

Food Digest

Department of Food Science and Technology



Food Science and Technology to get new home

In December, Virginia Tech broke ground for the first building in the new Biosciences Precinct at the corner of Duck Pond Drive and Washington Street. The 93,860-square-foot building will incorporate laboratory and support facilities, focusing on a wide range of microbiological and biochemical research. Researchers will benefit from the expanded space, which will house research programs on food safety, food packaging and processing, environmental quality analysis, bioenergy and biomaterials, systems biology, and nanotechnology, among other areas.

The building will house research facilities for the biological systems engineering and food science and technology departments. Researchers and graduate students will benefit from open-plan laboratories, pilot plant research space, a sensory/flavor-testing suite with individual panelist booths, prep kitchens, and group debriefing and discussion rooms. Other perks will include new offices for researchers, and work spaces for graduate students.

The southeast corner of the Duck Pond Road parking lot (the Cage) will be closed for the duration of the project.

When complete, Biosciences Precinct is expected to have four laboratory buildings, and will include more than **400,000 square feet of research space** for the College of Agriculture and Life Sciences. Additionally, it will have a **full-scale chiller plant, a greenhouse complex**, and its own parking area.

Construction on the first building is expected to take about **24 months**, and will cost **\$53.7 million**.

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GREETINGS

With the start of 2012 many new and dynamic developments await you. The construction of the building, which will house the Food Science and Technology (FST) and the Biological Systems Engineering departments, is underway. From our windows that face Duck Pond Drive, we can see a growing mound of dirt as site preparation begins. Soon there will be cameras mounted at the site so we can have a continuous view of the construction. The FST web site is also under construction. When finished, it promises to have many new features. We will certainly include the link to the construction cameras, so check our

web site often for updates. Our project manager brought an official site hard hat, a Day-Glo™ yellow safety vest, and approved eye protection so you can visit the site. We are expected to move in by the end of 2013.

On a similar, but separate note, we are in the midst of significant changes in the current food science building. Last fall, two types of energy saving lights were installed and evaluated in three locations within the building. Based on this trial, a new type of light fixture was selected to replace all standard fluorescent lighting at Virginia Tech. The new lights are expected to cut our energy consumption by half.

Much to my surprise, the first building on campus to receive the new lights is the current food science building. A survey indicated that several parts of our building were too dark. To that end, we

not only received new lights, but received brighter lights in many parts of the building. The work on the new lights started in December and will continue through April. Wow, what a difference!

This newsletter will highlight many of the changes and accomplishments taking place in our department.

Our faculty, staff and students continue to excel in teaching, research and Extension. Thank you for your continued support and interest in the FST department.

Best regards,
Joe Marcy
Department Head



Food Science and Technology Student receives accolades

Mary Diehl of Grottoes, Va., was recognized as the outstanding senior in the Food Science and Technology department.

She has been a member of the biological and life sciences learning Community for three years. In addition, she was a National Residence Hall Honorary Inductee in 2008.



Mary Diehl

Diehl was vice president of the Food Science Club, a member of the pharmacy club, and Alpha Chi Sigma, a professional chemistry, co-ed fraternity. She served as a Big Event team leader, and participated in Relay for Life. She also volunteered as a pharmacy technician at the Harrisonburg Free Clinic.

The students who receive the annual outstanding award are recognized for their participation in activities and opportunities that have broadened their educational experience, and who have surpassed their traditional college career.

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Faculty members provide food safety education

Given the public's heightened awareness of food safety concerns, and their ardent interest in locally grown foods, Virginia Cooperative Extension has been meeting the increased demand for consumer education. Extension recently held an in-service training on canning and food preservation for its agents.

Since 1991, Extension has offered ServSafe® – an accredited food safety certification program developed by the National Restaurant Association. ServSafe® trains food service managers in sanitation, food storage, safety regulations, pest management, and food handling. The program is offered to local food service workers at restaurants, hospitals, schools, and childcare centers.

Extension also offers food safety training to individuals who occasionally prepare and serve large quantities of food for sizeable groups, public events, or fundraisers. The Cooking for Crowds curriculum was specifically developed for nonprofit organizations. Participants in the program are typically organizational volunteers who have minimal professional food service training, and/or have access to commercial food service equipment.



Melissa Chase conducts canning workshop

The program uses information and hands-on activities to demonstrate the risks that can develop when cooking large volumes of food. Also, participants learn how to reduce those risks so they can prepare food that is safe and delicious.

Most Virginia municipalities do not mandate food safety certification, but Virginia code does require food service managers to demonstrate knowledge of foodborne disease prevention, including proper food handling. If they are unable to demonstrate adequate food safety knowledge, the restaurant can be shut down immediately.

Beyond commercial and nonprofit food safety training, Extension continues to serve as a resource for individual consumers. "With the increased interest in the local-food movement and the economic downturn, more people are growing and preserving their own food. A failure to adequately preserve foods in the home can result in foodborne illness," says Renee Boyer, assistant professor of food science and Extension consumer food safety specialist. "People know that they can come to us for reliable information."

"Once people have a garden and grow something, they want to know what they can do with it," said Melissa Chase, consumer food safety program manager in food science and technology. For more than 19 years, Chase has been canning, and enjoys teaching others. Her classes cover equipment safety,



food safety, and what consumers need to know before they get started.

She often incorporates hands-on canning as part of her training; for example, the class participants use the equipment, which makes them feel more comfortable. "The folks have an 'a-ha' moment when they realize that they can do this. They also like to see the finished product and have something to take home," Chase said.

The continued success of these core food safety programs, helped Extension successfully transfer research-based knowledge into practical know-how for residents of the community.

