

Food Digest

Department of Food Science and Technology



MESSAGE FROM THE DEPARTMENT HEAD

Greetings. December 10, 2013, is a date that should be recorded as part of the Food Science and Technology history. On this date we received a Temporary Certificate of Occupancy for the Human and Agricultural Biosciences Building 1 (HABB1). Almost exactly two years after breaking ground, we have moved into the new 93,860-square-foot building with research and office space for the Food Science and Technology and Biological Systems Engineering Departments. Moving our professional belongings is much like what we have all experienced in moving our personal possessions. It is a time of sorting and evaluation.

Joe Marcy

While most of the department is enjoying beautiful new offices, some of us will remain in our current (FST) building that we still cherish, but the signs of its age are apparent. We will retain the administrative offices and the advising offices. Faculty and staff whose duties are primarily teaching or Extension will remain in FST. Some graduate students also will remain in the FST building, so the path between our two buildings is quickly becoming familiar. We are planning how to best use the space that we now have in FST. Lots of changes are still ahead for the FST department in 2014.

We continue to grow as a department, with new faculty, staff, and increasing undergraduate enrollment. Our undergraduate program now has more than 150 majors. At the first Food Science Club meeting this year we had over 80 students in attendance.

HABB1 is a beautiful building, and the department is delighted to finally be in a building made of Hokie Stone. The office areas and atrium inside HABB1 also have Hokie Stone. One Board of Visitors member commented that he believed the inside of HABB1 was the most attractive part of the building. I invite you to come and judge for yourself. We would love to show you the new building.

Best personal regards,

Joe Marcy

Contents

TEDxVirginia Tech	2	Extra Mile Award	7	Fall 2013 Dean's List	11
Outstanding Senior Award.....	2	Student Receives the Gwin Parker-Gwin Award	7	FST Faculty Mentor Governor's School Students	11
New Faculty Members.....	3	Spotlight: FST Undergraduate	8	Spring 2013 Dean's List	12
Biofilm <i>Salmonella</i>	3	FST Students Inducted into IDR	8	Staff Awards.....	13
Feeding Tomorrow Scholarship Awards.....	3	Sensory Studies Support Science and Society.....	8	Alumni Updates	13
Contamination Risks Associated with 'Living Lettuce'	4	Food Science, Society, and Health Security Course	9	Outstanding Alumni Awards	14
FFA Food Science CDE	4	FFA Milk Quality and Products CDE.....	9	Food Science Club (FSC) Update	14
Living Career Fair	5	FST Alum Receives OSU's Young Professional Achievement Award	9	2013 Spring Awards Celebration.....	15
Tanzanian Student Pursues Master's Degree.....	5	Wine Microscopy Workshop	10	'Pulse of the Planet' Features Duncan's FST Research	15
College Bowl Team Competition.....	6	Students Attend Capitol Hill Days.....	10	The 3rd Annual Natural Coloring Competition.....	16
FST Poster Session Contest.....	6	Undergraduate Awarded Homeland Security Scholarship.....	10		
Awards and Honors	7				



Dr. Susan Duncan presents at the TEDx talks

TEDxVirginia Tech

Sixteen Virginia Tech faculty, students, and alumni participated in the second TEDxVirginiaTech event in November 2013 at the newly opened Center for the Arts.

TED (Technology, Entertainment, Design) is a nonprofit organization that started as a four-day conference in California 26 years ago for the purpose of supporting world-changing ideas. In the tradition of TED events, TEDxVirginiaTech speakers shared inspiring and thought-provoking ideas worth spreading. Each talk focused on the theme of moving “Beyond Boundaries.”

The event was presented by Virginia Tech’s Center for Instructional Development and Educational Research; Institute for Creativity, Arts, and Technology; and University Relations.

Faculty, staff, students, alumni, and the community came together to hear authentic stories from people who think and do things beyond boundaries out of passion. Hopefully the audience members were inspired to take action and make a difference.

This year’s event expanded from 2012’s inaugural TEDxVirginiaTech event to include community members from the New River Valley who were not directly affiliated with the university. At a TEDx event, TED Talks video and live speakers combine to spark deep discussion and connection in a small group.

FST’s Dr. Susan Duncan spoke on “The mixology of food and emotions.” Other speakers came from a wide range of backgrounds including Engineering, Computer Science, Psychology, Theater and Cinema, and International Affairs.

Outstanding Senior Award

Julie McIntire (Sterling, Va.) received the 2013 Outstanding Senior Award for FST. She found that obtaining her food science degree with a science option combined her passions for the methodical, results-oriented nature of hard sciences with the creativity of the culinary arts.

“I want to work in research and development where I can take innovative product ideas from concept to commercialization,” she said. And she’s already well on her way. Having interned in the food safety and quality department at Hillshire Brands, she has already gained valuable hands-on experience in the food industry to complement her academic achievements. She was named to the Dean’s List every semester during her academic career and maintained a high level of involvement in extracurricular activities such as the Food Science Club’s Product Development Team, consistently contributing to the team’s success in the past several years.



Left to right: Dr. Joe Marcy, Julie McIntire, Dean Alan Grant

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New Faculty Members

FST welcomed two new faculty members in 2013: Brian Wiersema and Amanda Stewart.



Brian joined the Department in July in the role of Pilot Plant Manager. Brian is a Virginia Tech Food Science alumnus ('98), and has varied work experience, including attaining his master's

in construction management from the University of Washington. Brian has been an assistant winemaker, cider maker, and QA manager in the food and beverage industries, as well as project manager and building information modeling manager in the architecture/construction industry. Brian joins us from northern California, where he was the quality assurance and analytical lab manager for a craft brewery.

Amanda moved to Blacksburg in August, joining our department as Assistant Professor of Enology and Fermentation. Amanda earned a Ph.D. in Food Science at Purdue University with a focus in enology and a concentration in



ingestive behavior. Her research interests include yeast nutritional status in juice and must from *Vitis vinifera*, hybrid and muscadine wine grapes, developing predictive models for wine fermentation, and the role of fermented foods and beverages in human health and feeding behavior. Previously, Amanda worked as a process engineer and project manager in the biofuels industry and as a winemaker in Oregon and New Zealand. She has served as a judge for regional and international wine competitions for over a decade and has assisted with study-abroad courses in the wine regions of Chile, Argentina, and Italy.

