research is opening up new possibilities to design shelf-stable food products that are minimally processed.

The team’s research progress has led to the submission of four research articles in 2003 with three more articles being prepared for submission this year.

The Southeastern Food Processors Association established a scholarship endowment fund in honor of **Dr. Bill Morris**. The Association presented **Bill** with the \$17,500 gift at a ceremony in November.



(Left to Right) Mr. Marion Swink, President McCall Farms, Effingham, South Carolina; **Dr. Bill Morris**, Professor, Agriculture Extension Specialists; Mr. Charles “Butch” Peccolo, Vice President and Treasurer, The University of Tennessee.

FST Dairy Products Evaluation Team Activities

By Marjorie P. Penfield

A former team member from 2002 was presented with a plaque and check in honor of the Virginia Dare Award at the 2003 spring International Dinner. **Ellen Hill** was the lowest scoring individual on the team last year. Kerri Grant received the 2003 Virginia Dare Award.

The Dairy Products Evaluation Team completed their 2003 activities in November. The team participated in two contests. Even though no trophies were received, the team's performance was commendable, and there are several bright spots to report.

At the Mid-West contest, which is sponsored by the Chicago Dairy Technology Society, the undergraduate team placed in the middle of the nine teams in milk, butter, and cottage cheese. **Kerri Grant** placed fifth in milk and cottage cheese. Graduate students participated as individuals. **Kellie Burris** placed first in cottage cheese and third in yogurt while **Andres Rodriguez** placed second in butter.

At the National Intercollegiate competition the undergraduate team's seventh place (18 teams participated) was recognized. Top-ten finishes in five of the six products contributed to the finish and included fifth in yogurt, sixth in butter, seventh in cottage cheese, eighth in cheddar cheese, and ninth in ice cream. Top-ten finishers are recognized on the contest web site (<http://www.ams.usda.gov/dairy/cdpec>).

Top-ten finishers for individuals included fifth in cottage cheese for **Pamela Robertson** and eighth in butter for **Bryan Combs**. **Felice Bryan** was an alternate. Of note are top-five finishes by graduate students—third in yogurt by **Andres Rodriguez** and fourth and fifth in yogurt and cottage cheese by **Kellie Burris**.

The national competition was held in conjunction with the World Food Expo at McCormick Place in Chicago. There were many opportunities to visit with alumni including **Tammy Lowe**, MS '84, (Viskase); **Doug Mitchell**, MS '90, (Red Arrow); and **Susan Varner Edwards**, MS '89, (Red Arrow). **Alex Rojas**, MS '93, (Johnson Diversy) joined the team for dinner following the competition. The group enjoyed his visit as he shared information about his experiences in the food industry.

Aaron K. Edwards Moves to Japan

By Dr. Marjorie P. Penfield

Aaron Edwards BS 94, Market Development Manager, Food Starch Japan National Starch & Chemical Company, has moved to Japan. He has been with National Starch for 7 years and he writes the following about his activities in Japan.

"I build businesses for National Starch. My last assignment in the US was building a branded Foodservice ingredient business. I do the same thing in Japan, really. My responsibilities here are to build two businesses in the Japan retail foods market.

I moved to Tokyo in September 2003 and expect to be here for 3-4 years. My wife was able to join me in January. Japan is a great place to live and Tokyo is a truly huge city with the population of metropolitan Tokyo reaching 33 million."

Student News



(Left to Right) **English Cranfield**, recipient of Purity Dairy Scholarship; **Dr. John Mount**, Scholarship Committee Chair; Mr. Harold York, Purity Dairy representative.



Carol White, a FST pre-pharmacy major, was appointed to the UT Board of Trustees on July 11, just weeks before former President Shumaker's resignation. Carol is the only student representative and was appointed by Governor Phil Bredesen to a one-year term.

Carol says, "It has been an honor to serve at such a pivotal time in Tennessee and to work with people from the students all the way up to the governor."