George Flick awarded Emeritus status

George Flick Jr., professor in the Department of Food Science and Technology, has been conferred the University Distinguished Professor Emeritus title by the Virginia Tech Board of Visitors.

A member of the Virginia Tech community since 1969, Flick has made significant contributions to the understanding of food science and technology through his work in seafood technology, aquaculture, and risk management. His cooperative work with researchers from William and Mary College led to Virginia Tech being named a Sea Grant College. He established the Seafood Agricultural Research and Extension Center in Hampton, Va., as well as the Aquaculture Extension facility in Saltville, Va. He also established the graduate curriculum in health product risk management, which will be graduating its first class in 2012.

He has published more than 150 journal articles, 52 book chapters, and five books, and served the scientific community by planning, conducting,

and publishing research that was funded by more than \$20 million in external grants and contracts.

Flick held leadership positions in 26 professional societies, and was named Fellow by the American Association for the Advancement of Science by the Institute of Food Technologists. He was a visiting professor at USDA's Southern Regional Research Center, the National University of Mexico, and at Tokyo University's Department of Marine Biochemistry. His collaborative efforts have been recognized with the USDA Secretary's Honor Award, the USDA Secretary's Group Honor Award, the USDA Certificate of Appreciation for National Leadership in Seafood Hazard Analysis and Critical Control Point Alliance, and former Vice President Al Gore's National Performance Review Hammer Award.



George Flick, Jr.

Additional awards and honors include the IFT's Myron Solberg Award for Excellence in Government Collaboration, IFT's Elizabeth Fleming Stier Award for pursuit of humanitarian ideals, the Department of the Army's Certificate of Appreciation, the Gamma Sigma Delta Extension Award of Merit, the Atlantic Fisheries Technology Society's Earl P. McFee Award, the Pi Kappa Phi Lifetime Service and Achievement Award, and the Virginia Tech Alumni Award for Extension Excellence.

FST faculty and students support Lego League

Several members of the Food Science and Technology (FST) department played a significant role in helping Blacksburg's Harding Avenue Elementary School's fifth grade first Lego League Team.

The Epic Tomato Defenders took first place in the regional Lego League competition. Food safety was the theme of the competition.

In addition to programming a robot to complete missions, the team researched food safety, and provided an innovative idea for combating problems in this area.

Laurie Bianchi, a doctoral candidate, was an assistant coach. Bryan Aviles, a

master of science candidate, provided a presentation to the team, and Karleigh Bacon gave a tour of the FST building. Robert Williams, assistant professor, and other graduate students sat in the audience as the team presented their idea, "Adios Contaminos 3000." Susan Duncan, professor, and Kumar Mallikarjunan, associate professor, met with the SuperComputers, a Lego League team from Franklin and Rachel Carson Middle Schools in Fairfax County, Va. This team, coached by Chandru Rajam, won the regional tournament at George Mason University, and was one of 37 contestants, to compete in the Virginia,

District of Columbia Lego League championship tournament. The team took first prize in the Research Project Presentation category.



The Epic Tomato Defenders

2011 winner of the Extra Mile Award and IFT's Feeding Tomorrow Scholarship

Elisabeth "Liz" Greene, a food science and technology master's candidate from Asheville, N.C., was the recipient of the 2011 Extra Mile Award. The award was established in 2010 by FST alumni, Dr. Richard Linton (M.S. '91; Ph.D. '94) and Payton Pruett (M.S. '90; Ph.D. '93).

One graduate student is selected each year based on leadership skills, peer mentoring, teaching, research, publishing, creativity, service and/or participation in professional association activities. Greene was presented with a monetary award and plaque on September 30th at a luncheon.

She also received the Institute for Food Technologists' Feeding Tomorrow Scholarship for the graduate food microbiology division. Greene was required to submit a statement of interest in food microbiology, including a description of career objectives and professional aspirations.

Feeding Tomorrow was established in 1985 as a charitable entity made up of a community of donors committed to the vision of safe and abundant food for all. Feeding Tomorrow funded more than \$10 million in food science programs, and distributed more than 4,000 scholarships to exceptional students, pursuing undergraduate and graduate food science degrees.

Congratulations to Liz for her many contributions to the department, and to the community!



Sarah Elisabeth Greene receives the 2011 Extra Mile Award, Payton Pruett (left) and Joe Marcy (right)

Statistical insight

Spring 2012: **98 FST majors**
and **21 FST minors**

Females: **68 percent**

Ethnic in origin: **23 percent**

2011 fall semester: **99 undergraduate majors**
and **19 minors**

2010: **22 students** graduated with a
bachelor of science in food science.

The department has 16 master of science students and 12 doctoral students. Of those, 61 percent are female. More than 100 graduate applications were submitted for fall 2011, but only 12 were admitted into the department.

In 2009, the department awarded FST scholarships totaling \$8,500. In 2010 undergraduate and graduate students received \$9,800 in scholarships. And in the spring of 2011, FST scholarships soared to \$31,750.

Between 2008 and 2010, FST experienced a 27 percent decrease in the number of faculty, and staff funding declined by 32 percent. Courses taught increased by 25 percent, which resulted in a 36 percent rise in student enrollment. Graduate student numbers increased by 123 percent, while the number of doctoral students decreased by 24 percent.

The number of theses and dissertations expanded by 125 percent, and the number of publications increased by 69 percent.



Graduate scholarships advance dairy product research at Virginia Tech

The International Dairy Foods Association awarded scholarships to four graduate students who conduct dairy food quality and safety research in the Department of Food Science and Technology (FST) at Virginia Tech. One doctoral student, Laurie Bianchi, and three master's students, Bryan Aviles, Jeff Hamilton, and Kerri Martin, received support related to their graduate research and training expenses.