Biofilm *Salmonella*

Virginia Tech scientists have provided new evidence that biofilms (bacteria that adhere to surfaces and build protective coatings) are at work in the survival of the human pathogen *Salmonella*. Over a million illnesses annually are caused by *Salmonella* bacteria, according to the Centers for Disease Control and Prevention. Finding out what makes *Salmonella* resistant to antibacterial measures could help curb outbreaks.

In addition to protecting *Salmonella* from heat-processing and sanitizers such as bleach, biofilms preserve the bacteria in extremely dry conditions, and again when the bacteria are subjected to normal digestive processes. The study appeared in the April issue of the International Journal of Food Microbiology.

"Biofilms are an increasing problem in food processing plants serving as a potential source of contamination," said Monica Ponder, assistant professor of Food Science and Technology. "We have discovered that *Salmonella* in biofilms survive on dried foods much better than previously thought, and because of this are more likely to cause disease."

Outbreaks of *Salmonella* associated with dried foods such as nuts, cereals,

spices, powdered milk, and pet foods have been associated with more than 900 illnesses in the past five years. These foods were previously thought to be safe because the dry nature of the product should stop microbial growth. If thrust into a dry environment, *Salmonella* cease to reproduce, but turn on genes which produce a biofilm, protecting them from the detrimental environment.

Researchers tested the resilience of the *Salmonella* biofilm by drying it and storing it in dry milk powder for up to 30 days. At various points it was tested in a simulated gastrointestinal system. *Salmonella* survived this long-term storage in large numbers but the biofilm *Salmonella* were more resilient than the free-floating cells treated to the same conditions. The bacteria's stress response to the dry conditions also made it more likely to cause disease. Biofilms allowed the *Salmonella* to survive the harsh, acidic environment of the stomach, increasing its chances of reaching the intestines, where infection results in the symptoms associated with food poisoning. This research may help shape Food and Drug Administration regulations by highlighting the need for better sanitation and new strategies to reduce biofilm formation on equipment.

Feeding Tomorrow Scholarship Awards

Hayley Potts (Senior, Purcellville, Va.), Ershad Sheibani (Ph.D. candidate, Tehran, Iran), and Allison Sivak (Junior, Olney, Md.) received the Feeding Tomorrow Scholarship for the 2013 academic year. The Foundation of the Institute of Food Technologists received a record number of scholarship applications this year, making the application process more competitive than ever.

Undergraduates are evaluated primarily on coursework, while graduate student applicants are recognized for coursework, research, volunteer and student leadership activities.

Feeding Tomorrow was established in 1985 and has funded more than \$10 million in food science programs and awarded more than 4,000 scholarships to food science students. It has also collaborated with General Mills, Kraft Foods, and Mondeléz International to offer full-time, paid summer internships.

Contamination Risks Associated with 'Living Lettuce'

Hydroponic farming methods replace soil with water to cultivate crops. They are becoming popular around the world due to their ability to produce a large volume of produce in a limited amount of space. Hydroponically grown lettuce packaged in plastic clamshells with intact roots, marketed as "living lettuce," is also rising in popularity due to its rapid growth rate and extended shelf life.

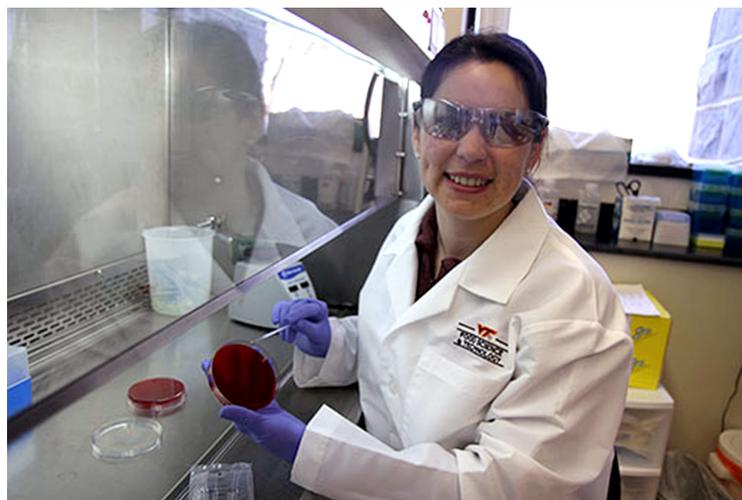
Jessie Waitt (Powhatan, Va.) finished her master's in FST in 2013. She and her advisor, Dr. Monica Ponder, examined the potential for postharvest transfer of *Salmonella enterica* to living lettuce via water or greenhouse workers' handling practices.

Waitt modeled the process from farm to table in both ideal (4°C) and "reality"-based conditions. The standard for realistic conditions involved warmer storage temperatures of 12°C which studies have found is the norm in most household refrigerators. At both temperatures, *Salmonella* survived on leaves and roots for the 18-day shelf life, and temperature abuse (12°C) resulted in increased *Salmonella* survival on roots and leaves. This is a concern because small-scale hydroponic producers who direct-market living lettuce through farmers markets and

roadside stands may not be able to maintain colder temperatures. The high humidity within the packaging clamshells also encourages microbial growth.

"Previous research has stated that removing the outer leaves of lettuce was enough to remove pathogens, but that is not what I found," said Waitt. She used Glo Germ™ to demonstrate that contamination can occur on the surface of inside leaves as well as outside leaves. Glo Germ™ is a fluorescent microspheres solution that simulates the behavior of germs and is only visible to the human eye with a black light. It is often used to train children about the importance of good hand-washing techniques.

The study also demonstrated the transfer of *Salmonella* from contaminated



Jessie Waitt

worker gloves and contaminated roots to leaves where it survived at 4°C for 18 days. Transfer rates from gloves were reduced after each sequential handling event, from 94 percent with head 1, 82 percent with head 2, and 69 percent to head 3. The large numbers recovered from the third head suggest that transfer to additional heads is probable. This problem may be compounded because many harvesters wear the same gloves for packaging that were worn for harvesting.

Waitt's findings indicate a need for the development of safe handling practices for living lettuce.

FFA Food Science CDE

Food Science and Technology hosted the 2013 State FFA Food Science Career Development Event in October. Teams participated in a range of activities that included a product development project, sensory testing, a written test, and safety/sanitation problem identification. The winning team was Central High School from Woodstock, Va., coached by Mrs. Sherry Heishman. Team members were Emily Dysart, Lacey Dysart, John-Robert Helsley, and

Garrett Coffey. Emily was top-placing individual and Lacey placed second. Ben Garber from Fort Defiance High School (Fort Defiance, Va.) was third top-placing individual.