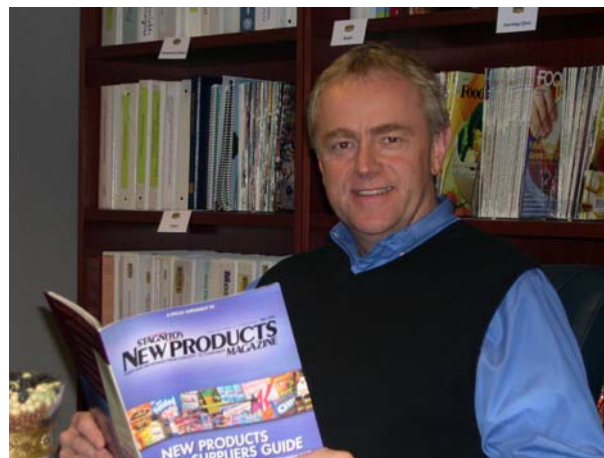
Faculty, Staff, and Alumni News

Parker and Woody join Sensory Lab Staff By Marjorie P. Penfield

Two new Research Associates recently joined the staff of the Sensory Lab. **April Parker** completed her Masters in Food Science and Technology in 2003 and Bachelors in Agriculture in 2001-both from the department. **April's** hometown is Ripley, a small town in West Tennessee. **Aaron Woody** is originally from Cohutta, Georgia, a small town in the northwestern part of the state. **Aaron** received a Bachelor of Science in Agriculture December 2000 and a Master of Science in Food Science and Technology August 2003 from The University of Tennessee.

Both new Research Associates will have major responsibilities for managing the lab and conducting consumer sensory panels in the laboratory for departmental research projects and the approximately eight companies that use the services of the Sensory Lab.

Dr. Perkins Joins FST By Dr. Bill Morris



Dr. Phillip S. Perkins has joined our Department as an adjunct faculty member. He is Senior Vice President and Director of Research, Development & Innovation for Bush Brothers & Company. His career spans over twenty years of working for world class consumer goods companies, starting at Whitebread PLC (UK's third largest brewer), M&M Mars (U.K.), Guinness/Pillsbury and now Bush Brothers.

Dr. Perkins received his Ph.D. in inorganic chemistry and B.Sc. in chemistry from the University of Exeter in the United Kingdom. He brings a tremendous amount of diversity, knowledge and experience to our Department having worked with food and packaging companies in 25 countries throughout Europe, North and South America, Africa, Australia, India and the Far East. He has worked in a variety of capacities for companies in their R&D Departments and is recognized for both his strategic and technical abilities. **Phil** is also a member of the U.T. Agricultural Development Board and the National Food Processors Association's (NFPA's) Regulatory and Scientific Affairs Committee.

He will be teaching a course this fall entitled **The Strategic Application of Food Science in Industry**. This is an excellent opportunity for our students to interact and gain insight and knowledge on what drives the food industry today from a highly regarded senior food company official. We are very fortunate to have **Phil** on our faculty and look forward to his interaction with our faculty, staff and students.



Alumni News

Donna Green, BS '02, completed her BS at Virginia Tech Dec. '03. She is now working as a Research Associate at Texas Tech in Lubbock and working on her PhD.

Margaret Chappell Smolka, MS '87, and husband, welcomed twins into the world on April 18, 2003. Elizabeth Carlisle and William McDonald join older sister Meredith.

Alisa Doan, BS '02, and **Ellen Hill**, BS '03, are working toward MS degrees in Sensory Evaluation at Kansas State University.

Departmental Presentations IFT— Las Vegas July 19-25

Tuesday, July 20: morning

- 17E-15 High-intensity ultrasound mediated modifications of BSA adsorption kinetics at different solution pH. **I. GULSEREN**, B. Bruce, **S. Zivanovic**, and **J. Weiss**.
- 17F-6 Ultrasound-aided chitin extraction from freshwater Tennessee prawn shells **G. T. KJARTANSSON**, K. Kristbergsson, **S. Zivanovic**, and **J. Weiss**
- 17G-29 Production of antimicrobial electrospun PEO-chitosan fibers **T. SAMS**, J. Rodriguez, **S. Zivanovic**, K. Kit, and **J. Weiss**.

Tuesday, July 20: afternoon

- 33D-14 Antimicrobial activity of ultrasound-assisted solvent-extracted Thai spices **C. THONGSON**, **P. M. Davidson**, W. Mahakarnchanakul, and **J. Weiss**.
- 33D-16 Potential for development of resistance to food antimicrobials by *Salmonella typhimurium* and *Listeria monocytogenes* **L. M. SANTIAGO** and **P. M. Davidson**
- 33D-22 Antimicrobial efficiency of an encapsulated phytophenol in emulsifier-based nanoparticles at selected pH and temperature **S. GAYSINSKY**, **P. M. Davidson**, B. Bruce, and **J. Weiss**
- 33D-29 Antimicrobial activity of trypsin and pepsin hydrolysates derived from acid-precipitated bovine casein **K. P. BURRIS** and **P. M. Davidson**

Wednesday, July 21: morning

- 49F-19 Extension of fresh produce shelf-life with novel chitosan coatings **T. SAMS**, **S. Zivanovic**, **F. A. Draughon**, **J. R. Mount**, and C. E. Sams