Improving packaging for protecting flavor, and nutritional value of fluid milk, dairy and soy-based beverages

Jeff Hamilton and **Laurie Bianchi**, under the direction of FST Professor Susan Duncan, are studying the effects of visible light wavelengths on bioactive molecules in fluid milk, dairy- and soy-based beverages. Their goal is to provide the packaging, dairy and food industries with information that will advance innovation in packaging for milk and beverage products.

Specifically, Bianchi is studying the effects of chlorophyll and certain band wavelengths of light on the photooxidation of polyunsaturated

fatty acids. In addition, she hopes to determine how photooxidation of these fatty acids under different light conditions affects sensory changes of soymilk.

Improving the safety of dry milk powder

Bryan Aviles is studying molecular microbiology under the direction of Monica Ponder, assistant professor. His thesis focuses on the genes expressed by *Salmonella* Tennessee and *Salmonella* Typhimurium, in free single cell (planktonic) organisms. He is comparing this expression to a slime layer, called a biofilm, in low moisture foods, such as dry milk powder.

This project will establish an approach for evaluating pathogens in milk powder in its dry state. This is in comparison to previous methods that require additional water. Availability of moisture alters gene expression in bacterial cells, affecting the understanding of pathogen survival in low moisture foods. Dried biofilms are the most common form a pathogen takes within a dry dairy processing plant. By looking at gene expression of biofilm, versus planktonic *Salmonella* within dry powdered milk, more representative gene expression patterns can be obtained. The understanding of what state a *Salmonella* cell is in can lead to biofilm targeted interventions for reducing the risk of dry milk product contaminations in products such as infant formula. This work will be of broad interest to the international dairy industry.

Milk proteins may improve quality of life for cancer patients

Kerri Martin, guided by professor Susan Duncan, is studying the biochemical role of milk proteins in reducing the perception of metallic flavor, a common complaint of cancer patients as they undergo therapeutic treatments. Martin, in conjunction with a multidisciplinary team of researchers, including environmental and civil engineers, seeks to understand the mechanism of metallic flavor associated with water, pharmaceuticals, and foods.

Margo Duckson



Duckson receives Italian Packaging Award

Margo Duckson, a doctoral candidate, spent two weeks in Italy as one of the 2011 winners of the Italian Packaging Technology Awards Program. She was one of nine winners from universities throughout the nation.

While in Italy, the students visited Milan, Bologna, Venice, and Rome. They participated in five company tours: Cavanna Packaging Group, MG2, IMA, Sacmi Imola, and Marchesini Group. When they weren't visiting companies, they toured the host cities, visited cultural sites and enjoyed scrumptious Italian cuisine.

Each entrant submitted a 10-12-page paper that reviewed an area of technical innovation, and/or covered an innovation in packaging materials.

Noel receives Undergraduate Research Scholars Award

Chase Noel, a senior majoring in food science and technology, was one of five Virginia Tech students to receive the ACC Undergraduate Research Scholars Award. The \$2,000 scholarship was awarded for his project entitled, "Transmission Dynamics of E. coli Between Cows and Calves." Noel has been working

with Monica Ponder, assistant professor, for the past two semesters. Noel, one of 47 entrants, placed second in the competition. The ACC Undergraduate Research Scholarship program recognizes highly talented, undergraduate students who pursue ambitious and unique research projects.

New Faces in Food Science and Technology

Karleigh (Huff) Bacon is director of the food innovations program. She is a native of Anderson, Ind. She earned her bachelor of science in biology, and her master of science in food science at Purdue University. Following her tenure with the National Food Laboratory as a food safety microbiologist, she came to Virginia Tech in 2008 to begin her doctorate work in Food Science and Technology (FST), with a concentration in food microbiology. Her research focused on produce food safety, and the extraction of natural antimicrobials from jalapeno peppers.

Melissa Chase is the consumer food science program manager. She has a doctorate in career and technical education from Virginia Tech. Since 2007, she has served as an Extension agent in Family and Consumer Sciences in Giles and Bland counties. Chase coordinated community educational programs in family financial management, nutrition/health/wellness, and family/child development. She focused on regional food safety programs with local health departments in the Mount Rogers Health District, including the ServSafe® manager's

certification, ServSafe® employee starters courses, and the Cooking for Crowds food vendors training. She also conducted home preservation workshops on canning fruits, vegetables, and wild game.

Andrew Neilson is an assistant professor. He received his doctorate in food science in 2009 from Purdue University, and completed a postdoctoral fellowship in the University of Michigan's Department of Family Medicine/Comprehensive Cancer Center in 2011. Neilson's area of expertise is functional foods and their role in food quality and human health, particularly in relation to obesity and chronic diseases.

Ann Sandbrook joined FST in June 2011 as a technician for the enology service laboratory. She graduated from Virginia Tech in 2009 with a bachelor of science in human nutrition, foods, and exercise and a minor in medicine and society. Prior to joining FST, she worked in a dairy quality assurance lab, where she performed analytical and microbiological testing.

Dan Taylor joined the department as a laboratory and research specialist. He is stationed at the Southwest Virginia Aquaculture Research Center in Saltville, Va., where he provides support for aquaculture and aquaponic research.

Vicki Keith was hired as an administrative assistant. Prior to this position, she worked 4½ years agricultural and Extension education.

Angela Correa accepted the position of communications manager at Virginia Tech's Center for Geospatial Information Technology. She worked 13 years in the FST seafood group.



2011 Gamma Sigma Delta initiates

Pictured from left to right: Robert Williams, associate professor, FST graduate student initiates Jeff Hamilton, Kerri Martin, Matt Schroeder, Elisabeth Greene, Bryan Aviles, Mona Kumar, Jessica Maitland, Laurie Bianchi, Susan Duncan, professor, and FST graduate student initiate Renee Felice

FST is proud to have nine graduate students inducted into the Gamma Sigma Delta (GSD) Agricultural Honor Society. A total of 55 graduate student initiates were inducted at the annual initiation and awards ceremony held on April 19, 2011.