The team went on to earn a Silver Emblem at the 86th National FFA Convention in Louisville, Ky. Garrett and Lacey earned individual Gold Emblems, and Emily and John-Robert earned Silver Emblems.



Central High School FFA team

Living Career Fair

Laurie Bianchi (Ph.D. candidate) participated in a Living Career Fair at An Achievable Dream Academy in Newport News, Va. An Achievable Dream Academy is a school for children who are at risk of failure in school due to socioeconomic factors. Students in kindergarten through 12th grade are offered a quality education in a nurturing environment as well as the opportunity to develop meaningful relationships with caring adults. Eighty percent of AADA graduates go on to college and 20 percent enter the military. The goal for the Living Career Fair was to inspire under-represented students to be excited about their teachers' areas of expertise and Virginia Tech.

Several different departments from Tech led hands-on activities for four groups of 15 7th grade students. Bianchi focused on food chemistry and showed the students how the compound anthocyanin found in red cabbage can be used as a pH indicator. She ground red cabbage in a blender and had the students add foods such as lemon juice, vinegar, and baking soda to the strained cabbage juice to see how acidic and basic foods changed the purple color to blue-green or pink. The fair was a great success.

Bianchi wishes to thank Virginia Tech's Office of Diversity and Inclusion for monetary support for her travel.



Laurie Bianchi

Tanzanian Student Pursues Master's Degree

Aldegunda Matunda is from the Republic of Tanzania, in East Africa. It is a country with a population of 44,928,923, and most people depend on agriculture.

Matunda earned her undergraduate degree in Horticulture in Tanzania at Sokoine University of Agriculture. Following graduation, she was employed with the ministry of agriculture as an extension officer for six years, working with local farmers. She advised them in matters relating to fruit and vegetable production and simple processing techniques. Her experiences made her realize her limitations, and she felt it necessary to build her skills and knowledge of fruit and vegetable processing so that she would be able to provide more complete technical assistance to the local people. Matunda began searching for an institution that might offer sponsorship and found United States Agency for International Development (USAID). This organization seeks young career people and encourages female applicants to apply.

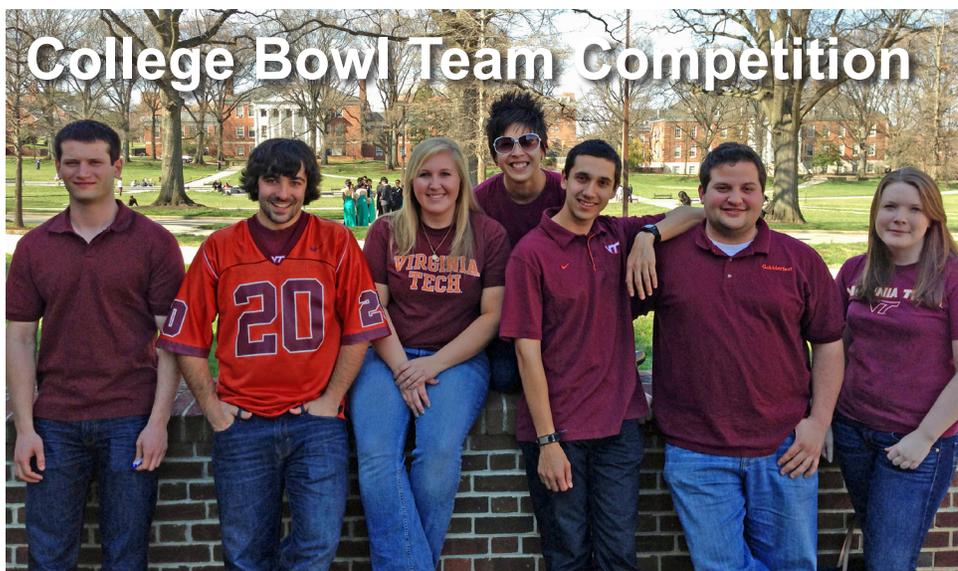


Aldegunda Matunda

Matunda did apply and was awarded a scholarship. She knew nothing about Virginia Tech, but USAID told her that the university is one of the most reputable agricultural institutions in the U.S., so she applied and was admitted into FST as a master's candidate. Her research focus is on long-term preservation methods for fruits and vegetables. In Tanzania, fruits and vegetables are only available fresh, which is a very short window of time; thereafter, they are unavailable. Matunda wants to develop better preservation methods so that these foods might be available for a longer time frame, perhaps even year-round. If she can accomplish this, the malnutrition and disease which are common in her country can be greatly reduced.

The knowledge that she gains at Virginia Tech will help the ministry of agriculture and could initiate much research in the food preservation area. She also hopes that her additional knowledge of food safety, food quality, and food enhancement will aid in her work with local Tanzanian farmers. She wishes to use the skills that she gains from her graduate studies to ensure that better processing techniques are developed to bring about higher quality commercial production in order to feed the people of Tanzania.

"I express my sincere thanks to USAID and their team for giving me this wonderful moment in my life of getting one of the best educations in the world," she said. "I would also like to thank Virginia Tech and the Food Science Department for accepting me."



Left to right: Derek Barlow, Alex Potter, Tori Linville, Lily Yang, Jason Levy, Mark Moskowitz, Mary Beth Wingfield

Question 1: Which of these fruits are native to the United States? Is it: (a) apples, (b) oranges, (c) cranberries or (d) figs. If you chose (c) cranberries, you are correct! The only three fruits native to the United States are: cranberries, blueberries, and muscadines.

Question 2: What is a good starter culture for meats? If you raised an eyebrow at this question, don't worry, you weren't the only one. The answer is: *Micrococcus luteus*.

On April 6, eight brave souls, accompanied by Department Head Dr. Joe Marcy, faced off against competitors from University of Delaware, University of Maryland, and North Carolina State University. Virginia Tech's team was made up of graduate and undergraduate students from the Food Science Department. The team, led by captains Kathryn Goodrich and Tori Linville, practiced on Monday and Wednesday evenings. The rest of the team consisted of graduating seniors Mary-Beth Wingfield, Mark Moskowitz, Alex Potter, Derek Barlow, and graduate students Jason Levy and Lily Yang.

This year, the team placed third! While Katie could not be there for the actual competition, her spirit remained strong with the team as they answered questions and generally had a good time. Their first match was against North Carolina State University. Due to the fact that they have had the same individual on their team for almost seven years, N.C. State won the competition.