Wednesday, July 21: afternoon

- 67D-1 Chitin and chitosan—value-added products from mushroom waste **T. WU** and **S. Zivanovic**.
- 67D-3 Molecular weight and degree of acetylation of ultrasonicated chitosan **S. R. BAXTER**, **S. Zivanovic**, **J. R. Mount**, and **J. Weiss**
- 67E-17 Survival of *Salmonella* strains in ground beef containing varying fat contents and heated at varying calculated lethalties **C. J. Williams**, **P. M. Davidson**, **F. A. Draughon**, and **J. R. MOUNT**.
- 67E-32 Multistate study to determine the presence of *Salmonella* in swine and cattle beef fecal swabs and environmental samples **A. RODRIGUEZ**, **H. Richards**, **P. Pangloli**, **J. R. Mount**, and **F. A. Draughon**
- 67F-26 Ingredient optimization to improve texture and color of retorted egg products **H. PERRY III**, **S. Zivanovic**, **J. R. Mount**, **M. P. Penfield**, and **J. Weiss**

Thursday morning, July 22

- 83B-23 Physico-chemical properties of chitosan films enriched with oregano essential oils **S. CHI**, **S. Zivanovic**, **J. Weiss**, and **F. A. Draughon**.
- 83G-31 Vanilla flavoring type and labeling affects consumer liking of ice cream. **A. R. PARKER** and **M. P. Penfield**.

Thursday, July 22: afternoon

- 99D-6 High-intensity ultrasound induced inactivation of *Escherichia coli* O157:H7 in the presence of salts **K. STANLEY**, **D. A. Golden**, and **J. Weiss**.
- 99D-25 Surface charge of microbial cells and biopolymers as affected by environmental conditions. **L. M. MICHAEL**, **S. Zivanovic**, and **D. A. Golden**.

Friday, July 23: morning

- 114A-1 Stability of liposomal encapsulated antimicrobials as a function of pH, temperature and phospholipid composition **T. M. TAYLOR**, **P. M. Davidson**, B. Bruce, and **J. Weiss**.
- 114A-26 Temperature and pH stability of phytophenol antimicrobials encapsulated in emulsifier micelles **S. GAYSINSKY**, **P. M. Davidson**, B. Bruce, and **J. Weiss**.
- 114B-24 Development of a quartz crystal microbalance system (QCM) for detection and quantification of real time volatile compound production in the headspace of wine glasses. **M. JARRARD**, **W. C. Morris**, and **J. Weiss**
- 114D-22 Enumeration of aerobic microorganisms, coliform, and *Escherichia coli* in animal and environmental farm samples using conventional plating and SimPlate® methods. **P. PANGLOLI**, F. Jackson, **J. H. Stevens**, **H. Richards**, **J. R. Mount**, S. P. Oliver, and **F. A. Draughon**.

IFT Alumni Get-Together

Tentative date: Tuesday evening, July 20

To receive email notification of exact date & time send your address to vikki@utk.edu. You may also check with faculty and students at Poster Presentations.

December 2003 Graduates

B.S.
Johnny Deon Green
Amanda Smith

M.S.
Karen Sebby





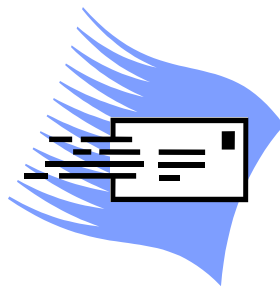
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Attention Alumni

Keep us informed!! Everyone loves to hear what has been going on in the lives of our alumni. As always, we appreciate any comments or suggestions you may have.

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Newsletter Committee:

Dr. Bill Morris, chair; Ms. Vikki Webb, editor; Dr. Ann Draughon, Dr. Marjorie Penfield, Dr. Lana Zivanovic, and Mr. Willie Taylor.

*NOTE: Names in **Bold** are current FST employees, retirees, students or alumni.*

Better Process Control School

By Dr. Bill Morris

Four Better Process Control Schools have been conducted since last fall. Three were specifically for ConAgra in Humbolt and Newport, TN, and one was a general course attracting personnel from companies nationwide. The course is designed for food processors of thermally processed low acid and acidified foods in hermetically sealed containers. It is conducted under the auspices of the U.S. Food and Drug Administration and the Food Processors Institute. The next course is scheduled for September 28-October 1, 2004, in Knoxville. For information contact wcmorris@utk.edu. Instructors include **Dr. P. Michael Davidson, John Mount, and Bill Morris.**

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