Robert Williams, GSD secretary/ treasurer and FST associate professor introduced the initiates, and GSD President Joyce Latimer completed the ceremony.

Williams was recognized with the 2011 GSD Faculty Extension Award and Susan Duncan, FST professor, received the GSD Faculty Research Award.

Eric Kaufman, assistant professor in Agriculture and Extension Education, was the keynote speaker. His presentation, "The Challenge of Leadership: Strengths-based Leadership and Followership" challenged audience members to recognize their individual leadership strengths.

FST celebrates spring awards

Food Science and Technology's annual awards recognition ceremony was held April 26th, 2011 at the Hahn Garden amphitheater on the Virginia Tech campus. Following the ceremony, a cookout and picnic was held at the department.

Departmental and industry awards were presented to the following students:

Ellen Ewell, Alexandria, Va., Boyd-Arline Award,

Erin Deliere, Washington, Pa., Paul Large Scholarship,

Christian Bushnell, Berlin, Md., The Carolina-Virginia Dairy Products Association Scholarship,

Victoria Yu, Charlottesville, Va., Harvey Scott Outstanding Graduating Senior Award,

Brandon Pov, Ridgeway, Va., R.F. Kelly Award,

Andrew Smithson, New Cumberland, Pa., Food Science and Technology Outstanding Achievement award, sponsored by the Dairy Foundation of Virginia,

Shane Pasch, Virginia Beach, Va., W.F. Collins Scholarship,



Elizabeth Chin receives award

Mary Diehl, Grottoes, Va., Outstanding Graduating Senior Award, sponsored by the Virginia Meat Packers,

Shannon Glisan, Williamsburg, Va., and **Michael Torti**, Downingtown, Pa., FST Achievement Award,

Nathan Briggs, Herndon, Va., and **Chase Noel**, Virginia Beach, Va., Marvin Poster Memorial Scholarship,

Elizabeth Chin, Herndon, Va., Virginia Meat Packer's Award,

Clara Hintermeister, Oakton, Va., TIC Gums Award, and

Julie McIntire, Sterling, Va., Mid-Atlantic Dairy Food Boosters Award.

National/Regional Awards:

Margo Duckson, a doctoral candidate, Sanford, N.C., Italian Packaging Award and a trip to Italy.

At the faculty level,

Sean O'Keefe, professor, College Certificate of Teaching Excellence.

Susan Duncan, professor, Gamma Sigma Delta Award for Research Excellence.

Robert Williams, associate professor, Gamma Sigma Delta Award for Extension Excellence.



Shannon Glisan receives award

Undergraduate degrees awarded – Spring/Summer 2011

Fatemeh Ataei, Alexandria, Va.

Jordan Bergloff, Roanoke, Va.

Matthew Boling (Cum Laude), Blacksburg, Va.

Kirstie Cook, Stafford, Va.

Mary Diehl (Cum Laude), Grottoes, Va.

Caitlin Fornasar, Woodbridge, Va.

Alison Freedman, Flemington, N.J.

Brittany Kenah, Clifton, Va.

Jeri Kostal (Magna Cum Laude), Amherst, Va.

Lance Holmes, Glen Allen, Va.

Sarah Honaker (FST minor), Pilgrims Knob, Va.

Katie Mason, Ashburn, Va.

Stephen Miller, Yorktown, Va.

Meghan Patton, Clear Brook, Va.

Hannah Robinson, Winchester, Va.

Megan Rosario, Stafford, Va.

Gina Sitta (FST minor), Virginia Beach, Va.

Michael Yager, Virginia Beach, Va.

Jenny Yoon (Cum Laude), Annandale, Va.

Alumni updates

Michelle Anonick Banks (B.S. '10) is a paper science research technician at MeadWestvaco Corp.

Vanessa Teter (M.S. '06) is manager of product development at The YoCrunch Co.

Renee Felice (M.S. '11) is a research associate for Virginia Tech., and under contract with DuPont Teijin Films.

Denise Gardner (M.S. '09) is the extension enologist for Penn State University.

Scott Daigle (M.S. '05) is a barrier bags specialist for Vista International Packaging. He and his wife, Carrie, welcomed their first child, Andrew Paul, on Nov. 8, 2011.

Graduate degrees awarded in 2011

Student	Degree	Professor	Thesis/Dissertation
Renee Felice	M.S.	Susan Duncan	"Sensory and Physical Assessment of Microbiologically Safe Culinary Processes for Fish and Shellfish"
Qin Li	M.S.	Susan Duncan	"Controlling Light Oxidation Flavor in Omega-3 Fatty Acids Enriched 2% Milk by Packaging Films"
Luman Chen	M.S.	Sean O'Keefe	"Sensory and Chemical Characteristics of Eastern Oysters (<i>Crassostrea virginica</i>)"
Liyun Ye	M.S.	Sean O'Keefe	"Antioxidant Activity of <i>Ampelopsis Grossedentata</i> Crude Extract and Its Major Component Dihydromyricetin"
Karleigh (Huff) Bacon	Ph.D.	Renee Boyer	"Association of foodborne pathogens with <i>Capsicum annuum</i> fruit and evaluation of the fruit for antimicrobial compounds"
Govind dev Kumar	Ph.D.	Robert Williams	"Role of airborne soil particulates in transfer of <i>Salmonella</i> spp. to tomato blossoms and subsequent fruit contamination"



Luman Chen, Renee Felice and Qin Li

Spring 2011 dean's list

Le Mar C. Baliwag, freshman, Sterling, Va.
Matthew K. Boling, senior, Blacksburg, Va.
Nathan D. Briggs, junior, Herndon, Va.
Elizabeth L.Chin, senior, Herndon, Va.
Ruth L. Edwards, junior, Copper Hill, Va.
Ellen S. Ewell, senior, Alexandria, Va.
Shannon L. Glisan, senior, Williamsburg, Va.
Jeri E. Kostal, senior, Amherst, Va.
Julie M. McIntire, sophomore, Sterling, Va.
Shane E. Pasch, sophomore, Virginia Beach, Va.
Megan E. Rosario, senior, Stafford, Va.
Andrew T. Smithson, freshman, New Cumberland, Pa.
Andrea K. Stone, freshman, Stafford, Va.
Michael J. Torti, sophomore, Downingtown, Pa.