While the competition was the main point of the trip, a highlight was meeting the other teams and forming closer connections with other food science students, sharing fun stories, and getting to know each other better. The first night, with many groups segregated by their individual schools for pizza and games night, the Virginia Tech team brought everyone together by comingling everyone into a huge circle. At the TerpZone at U. of Maryland, the schools competed in bowling and pool. On the day of the competition, each team presented the events of their respective Food Science clubs and departments. Not only was this an effective way to see what other schools were doing, it allowed students to exchange information and discuss collaborative efforts between schools.

FST Poster Session Contest

The first annual FST poster contest was held on May 3, 2013. There was an outstanding turnout with 26 entries from graduate and undergraduate students. Cash prizes were awarded to the top-placing posters. In the graduate student division, **Stephanie Pollard** (Ph.D. candidate) won first place with her poster entitled, "Survival of *Salmonella enterica* Newport in *Ralstonia solanacearum*-infected Tomato." **Elizabeth Arnade** (M.S. candidate) came in second with "Measuring Emotional Response to Flavored and Unflavored Milk using Facial Expression Analysis." Third place went to **Jian Wu** (Ph.D. candidate) for "Extracts of Traditional Chinese Medicines Inhibits Growth of Bacteria Related to Seafood."

In the undergraduate division, Natalie Ang and Jordan Newkirk came in first with "The effect of panning on the flavor compounds of Oolong Tea." Laura Griffin came in second with "Dietary grape seed extract administered at 10 mg/kg prevents increases in body fat percentage induced by high-fat feeding in male C57BL/6J mice."



Jordan Newkirk, Natalie Ang – winners of the undergraduate poster competition – with Dr. Joe Marcy



Stephanie Pollard – winner of the graduate poster competition

Awards and Honors

Dr. Renee Boyer received The Honor Society of Agriculture, Gamma Sigma Delta, Extension Award of Merit in April 2013.

Dr. Mike Jahncke received the FDA Leveraging Collaboration Award for effective partnerships and performance. This award was for his efforts in conducting the Successful Good Aquaculture Practices Plus Seafood HACCP Training Program in Can Tho, Vietnam. He also conducted seafood HACCP Training and Train-the-Trainer Good Aquaculture Practices workshops for industry and government officials in Kochi, India, in March and in Bhubaneswar, India, in May. Dr. Jahncke is also serving as subject matter expert for the National Advisory Committee on Microbiological Criteria for Foods (2013-2014).

Moonyoung Choi (M.S. candidate) and **Lester Schonberger** (FST Junior) were selected to participate in USDA's Agricultural Outlook Forum Student Diversity Program held in Arlington, Va., in February 2014. The four-day program is designed to expose

students to contemporary agribusiness, future trends, scientific research, and agricultural policy in today's real world environment. In addition to attending the forum, they toured USDA facilities and met administrators. Choi submitted an essay that addressed "The Greatest Challenge Facing Agriculture over the Next 5 Years." Schonberger wrote about "Agriculture as a Career." The essays from Virginia Tech students were first evaluated by the CALS Office of Academic Programs. Then, they went on to a selection committee at the USDA. Only 35 students (20 undergraduates and 15 graduate students) from across the country are chosen, so these students deserve recognition for their accomplishment.

Lester Schonberger (FST Junior) was selected to attend the annual Hokie Day program which is co-sponsored by the Student Government Association and the Office of the President. This program takes approximately 100 students to Richmond for a day to lobby Virginia legislators on behalf of the school. Common lobbying issues are usually against budget cuts and for more funding.

Student Receives the Gwin Parker-Gwin Award

Anibal Concha-Meyer (Ph.D., 2013) received the Gwin Parker-Gwin Award for Student Community Engagement, given by Virginia Tech



Anibal Concha-Meyer

Engage. The award is given to select students who have demonstrated sustained commitment to community engagement as a part of their academic education, and have made notable differences in the community through their efforts.

Concha-Meyer voluntarily completed the instructor and proctor certification through the National Restaurant Association to teach the ServSafe Manager and Food Handler food safety education courses for the Virginia Cooperative Extension. He is one of the few certified instructors able to teach the course in Spanish, thereby helping VCE to meet this growing need statewide. Concha-Meyer is very perceptive in identifying his students' varied learning styles, and willingly provides additional instruction on how to take tests and offers test-taking strategies. He also translates educational materials necessary to support Extension's food safety programs. He continuously researches new ways to enhance his teaching and professional skills and always has a real "can do" attitude. Professor Joseph Eifert and Consumer Food Safety Program Manager Melissa Chase nominated Concha-Meyer for this recognition.

Extra Mile Award

Matt Schroeder, FST Ph.D. candidate, was selected as the 2013 winner of the Extra Mile Award. The award was presented by **Payton Pruett** (M.S. '90, Ph.D. '93) and **Richard Linton** (M.S. '91, Ph.D. '94). Pruett and Linton established the scholarship in 2010.

The monetary award and plaque are presented annually to a graduate student in Food Science who exhibits strong leadership skills through activities such

as peer mentoring, teaching, research, publishing, creativity, service, and participation in professional association activities.



Left to right: Payton Pruett, Matthew Schroeder, Richard Linton

Spotlight: FST Undergraduate

Amanda Salinas-Jones, a junior from Pulaski, Va., is an honors student in the Department of Food Science and Technology.



Amanda Salinas-Jones

As a high school student at the Southwest Virginia Governor's School for Science, Mathematics, and Technology, she conducted a science fair project on *Epigallocatechin gallate* (EGCg) and caffeine levels in green tea and human tea taste preferences, leading to a first-place win in the Virginia Junior Academy of Science contest's Consumer Sciences category.

In her first year at Virginia Tech, Salinas-Jones worked as a laboratory technician in Tech's Food Analysis Laboratory Control Center and worked within a class team to conduct research on consumer acceptance of a pork sausage product for a Blacksburg small business.

She conducts research, in cooperation with the USDA, on a value-added and enhanced food safety approach for raw oysters, using a combination of flavoring systems and high pressure processing. In addition to her research activities, Salinas-Jones has been a math and language tutor for the Virginia Tech Community Literacy Corps. and is involved in intramural sports. She was inducted into Gamma Sigma Delta in 2012 and has received numerous scholarships.

In spring 2013, Salinas-Jones completed a study abroad at the Universidad de Belgrano in Buenos Aires where she studied Spanish. Her research mentor Susan Duncan and academic advisor Linda Granata provide research guidance for the high pressure processing.