The Spring 2011 Graduating Class!

Undergraduate degrees awarded - Fall 2011

Chris Bushnell (Summa Cum Laude), Berlin, Md.
Ellen Ewell (Summa Cum Laude), Alexandria, Va.
Shannon Glisan (Summa Cum Laude), Williamsburg, Va.
Robert Gunter, Colonial Heights, Va.
Victoria Kokal, Mosley, Va.
Trey McCoy, Rustburg, Va.
Kurt Nario, Virginia Beach, Va.

The D.C. scoop

Staff, graduate students and faculty dished out ice cream and served root beer floats to thousands, including politicians, in the nation's capital. The June 23rd event, in commemoration of National Dairy Month, raised awareness of the issues related to the dairy industry, and promoted dairy consumption.

Virginia Tech participants joined volunteers from Penn State University to promote dairy consumption.

The International Dairy Foods Association sponsored the ice cream party.

Virginia Tech alum honored with Distinguished Achievement Award

Wes Schilling, who received his doctorate from Virginia Tech in 2002, received the 2011 American Meat Science Association (AMSA)

Distinguished Achievement Award. An

associate professor at Mississippi State University, Schilling's numerous publications and presentations in meat chemistry have been primarily published in Tier 1 journals. His work, well defined in fundamental terms, is broadly applicable across many commodities in the muscle foods arena. He established himself as one of the brightest young meat scientists.

At Mississippi State University, Schilling is constantly ranked as one of the best teachers. Graduate students and co-workers continually turn to him for guidance. He often contributes his time and expertise to the university's muscle foods workshops. The Achievement Award, established in 1992, recognizes and fosters the development of young AMSA members who demonstrate significant scientific skills in muscle foods research and technology that contribute to the animal products industry.

Award winners were honored at a special reception at the AMSA Reciprocal Meat Conference in Manhattan, Kan.



Dr. Wes Schilling

IJRA reaches milestone

The International Journal of Recirculating Aquaculture (IJRA) is a peer-reviewed journal produced within FST. It has celebrated its 10th year anniversary. The annual journal features original research on recirculating aquaculture from throughout the world, as well as reviews of key aquaculture books, written by leaders in the field. IJRA is indexed by several citation services, and provides a valuable service to aquaculturists around the world. IJRA is published with additional support from partners in the Virginia-Maryland Regional College of Veterinary Medicine, and Virginia Cooperative Extension. Go to www.ijra.com to find out more.



Payette awarded Perpetual Wine Grape Productivity Tray

The Atlantic Seaboard Wine Association (ASWA) selected Tom Payette, a winemaking consultant (Food Science and Technology, '85) as its 2011 distinguished American wine industry recipient of the ASWA Perpetual Wine Grape Productivity Tray.

Since 1984, the Wine Grape Productivity Tray has been presented each year to an individual, or organization, that contributed to the sustainable growth and economic viability of the American wine industry. Previous recipients of this prestigious honor have included Sen. John W. Warner, Bruce Zoetlein, Women for WineSense, and television personality, Willard Scott.

Payette is a hands-on and analytical winemaking consultant based in Rapidan, Va. He serves clients throughout the United States, Spain, Canada, and the Caribbean. He has worked since 1985, crafting still and sparkling wines in Virginia. He also has seven years' experience in ultra-premium Bordeaux varietal wine production in Napa, Calif. He studied under famed Bordeaux Enologist Jacques Boissenot.

In addition to winemaking, Payette is a noted national speaker, recognized International wine judge, and Wine Tech columnist for Vineyard & Winery Management magazine. He is a member of the American Society of Enology and Viticulture, ASEV-Eastern Section; The American Wine Society; The American Vineyard Foundation's review board; and serves on the advisory board to Wineries Unlimited, the East Coast's premier wine industry trade show and seminar event. He is a past member of the governor-appointed Virginia Winegrowers Advisory Board where he also served as technical committee chair. Payette was named Winemaker of the Year by Vineyard & Winery Management magazine in 1999, a title he still holds today.



Tom Payette receives tray from David Barber, 1st vice president (left) Carl Brandhorst, president (right)

People over the age of 50 demonstrate fading ability to taste iron

“Our findings are ... unique in that drinking water is the source of the environmental sensory contaminant, and evidence is provided for wide variation in the human population,” the report states. “Whereas our research focused on iron, there are implications for other metals of health concern, most notably copper from copper pipes. As our previous research has demonstrated, copper is less flavorful than iron, and it is known that copper is also more toxic than iron.”

Andrea Dietrich, professor of civil and environmental engineering at Virginia Tech, and her colleagues, Susan Mirlohi, a Ph.D. student in environmental engineering, and **Susan Duncan, professor of food science and technology**, point out that people need less iron after age 50.

The ability to perceive metallic flavor in water can help people limit exposure to metals, including iron.

Metallic flavor can be caused by the dissolved iron and copper commonly found in groundwater, or it may be

introduced to tap water by the nation’s corroded iron water supply pipes. The latter has been an issue for water drinkers and utilities for years. More than 2 million miles of the nation’s infrastructure of water and wastewater pipes is nearing the end of its useful life, but the mostly underground facilities often do not attract much attention because of their invisibility.

Studies also suggest that older people who consume too much iron – especially in dietary supplements and iron-rich foods – may be at an increased risk for Alzheimer’s disease and other

age-related conditions. Scientists long have known that taste perception fades with age. The Virginia Tech research group set out to fill in the gaps in knowledge about how aging affects the perception of metallic flavor in water.

The study, which included 69 participants, aged 19 to 84, showed a distinctive age-related decline in their ability to taste iron. People over age 50 tended to miss the metallic taste of iron in water, even at levels above the thresholds set by the U.S. Environmental Protection Agency and the World Health Association.

Team proudly places second in Danisco Knowledge Award competition

The Danisco Knowledge Award offers the opportunity for students to apply the skills and knowledge that they acquired during their food science studies. The most innovative and well-developed food product ideas that focused on healthy versions of popular snacks and desserts were considered. The 2011 finalists were, largely, vegetable-based and gluten-free foods.

Virginia Tech’s six-person team took second place, the highest ranking ever for the university. Led by Margo Duckson, the team included Brittany Kena, Bryan Aviles, Govindaraj Dev Kumar, Liyun Ye and Raul Saucedo. They developed “Black Turtle Brownie Mix,” a gluten-free brownie mix that is high in fiber, low in fat, and low in calories. It is made from black bean flour and includes a packet of dulce de leche for a Latin American flavor twist. This concept is designed for those who want to enjoy the

decadence of a moist, triple chocolate fudge brownie without compromising a healthy lifestyle. Litesse® polydextrose was incorporated to add additional fiber and prebiotics, reduce fat content, and lower glycemic response. It was also used to improve texture and stiffness, given the absence of gluten. Xivia™ C xylitol reduced calories while providing the same level of sweetness.

The team also earned \$5,000, which was deposited into the product development account.

A team of seven students from Clemson University took first place for its “Farmer Chad’s Very Veggie Dip with Gluten-Free Chips,” a healthful, portable snack offering. It included a full serving of roasted vegetables, accompanied by gluten-free pita chips.

Team members sell food at spring plant fundraiser at Virginia Tech



Govindaraj Dev Kumar, Margo Duckson, Bryan Aviles, Raul Saucedo, Brittany Kena (not shown), and Liyun Ye



Faculty awards

The American Society for Enology and Viticulture-Eastern Section presented **Bruce Zoecklein**, Professor Emeritus in the Department of Food Science and Technology (FST), with its Outstanding Achievement Award. The award citation read, "Presented to Dr. Bruce W. Zoecklein for his contributions to the science of wine flavor and aroma, and for his leadership and training of wine producers and researchers."



The Outstanding Achievement Award is presented "to provide recognition for the lifetime accomplishments of individuals who have meritoriously contributed to the advancement of enology or viticulture, or to both fields."

Sean O'Keefe, professor, was awarded the 2011 College Certificate of Teaching Excellence from the College of Agriculture and Life Sciences at Virginia Tech.



Susan Duncan, professor, received the Award for Research Excellence from the VPI & SU Chapter of Gamma Sigma Delta.

Robert Williams, associate professor, earned the Gamma Sigma Delta Award for Extension Excellence from the VPI & SU Chapter.



Graduate student receives research award

Georgianna Mann (Marietta, Ga.) received a monetary award from the graduate student assembly's Graduate Research Development Program (GRDP). Mann's research project was entitled, "Effects of mineral content in bovine drinking water: Does iron content affect milk quality?" She was one of 29 masters and doctorate candidates selected for the Fall 2011

cycle. Professor Susan Duncan is her advisor.

The GRDP provides monetary support for degree-contingent research conducted by Virginia Tech graduate students. This funding opportunity is available to graduate students twice a year in two cycles for the academic year 2011-2012.

Update on Food Science Club (FSC) activities



FSC members Mona Kumar and Jessica Maitland at Gobblerfest

The FSC at Virginia Tech wrapped up a fall semester filled with food, fun, and fellowship. We enjoyed the opportunity to participate in a variety of career development activities with companies, including ConAgra Foods, Cargill, and Sara Lee Corp.

Other guest speakers included representatives from local businesses such as Attimo Winery in nearby Christiansburg, Va. We were happy to have completed a profitable fundraiser in which we sold brats, beans and cookies at Oktoberfest in the Hahn Pavilion. In addition to club fundraisers, we also took part in charitable activities such as a holiday food drive to benefit Blacksburg's Interfaith Food Pantry. Trips to processing facilities like the Hershey plant in Stuart's Draft, Va., and the Bull and Bones Brewery were entertaining and educational.

International pot-lucks, cookie swaps, and holiday parties allowed us to get to know a little bit more about each other and our diverse cultures. We also had the unique opportunity to spread the word about opportunities and careers in FST with informational booths at Gobblerfest, the Majors Fair, and CALS Homecoming Tailgate.

We look forward to an exciting Spring semester filled with activities such as an exhibit at Kid's Tech University, group outings to Attimo Winery and Château Morrisette, recruitment from Cyovac Sealed Air, Tyson and Schreiber Foods, participation in Relay for Life, and Iron Chef style cook-offs! Officers for the 2011-2012 school year are Liz Greene (president), Mona Kumar (vice president), Liz Royson (treasurer), Chase Noel (secretary), and Bryan Aviles (webmaster/historian).