FST Students Inducted into IDR

Iota Delta Rho, the Interdisciplinary Research Honor Society (IDR), inducted Raul Saucedo, Aili Wang, and Courtney Crist (all Ph.D. candidates) as Associate Members at the third Interdisciplinary Research Day at Virginia Tech. IDR Day marks the induction of new honor society members and promotes interactive dialogue between scholars of all disciplines and levels in brainstorming interdisciplinary answers to complex questions.

Saucedo's doctoral research focus is post-harvest surface treatments using antiseptics and medical devices to reduce Salmonella contamination and biofilm formation on the nested surface of cantaloupes. His research includes the food science, chemistry, and horticulture disciplines.

Wang's doctoral research focus is (1) the interaction between iron and lactoferrin and their effect on biological fluids including bovine milk and human saliva; and (2) the interaction of iron and sweeteners and the effect on metallic and sweet perception. Her research includes the food science and biology disciplines.

Crist is involved in the Water INTERface Interdisciplinary Graduate Education Program (IGEP) and the CALS Graduate Teaching Scholar program. Her research focus is studying consumer perception and acceptability through emotional response and qualitative theories as it relates to food processing and technology.

Sensory Studies Support Science and Society

The Food Science and Technology (FST) Sensory Lab has initiated a marketing campaign of "serving science and society." This campaign provides incentives that help participants feel good about participating in sensory research conducted through the lab. Panelists are rewarded for their participation with a gift card as well as canned foods (total value about \$5). Panelists can keep the gift card and may donate the canned food, through the FST Sensory Lab, to the Montgomery County Emergency Assistance Program, which provides assistance to families and individuals in immediate, temporary, and emergency situations.

"While participating in sensory research to improve and develop food products appeals to the scientist in me, being able to do this and have food donated to local food banks because I participated makes this activity so much more worthwhile," said Laura Lawson, FST Seafood Research Associate. "It seems to me to be a thoughtful use of resources and it encourages people to give back to their communities."

FST Sensory Lab activities range from class laboratories, product development student teams preparing for national competitions, student research (high school, undergraduate, and graduate), and contract research with industry.

The new HABB1 building that FST moved into in January boasts a state-of-the-art sensory laboratory where the majority of sensory testing will occur in the future. This laboratory will be equipped with a computerized data collection system and touch-screen monitors in each of the 10 sensory booths. The lab is also equipped for studying emotional response to foods and food packaging using facial response technology, which is not currently available in any other academic food science sensory laboratory in the United States.

If you would like to participate in upcoming sensory studies, or if your company has a sensory question that needs addressing, please contact Dr. Susan Duncan (duncans@vt.edu; phone 540-231-8675; fax 540-231-9293).

Food Science, Society, and Health Security Course

A new Food Science special topics course was offered for the first time in fall of 2013. FST 2984: Food Science, Society, and Health Security was designed to introduce students to the connection between food science research, teaching, outreach, and civic engagement. Food science-related health security topics involving food processing, food safety and microbiology, and applied food science were covered. It served as a hands-on introductory class for the Food Science and Technology major.

The course was offered to all CALS students and 19 students completed the class last fall. Sixteen were Food Science majors while three were from other departments. Upon successful completion of the class, students



Dr. Sean O'Keefe demonstrates how an oxygen analyzer is used to measure the level of oxygen in vacuum packaging



Students prepare fresh seafood

obtained certifications as Virginia Cooperative Extension Master Food Volunteers, which gives them the option to participate as a volunteer. Topics utilized FST faculty research expertise to develop students' understanding of the role of food science in health security through lectures and experiential learning activities. Faculty also coached students on the role of, and methods of, dissemination of information.

Overall, student feedback was very positive, and the students recommended that the course should be offered again. They appreciated the opportunity to hear from FST faculty regarding their areas of research and expertise, and they gained a better understanding of the link between our research, teaching, and outreach.

FST Alum Receives OSU's Young Professional Achievement Award

Vinodini "Emma" Buck (Ph.D., 2012) received the Young Professional Achievement Award from Ohio State University in March 2013. Buck received her B.S. and M.S. degrees at OSU before coming to Virginia Tech to pursue her Ph.D. in Food Science under Dr. Sean O'Keefe. The award recognizes OSU alumni for their early professional accomplishments and serves as a stimulus toward further efforts by younger alumni.



FFA Milk Quality and Products CDE

Sherando High School of Stephens City, Va., won the state Milk Quality and Products Career Development Event held at FST in June 2013. Eight schools participated, with Fort Defiance High School (Fort Defiance, Va.) coming in second and East Rockingham High School (Elkton, Va.) placing third. Contestants completed a written exam, evaluated milk samples for flavor and quality, and identified cheeses and milk fat contents. Team members were Virginia Jesse Ferrell, Haley Burns, Garrett Bush, and Collin Ordonez,

coached by Christina Whitacre. They also completed a problem-solving activity and performed CMT tests. Ferrell was top-placing individual, Burns was second, and Bush was third.

Sherando went on to compete at the National FFA Convention & Expo in Louisville, Ky. They came in fifth nationally, earning a Gold Emblem. Ferrell and Ordonez were Gold Emblem individuals while Burns and Bush earned individual Silver Emblems.



Wine Microscopy Workshop

A two-day Wine Microscopy Workshop was offered to wine industry members in November. Twenty-nine winemakers, winery laboratory personnel and winery owners attended. Dr. Molly Kelly, Enology Extension Specialist, led the workshop, which focused on basic microscopy and wine spoilage organisms that may be encountered throughout the winemaking process. Attendees received hands-on training in microscopy, slide preparation and staining techniques as well as identification of wine microorganisms using microscopy.

Presentations and lab exercises included simple staining, Gram stain, phase contrast microscopy, and performing viable yeast cell counts. Dr. Bruce Zoecklein, Professor Emeritus, presented an overview of the spoilage yeast, *Brettanomyces*, to the group. Ken Hurley and Ann Sandbrook of the Enology Services Lab demonstrated how the lab cultures bottles of wine for bacteria and yeast. They also offered information to participants on

purchasing supplies to perform this testing on their own. Food Science graduate students, Lauren Bowman, Nathan Briggs, Megan McGuire, and Elizabeht Arnade volunteered their time to assist with the workshop and learn more about microorganisms associated with wine spoilage.