Left to right: Kerri Martin, Katheryn Goodrich, Haleigh Simonpietin, Mona Kumar, Liz Greene

Staff awards

Three staff members from Food Science and Technology (FST) received the college's Employee-of-the-Month Awards in 2011. This award is given to employees who perform tasks beyond normal work performance, and demonstrate consistently good work. The award also recognizes employee dedication and exemplary job completion.

Hengjian Wang, laboratory specialist, meats, received his award in May. He teaches the meat science class, performs chemical analyses, and trains students to perform chemical analyses. He is the primary resource for statistical analysis and experimental design, and is always ready to help with any project.



Hengjian Wang

Walter Hartman, laboratory specialist, dairy, was the July recipient for the award. He taught labs for the dairy and food processing classes, and works closely with the dairy products' judging team. He is a valuable resource for Virginia dairy processors and was a cheese judge at national and world cheese contests.



Walter Hartman

Joe Boling, systems programmer analyst, received the award in October. He has been with the department for 32 years; his responsibilities included teaching, computer security, and website maintenance. He ensures that virus protection is up to date, that files are backed up, and that all computers are problem free. Joe also assists faculty, staff, and graduate students with statistical analysis.



Joe Boling

Dianne Bourne, laboratory and research specialist, received the 2011 Staff Award for Outstanding Performance in Labs. This annual award recognizes the exemplary accomplishments of an individual for performance supporting research and/or teaching labs.



Dianne Bourne

Water INTERface Ph.D Interdisciplinary Program

Water is needed for life, and quality water is needed for health.

The Water INTERface program is a Ph.D. interdisciplinary graduate research and education program with academic-corporate partnerships. The program comes under Virginia Tech's Interdisciplinary Graduate Education Program (IGEP). Susan Duncan and Sean O'Keefe are two of 14 FST professors participating in the program. Other faculty members represent Human Nutrition, Foods and Exercise, Biology, and Civil and Environmental Engineering.

The program focuses on basic and translational science that specializes in the following areas:

Drinking water chemistry,

Water taste and odor quality,

Water-borne infectious diseases,

Environmental microbiology,

Risk assessment,

Water treatment, re-use and public health,

Community nutrition and behavior, and

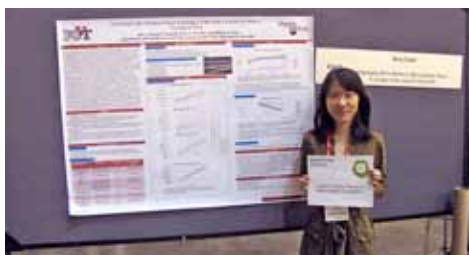
Public policy and ethics.

Domestic and international corporate partners are encouraged to support the program by serving as advisory council members, assisting with graduate stipends and scholarships, and hiring graduates of the program. Industry representatives will provide direction on research areas so discoveries can translate to real world applications. Students in the program participate in service projects in developing countries. They may also intern in corporate labs, and take part in sabbatical and scientific exchange programs.

Poster presentations at IFT and IAFFP

Food Science and Technology graduate students represented the department at the Institute of Food Technologists' (IFT) Annual Meeting & Food Expo, held June 11-14 in New Orleans.

Qin Li, (M.S. '11), presented her poster entitled, "Controlling Light Oxidation Flavor in Omega-3 Fatty Acids Enriched 2% Milk by Packaging Films". Qin received IFT's Certificate of Merit, and was a finalist in the John C. Bruhn Research Paper Poster Competition.



Qin Li (M.S. 2011)

Renee Felice, (M.S. '11), presented her poster in the Aquatic Food Products division. Her research evaluated the "Effect of Endpoint Temperature of Salmon, Tilapia and Shrimp on Consumer Acceptability and Perception of Food Safety."



Renee Felice (M.S. 2011)

The department was also active at the International Association for Food Protection held in Milwaukee from July 31st through August 3rd. The following presented their posters:

Ashley Eisenbeiser, Robert Williams, Joseph Eifert, Renee R. Boyer, and Susan S. Sumner:

"Effect of Alternative Household Sanitizing Formulations to Inactivate

Foodborne Pathogens on Food Contact Surfaces."

Bryan Aviles, Monica Ponder, Peter Ziegler, and William Swecker:

"Persistence of Verocytotoxigenic Escherichia coli in a Pasture-based Beef Cow-calf Cohort."

David Kang and Joseph Eifert:

"A Quantitative Microbial Risk Assessment Model for Reducing the Incidence of Human Campylobacteriosis Due to Chicken Consumption."

Karleigh Huff, Renee R. Boyer, Robert Williams, Sean O'Keefe, and Cynthia Denbow:

"The Isolation of Bacterial Growth Suppressing and Growth Promoting Compounds from Jalapeno Pepper Extract Using Liquid Chromatography."

George J. Flick, Dianne M. Bourne, and Linda A. Granata:

"Use of High Hydrostatic Pressure Processing on Three Human Pathogenic Strains of Vibrio parahaemolyticus in Live Gulf Coast Oysters (Cassostrea virginica)."

Lynn Ann Robertson, Benjamin Chapman, Catherine N. Cutter, Joseph Eifert, Nancy Franz, Abigail Villalba, and Renee R. Boyer:

"Assessment of Food Safety Educational Needs and Current Practices of Front-line Grocery Food Handlers through Survey and Observational Data Collection," and

Judy A. Harrison, Julia Gaskin, Mark A. Harrison, Renee R. Boyer, Geoffrey Zehnder, and Jennifer L. Cannon:

"Survey of Food Safety Practices on Small to Medium-sized Farms and in Small Farmers' Markets."

Virginia FFA Association- Dairy foods career development event

Sherando High School in Stephens City, Va., took first place in the state's Future Farmers of America (FFA) Dairy Foods Career Development Event (CDE), which was held June 27, 2011. The school was one of seven that competed in the contest, and the winners were announced at the Virginia FFA Convention at Virginia Tech. FST hosted the event.