Due to its initial success, this workshop will be offered again in the future. Attendees expressed an interest in performing some hands-on culturing of microorganisms, so this exercise will be incorporated into future workshops.



Undergraduate Awarded Homeland Security Scholarship



Nicholas Peavy (Mount Airy, N.C.), a junior majoring in FST, received a prestigious scholarship from the Department of Homeland Security's National Center for Food Protection and Defense. This is a new career development award offered through the *Frontier* program's grants.

The two-year award and research program includes a monthly living stipend, financial support for tuition and fees, a summer internship stipend, and travel funds for career development field trips and workshops.

Students Attend Capitol Hill Days

Jason Levy (M.S. candidate) and **Lily Yang** (M.S. candidate) were selected to attend Capitol Hill Day in April 2013. They were the only two participants from Virginia. The event is sponsored by the Coalition for the Life Sciences (CLS). Headed by Lynn Marquis, CLS is "an alliance of six nonprofit professional organizations working together to foster public policies that advance basic biological research and its applications in medicine and other fields including science education, professional training, and the funding, management, and oversight of scientific work, especially by the federal government."

Capitol Hill Day connects scientists with their members of Congress in Washington, D.C., and seeks to strengthen the communication between them. Scientists from all biological research disciplines and at all levels of training are encouraged to participate in the Hill Day program. Those selected received a travel stipend to make the trip to D.C. to advocate and share their positions for increased scientific funding to both the National Institutes of Health (NIH) and National Science Foundation (NSF) for FY14.

Levy and Yang had the chance to meet with members of Senator Mark Warner's and 9th District Representative Morgan Griffith's delegations. They were able to discuss research funding and opportunities with representatives from both offices. Additionally, they attended a briefing of the Congressional Biomedical Research Caucus. It was a great opportunity to experience the inner workings of our government and to advocate for good science policy on Capitol Hill.

Visits serve to educate legislators about science and the impact of scientific findings on furthering human health. In this way, visits develop goodwill with legislators who can not only have their scientific questions answered, but also allow them an opportunity to see the results of their continued support.

Fall 2013 Dean's List

Abigail Lawton	Senior	King George, Va.
Amanda Marx	Junior	Oakton, Va.
Amberley Bayse	Junior	Fincastle, Va.
Andrea Stone	Senior	Stafford, Va.
Andrew Gilley	Senior	Bel Air, Md.
Andrew Smithson	Senior	New Cumberland, Pa.
Anne Peters	Senior	Riner, Va.
Anne Ickes	Senior	Lewisburg, W.Va.
Caroline Ryan	Senior	Downinton, Pa.
Christina Weaver	Senior	Hockessin, Del.
Conor McKenna	Senior	Allentown, PA
Diana Woodrum	Junior	Sterling, Va.
Elisha Johnson	Junior	Herndon, Va.
Emily Clarke	Senior	Fairfax Station, Va.
Gregory Porter	Senior	Virginia Beach, Va.
Hailey Cassell	Junior	Galax, Va.
Hayley Potts	Senior	Purcellville, Va.
Huy Le	Junior	Annandale, Va.
Ian Philips	Senior	Alexandria, Va.
Jenna Angell	Senior	Lynchburg, Va.
Jordan Newkirk	Senior	Centreville, Va.
Kevin Carney	Junior	Downingtown, Pa.
Laura Griffin	Senior	Leesburg, Va.
Laura Gotthardt	Senior	Hillsdale, N.J.
Le Mar Baliwag	Senior	Potomac Falls, Va.
Maria Fiore	Junior	Winthrop, Mass.
Marilyn Wingfield	Senior	Appomattox, Va.
Mary Blodget	Junior	Bloxum, Va.
Megan Beatty	Senior	Blacksburg, Va.
Melissa Morgan	Senior	Winchester, Va.
Michelle Stark	Junior	Spotsylvania, Va.
Nanci Collins	Senior	Clarksville, Md.
Natalee Ang	Senior	Chesapeake, Va.
Nicole Va.n Schaack	Senior	Wall, N.J.
Ryan Henson	Senior	Newport, Va.
Shane Pasch	Senior	Virginia Beach, Va.
Sharon Auria	Senior	Pittsburgh, Pa.
Stephanie Such	Senior	King George, Va.
Tamzin Kaiser	Senior	Blacksburg, Va.
Tan Vi	Junior	Blacksburg, Va.
Travertine Orndorff	Senior	Blacksburg, Va.
Virginia Kelly	Junior	
William Coleman	Senior	Catonsville, Md.

FST Faculty Mentor Governor's School Students

The Southwest Virginia Governor's School is one of Virginia's 18 state-initiated magnet Governor's schools that offer advanced classes in science and math. Approximately 140 gifted high school juniors and seniors from eight school divisions are enrolled. The Department of Food Science and Technology has been actively involved with the school for several years.

In 2013, **Dr. Susan Duncan** mentored **Katlyn Smith**, a senior at Pulaski County High School. Her project was entitled, "Dairy Cattle Breed Effect on Yogurt Quality." For her efforts, she received an honorable mention from the Virginia Tech Statistics Club, an American Society of Mammalogists Award, the Virginia Dental Award for first place in Animal Sciences, and first place in the Animal Sciences Category. Smith is currently at Virginia Tech studying Animal Science.

Sydney Fain (also mentored by Dr. Susan Duncan), a junior from Auburn High School, submitted, "Interaction of Ferrous Sulfate and Alternative Sweetening Agents in the Perception of Sweetness and Presence of Dysguesia." She received first place from the Virginia Tech Statistics Club, an award from the Society for In Vitro Biology, and third place in the Medicine and Health Sciences category. Her research also won the Grand Award in the Archimedes Competition sanctioned by Virginia Tech. She presented at the Virginia Junior Academy of Science

continued on page 12



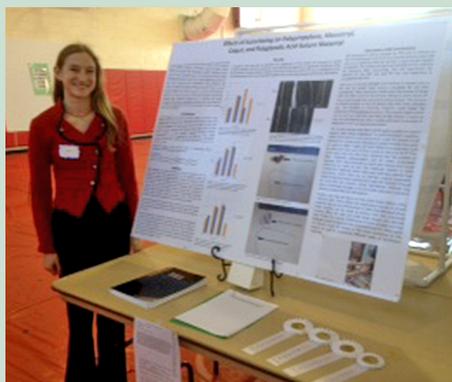
Governor's school students display their trophies

FST Faculty Mentor Governor's School Students continued from page 11

Symposium at Virginia Tech and won first place in the Medicine and Health Science category from projects across the state. She also received "Best Research Paper" across all disciplines.

Taylor Duncan, a junior from Pulaski County High School, entered her project, "Effects of Autoclaving on Suture Material." She received American Chemical Society Awards (first in the Virginia Blue Ridge Section), and second in the North Eastern Tennessee Section, the American Association of University Women Award, a VT Statistics

Club honorable mention, first place in the Chemistry/Biochemistry category, and the Virginia Dental Award in Animal Sciences. Kim Waterman served as her research mentor.



Taylor Duncan with her science fair poster

Dr. Sean O'Keefe has routinely provided career presentations to students at the school about food science as an academic program and a career option. O'Keefe mentored **Tyler Williams**, a junior from George Wythe High School, who submitted, "Comparison of Different Extraction Methods of Oligomeric Proanthocyanidins in Yeast Inhibition." He placed third in the Archimedes Competition and first at the Southwest Virginia Governor's School Science Consortium and Blue Ridge Highlands Regional Science Fair in the Consumer Science and Plant Science categories, respectively. Williams is now attending the University of Virginia and majoring in Biology.

Elizabeth Francis (advised by Dr. Sean O'Keefe), a junior at Jefferson Forest High School, attends the Central Virginia Governor's School. Her project was "The Effect of Cooking Methods on the Levels of Omega-3 Fatty Acids in Wild-Caught Alaskan Sockeye Salmon." She won an honorable mention at the regional science fair as well as the Women in Science award.

Spring 2013 Dean's List

Abigail Lawton	Senior	King George, Va.
Amberley Bayse	Sophomore	Fincastle, Va.
Andrew Gilley	Junior	Bel Air, Md.
Anne Ickes	Sophomore	Lewisburg, W.Va.
Brett Driver	Senior	Salem, Va.
Bridget Bier	Junior	Freehold, N.J.
Diana Woodrum	Sophomore	Sterling, Va.
Emily Clarke	Senior	Fairfax Station, Va.
Hayley Potts	Senior	Purcellville, Va.
Ian Philips	Senior	Alexandria, Va.
Jordan Newkirk	Senior	Centerville, Va.
Julie McIntire	Senior	Sterling, Va.
Kevin Carney	Sophomore	Downington, Pa.
Le Mar Baliwag	Senior	Sterling, Va.
Marilyn Wingfield	Senior	Appomattox, Va.
Meagan Harmeson	Sophomore	Yorktown, Va.
Melissa Limbaugh	Senior	Glen Allen, Va.
Michael Torti	Senior	Downington, Pa.
Moonyoung Choi	Senior	Vienna, Va.
Natalee Ang	Senior	Chesapeake, Va.
Nicholas Peavy	Sophomore	Mount Airy, N.C.
Samantha Cooper	Senior	Alexandria, Va.
Shane Pasch	Senior	Virginia Beach, Va.
Tamzin Kaiser	Junior	Blacksburg, Va.
Terence Solomon	Freshman	Freehold, N.J.
Thet Aung	Senior	Herndon, Va.
William Coleman	Senior	Catonsville, Md.
Zachariah Ewen	Sophomore	Fincastle, Va.

Staff Awards

Dan Taylor, a research specialist at the Southwest Virginia Aquaculture Center, was named the CALS employee of the month for March. Dan's nominator praised his enthusiasm, initiative, and professionalism.

His nominator wrote: "One of the most notable things about Dan is that, even though he works alone most of the time, he manages to stay motivated and he gets the job done. In fact, not only does he complete assigned tasks in a timely fashion, but he typically takes the initiative to do additional reviews of the literature and contacts experts so that he learns more about the task at hand and is doing it in the best way possible."



Vicki Keith, FST's administrative program specialist, was named employee of the month for February. Vicki was praised for helping to ease the transition when there were retirements in the department.

"Vicki has taken on numerous additional duties since joining the department; when three employees retired, Vicki graciously volunteered to help pick up some of the tasks that they had been responsible for."



In addition to her hard work, she was also praised for working well with the students in the department and for keeping morale high.

Trina Pauley, an administrative program specialist in accounting and finance for the Department of Food Science and Technology, was selected as May's Employee of the Month.



Trina's nominator praised her active participation in the governance process at Virginia Tech. She has served as president, vice president, and secretary of the College of Agriculture and Life Sciences Staff Association, and has served on the Staff Senate, on the Commission on Staff Affairs, and on other committees.

"She is willing to help others across departmental, college, and university lines, as well as to work above and beyond her regular job assignments," Trina's nominator wrote.

In addition to her service to the university, Trina also mentors students and helps them navigate complicated university channels.



Dianne Bourne, lab and research specialist, received the university's 2013 President's Award for Excellence. The President's Award is presented annually to Virginia Tech staff employees who have made extraordinary contributions by consistent excellence in the performance of their job.

"Dianne has made many significant contributions that are not customary for laboratory personnel," said George Flick, University Distinguished Professor of Food Science and Technology. Flick said her leadership has resulted in a potential new industry for Southside Virginia, an improved method for cooling clams, and prevention of a million dollar product loss for a lobster company.

Bourne has shown herself to be an excellent leader. In the years that she has supervised the lab, none of the reports, manuscripts, or presentations have been questioned or received negative critique.

Bourne has identified potential projects for external funding, and she has provided valuable input on grant proposals and put significant effort into creating research presentations.

Alumni Updates

Jeri Kostal (M.S. 2012) is R & D Nutritionist at United Pet Group in Blacksburg, Va.

Nancy Peper (B.S. 1981) has been promoted to Principal Scientist at McCormick in Baltimore, Md.

Outstanding Alumni Awards

Dr. Tatiana Lorca (B.S. 1995; M.S. 1999; Ph.D. 2002) received the 2013-2014 Outstanding FST Alumni Award (10+ years). She is an active member of the CALS Dean's Advisory Council, the CALS Leadership Council, and the FST Advisory Board.

As Manager of Food Safety, Education and Training with Ecolab Inc., Dr. Lorca provides educational and training assistance to corporate and small businesses. The services and support that she and her team provide make the U.S. and global food supply safer. In her previous employment, she coordinated and delivered food safety training and certification programs throughout North and South America.

Her networking has resulted in numerous research opportunities for FST faculty and graduate students. She has been instrumental in identifying sanitation and cleaning equipment needs and resources for the new HABB1 pilot plants. As a member of the FST Advisory Board, she provides guidance and assistance in improving departmental academic and research programs and physical facilities.