Sherando's team members were Kasey Johnson, Jack Dunlap, Brandon Strosnider and Logan Smith. All were top individual winners, and received pins provided by the Virginia FFA Association. The highest-ranking individual received a plaque, which was endowed in memory of Robert Harper. The state's winning team was recognized with a plaque sponsored nationally by Dairy Farmers of America.

Luray High School captured second place, and Fort Defiance High School came in third.

Sherando represented Virginia at the national Dairy Foods CDE, which was held in conjunction with the National FFA Convention in Indianapolis. Strosnider and Dunlap received individual Silver Emblems. Logan Smith earned a Bronze Emblem. The team earned a Silver Emblem. Christie Whitacre was the team's coach.

The Virginia FFA Dairy Foods CDE is a competitive activity that allows students to prove their knowledge in the recognition, selection and management of quality dairy foods. Participants must complete a written exam on milk production and marketing, evaluate milk samples for flavor and quality, identify cheeses, evaluate milk sediment pads and milker parts for defects, and distinguish between dairy and non-dairy products.

College of Agriculture and Life Sciences outstanding alumni awards

Janet Webster (B.S. '84; M.S. '94; Ph.D. '06) received the Outstanding Recent Alumni Award in Food Science. Upon graduation, she started her career on the proposal development team in the office of the vice president for research. She was subsequently promoted to associate director of finance and administration for the Fralin Life Science Institute.

Webster used her graduate training and professional experience to assist other Virginia Tech faculty in developing their research proposal writing skills. She assisted in the development of Virginia Tech's research proposals, surpassing \$50 million, contributing technical and editorial advice. She has been instrumental in developing and implementing the Fralin Life Sciences Institute's technical writing workshop

as well as recruiting for the graduate weekend. She frequently delivers programs related to proposal writing within the Faculty Development Institute at Virginia Tech. She co-teaches a graduate course in multidisciplinary grant writing and scientific ethics. She assists in preparing future generations of scientists who will influence the scientific integrity and competitiveness of this nation.

Payton Pruett (M.S. '90; Ph.D. '93) received the Outstanding Alumni Award. Since 2005, he served as vice president for corporate food technology and regulatory compliance for The Kroger Co. Prior to this, he worked for ConAgra Foods, first as manager of refrigerated prepared food safety, quality and lab services, then as senior

director of food safety and lab services. He is an adjunct professor at Purdue University, and sits on the editorial board of the Journal of Food Protection. Throughout his career, Pruett has continued to contribute to and serve the College of Agriculture and Life Sciences. He is a member of the departmental advisory board, and provides perspective on external factors that may affect departmental programs. He also is a liaison between the department and the corporate communities. He offered financial support to the department by creating the Extra Mile Award – an annual \$1,250 award given to a selected Food Science and Technology graduate student who exhibits strong leadership skills through peer mentoring, teaching, research and/or other activities.

State and National FFA food science career development events

The FFA team from Stonewall Jackson High School in Quicksburg, Va., won first place in the 2011 Food Science CDE held at VA Tech in September 2011. Team members were Jessie Baker, Alex Bodanske, Whitney Bowman and Brittany Bowman and their coach was Mr. Warren Brill. The team from Central High School placed second and Fort Defiance came in third in the contest. Five teams participated.



State winners from Stonewall Jackson High School

Whitney Bowman National top placing individual

In October, the winning team went on to represent Virginia at the national Food Science CDE in Indianapolis, IN. They placed fourth in the country, behind Minnesota, Connecticut and Pennsylvania. Team member, Whitney Bowman, was the number one top placing individual in the country, which is an amazing achievement! Her sister, Brittany, was fourth. The twins earned Gold Emblems for their efforts, while teammates, Alex Bodanske and Jessie Baker received Silver Emblems.

The students took an objective test that covered topics related to Food Science.

They participated in sensory testing, were asked to pinpoint sanitation or food safety problems, and responded to a fictional consumer complaint letter addressed to a food processor. The product development exercise required each team to respond to a marketing scenario that required them to develop a shelf stable beverage containing functional ingredients, which would appeal to adult men and women with active lifestyles. The teams created a product name and description, drew the proposed product's package design, and included an ingredient statement and flow diagram of how the product would be made.

FST undergrads join Phi Beta Kappa

Ellen Ewell (Senior, Alexandria, Va.) and **Chris Bushnell** (Biology/FST major, Berlin, Md.) accepted the invitation to join Phi Beta Kappa. Phi Beta Kappa, a prestigious honor society, advocates excellence in the liberal arts and sciences. Its campus chapters invite the most outstanding students from America's leading colleges and universities. Each year, only one college senior in a hundred, nationwide, is invited to join Phi Beta Kappa, so this is quite an accomplishment for Ellen and Chris.

2011 FST College Bowl team

Virginia Tech competed against teams from the University of Delaware, the University of Maryland, and North Carolina State University at the Central Atlantic Institute for Food Technologists' meeting on April 2, 2011.

Although the Food Science College Bowl team did not take home any prizes from the competition, team members enjoyed socializing with their peers and toured some facilities at the University of Delaware.

The graduate students from Virginia Tech were Margo Duckson (Sanford, N.C.), Govind Dev Kumar (Chennai, India), Liz Greene (Asheville, N.C.), and Kerri Martin (Christiansburg, Va.) Undergraduate students were Elizabeth Chin (Herndon, Va.), Brittany Kenah (Clifton, Va.), and Megan Rosario (Stafford, Va.)



Food Digest

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Name: _____ Year and Degree: _____

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Work Address: _____ E-mail Address: _____

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