Vanessa Teeter (B.S. 2004; M.S. 2006) received the 2013-2014 Outstanding Recent Alumni Award (<10 years). She was highly involved as an undergraduate and graduate student. As an alumnus, she is active in the Connecticut Alumni Chapter and manages the chapter Facebook page. She has supported the chapter golf tournament fundraiser for the Connecticut Chapter Virginia Tech Student Fund, which assists a Connecticut student going to Tech. She has assisted alumni in making connections with employment recruiters.

Teter has quickly advanced in her professional career, working initially in a small family-owned business

(Watson Inc.) as an associate food scientist. At her second employer, The YoCrunch Company, she was promoted from product development technologist to manager of product development within two years. In this role for YoCrunch, which was recently purchased by The Dannon Company,

she provides leadership and guidance for new product development, including formulation and nutrition. She is responsible for improving economics, marketing and product positioning, and she works closely with client companies in development of new products.

Food Science Club (FSC) Update

The Food Science Club was very active during the fall semester. In September, they had a booth at the CALS Fall Kickoff Picnic and at GobblerFest where they initiated a lot of interest in the Food Science major and in the club from students outside the major. Oktoberfest was also a big social event and fundraiser that promoted beer, bratwurst dinners, and Polka music.

At the first general meeting of the year, David Rasmussen, head of food safety in product development at Nestle, gave an interactive presentation and accepted resumes. Rasmussen is a Virginia Tech Food Science alum, and he spoke to a packed house. Later in the semester, Lacey Keesee, food safety supervisor for Kellogg's, and Steve Tracey, head of food safety at Food Lion, spoke to the club and accepted resumes to review. In November, representatives from Hillshire Brands and Bellisio Foods provided information sessions and conducted on-site interviews.

Ten FSC members volunteered at Feeding America Southwest Virginia to support the Institute of Food Technologists' Day of Service and Hunger Action Month in September. After a day of sorting and packaging food to be delivered to area food banks, they had a social gathering at Macado's in Salem. In November, FSC members received free tickets to attend

"Alton Brown Live" in Roanoke.

During the fall semester, the FSC developed the Mentor – Mentee program where FST graduate students were paired with undergraduates who wanted to know more about the program and career options.

The club was instrumental in setting up the various product development groups and recruiting for the College Bowl team. The "Golden Can Competition" is currently in progress. The Food Science departments at N.C. State, Clemson, Rutgers, and Virginia Tech are vying to see who can collect the most cans to donate to area food banks.

Spring semester is also going to be a busy one for the club. Check them out on their Facebook page (Virginia Tech Food Science Club) to keep up with current activities and events.



2013 Spring Awards Celebration

Food Science and Technology's annual awards recognition ceremony was held on May 1. Following the awards presentation, a cookout and picnic was hosted at the department.

Departmental and Industry Awards:

Amanda Salinas-Jones (Pulaski, Va.)	Boyd-Arline Award
Laura Griffin (Leesburg, Va.)	FST Achievement Award
Kevin Carney (Downingtown, Pa.)	
Bridget Bier (Freehold, N.J.)	Paul Large Scholarship
Shane Pasch (Virginia Beach, Va.)	R.F. Kelly Award
Anne Ickes (Lewisburg, Va.)	Carolina/VA Dairy Products Association Scholarship
Emily Clarke (Fairfax Station, Va.)	Marvin Poster Memorial Scholarship
Christina Weaver (Hockessin, Del.)	
Tamzin Kaiser (Blacksburg, Va.)	FST Outstanding Achievement Award (sponsored by the Dairy Foundation of VA)
Julie McIntire (Sterling, Va.)	Outstanding Graduating Senior
Hayley Potts (Purcellville, Va.)	W.F. Collins Scholarship
Allison Sivak (Olney, Md.)	Harvey Scott Scholarship
Natalie Donvito (Williamsburg, Va.)	Mid-Atlantic Dairy Food Boosters Inc.
Sarah Mason (Ashburn, Va.)	Marriott Meat Processor's Award
Victoria Dowling (Cincinnati, Ohio)	
Caroline Ryan (Downingtown, Pa.)	Honorable Robert Whitman Award



'Pulse of the Planet' Features Duncan's FST Research

Syndicated radio show "Pulse of the Planet" aired programs with Dr. Susan Duncan of the Department of Food Science and Technology in January 2014. She provided insight regarding the roles of (and research involving) food. The first program was about "Comfort Food," the second was the "Language of Food," and the last was "Objectivity."

According to the show's website, "Each weekday, the 'Pulse of the Planet' radio series provides its listeners with a two-minute sound portrait of Planet Earth, tracking the rhythms of nature, culture, and science worldwide." The show is made possible in part by the National Science Foundation.

"Pulse of the Planet" airs in Blacksburg on WVTF Radio IQ Virginia Public Radio (1260AM or HD89.1.2FM), and worldwide on Armed Forces Radio. In all, the program is broadcast on more than 250 stations around the world, most of them NPR stations. The programs also can be accessed on the "Pulse of the Planet" website (<http://www.pulseplanet.com/>), and include narrative, photos, and video, along with a list of stations carrying the show.

The 3rd Annual Natural Coloring Competition



FST's Danisco product development team won second place in the Natural Coloring Competition. The team developed a red velvet cake mix containing beet, carrot, and sweet potato powder. The frosting was made from nonfat cream cheese fortified with blueberry powder and chia seeds, and supplemented with a combination of prebiotics and probiotics.

Their formulation of classic red velvet cake was gluten free and contained antioxidants and natural colorings. It was also low in calories, high in fiber, and contained a full serving of vegetables.

Team members were Ershad Sheibani, Jian Wu, Jordan Newkirk, Ian Niblock, and Allison Pisieczko. There were 11 finalists from nine universities. The winning team was from Ohio State University, who entered a multi colored children's cereal. They topped Virginia Tech's score by 7 points.

Food Digest

UPDATE YOUR INFORMATION. We are interested in knowing what you are doing! Please help us keep our mailing list current by completing and returning this form to the Department of Food Science and Technology, Virginia Tech (0418), Blacksburg, VA 24061, or e-mail Terry Rakestraw at rakestra@vt.edu with the following information.

Name: _____ Year and Degree: _____

Home Address: _____

Employer: _____ Job Title: _____

Work Address: _____ E-mail Address: _____

News about Yourself (attach additional pages as needed): _____