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The College of Agriculture and Life Sciences SOWS REWARDING CAREERS

By Amy Loeffler

Once college graduates turn their mortarboard tassels to the left, they must turn their academic training into practical experience. But bridging the gap between college life and a career is something students who graduate from the College of Agriculture and Life Sciences are well-prepared for, and it's a process that begins the moment students set foot on campus.

"We do so much more than just educate our students about the topics they are studying, be it human nutrition, soil chemistry, international trade, and food science," said Susan Sumner, associate dean and director of academic programs. "We prepare students for the many rewarding careers awaiting them by giving them hands-on, experiential learning programs that enrich and deepen their knowledge."

Katie Harver holds bachelor's (2009) and master's (2011) degrees in crop and soil environmental sciences. Harver is a forage and wildlife specialist with Pennington Seed Company and was well-prepared for her career by the classroom and field training she had at the college.

"Virginia Tech provided me with an integrated approach to education that has served me well in my career," said Harver, 28, of Dunlap, Tennessee. "By providing the base technical knowledge through coursework and hands-on experiences, I was able to confidently enter the workforce."

Kristen DeAngelis could never have guessed where her career path would go when she graduated in 2013 with a

"We prepare students for the many rewarding careers awaiting them by giving them hands-on, experiential learning programs that enrich and deepen their knowledge."
— Susan Sumner
Associate dean and director of academic programs



HNFE graduate Kristen DeAngelis records a segment in a television studio.

degree in human nutrition, foods, and exercise. Today she is a registered dietitian and travels the world to assist her clients as a personal trainer and nutrition coach focused on health and wellness.

There are many ways in which the college prepares students as soon as they arrive in Blacksburg.

Every freshman participates in a First Year Experience, a one-credit course designed to promote a multidisciplinary perspective. Students engage in the discovery process through research assignments, learn to work independently and in a group, and participate in a final poster session.

For example, Anderson King, a first-year agribusiness major from Berryville, Virginia, worked on a project that examined organic versus conventional livestock farming techniques and the nutritional value of those products.

Students are also encouraged to participate in global education programs,

where they experience and learn about environmental and resource challenges that affect populations across the globe.

Small classes allow for discussions and mentoring relationships, while ample opportunities exist for undergraduate students to conduct laboratory research alongside world-class researchers. Capstone experiences give seniors the chance to apply what they have learned in an internship environment, further preparing them for the working world.

"At Virginia Tech I was encouraged to seek knowledge and experience both inside and outside of a formal classroom setting," said Brad Copenhaver, a 2012 graduate with dual degrees in agricultural and applied economics and political science. Copenhaver is now the director of government affairs at the Virginia Agribusiness Council.

Sumner credits the bright future of industries related to agriculture and the life sciences to the exceptional group of graduates going out into the world with every graduation ceremony.

"We are doing nothing short of preparing the next generation of leaders," Sumner said.

Online extras at <http://news.cals.vt.edu/innovations>



Secretary of Agriculture and Forestry Todd Haymore (left), Virginia Tech alumnus Brad Copenhaver and director of government affairs at the Virginia Agribusiness Council (center), and former Assistant Secretary of Agriculture and Forestry Carrie Hileman Chenery (right) are pictured. Copenhaver credits his academic preparation at Virginia Tech for a successful career that meshes his interests in public policy and agriculture.



Kalynn Harlow (center), a junior majoring in animal and poultry sciences, participated in the First Year Experience, which is one of the ways that students are prepared for future careers in agriculture and life sciences.



Featured CONTENT

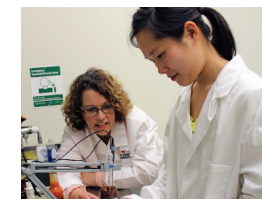
The College of Agriculture and Life Sciences sows rewarding careers 1
Dean's Update 2
Alumni making a difference 2



President Sands tours Eastern Shore

2

New VCE website provides better access to information 3
New instructor sees bright future for Ag Tech students 3
Agritourism can boost farmers' revenue 3
Programs in real estate and CSES build their academic homes on strong showings at national competitions... 3



Helping make food safe

4

Student creates flood of participation in water quality program 4
CALs Alumni Organization board of directors elects officers and new board members 4
Agriculture Future of America conference preps students for working world 5
Hazelwood named new director of student recruitment 5
College helps cider industry shine in the commonwealth 5
Flower power 6



Students learn businesses and entrepreneurial skills through the Kohl Centre

6

Animal welfare advocate Temple Grandin speaks at Virginia Tech 6
Researchers make strides in malaria research 6
New faculty in CALS 7
Teen Cuisine 7
Innovations survey 7



G.W. Carver Program promotes diversity and inclusion within the college

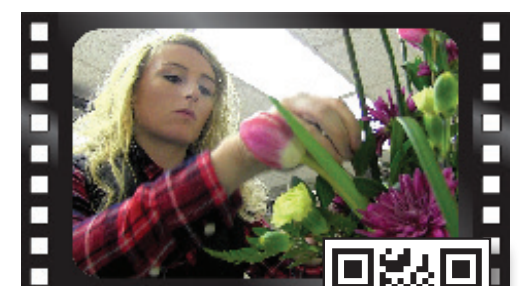
8

The lasting impact of John Lee Pratt 8
Keep up with all the exciting research, academic, and Extension news at the College of Agriculture and Life Sciences' website, www.cals.vt.edu, or find us on social media.



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<http://news.cals.vt.edu/innovations>.



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Dean's Update

In the College of Agriculture and Life Sciences, we are preparing the next generation of leaders who will help us feed an ever-growing global population. USA Today recently ranked agriculture and natural resources among the most lucrative degrees college students can earn. This issue of Innovations highlights some examples of how we are getting our students ready for rewarding and challenging careers.

In this edition, you'll learn about programs such as the First Year Experience course and capstone projects that help undergraduates gain hands-on experiences. For example, you can read about a student working across Virginia to improve water quality, a team of students who networked with industry leaders at the Agriculture Future of America conference, and graduate researchers who have benefited from the college's scholarship opportunities. Our students have the advantage of being educated by world-class faculty members who help guide their research and bring a wealth of experience to the classroom. CALS students conduct research with scientists who are among the very best in their fields. In fact, the National Science Foundation recently ranked Virginia Tech sixth among all U.S. universities for funding agricultural sciences research and development.

The careers we are preparing students for may very well take them around the world. A two-part series in Virginia Tech Magazine titled "Sowing the Future" examined the ways in which our students and researchers along with Virginia Cooperative Extension faculty members are working to meet the global demand for safe food and a clean environment in the years to come. Please take a look at those stories at www.vtmag.vt.edu.

Virginia Tech President Timothy D. Sands has made inclusion and diversity one of his priorities in his first year, and we are excited to take part in this mission to make the university more reflective of the society we serve. Learn about some of the ways that we are accomplishing this in the college at www.cals.vt.edu/diversity.

I hope you enjoy reading this issue of Innovations. Many thanks to the alumni and friends of the college for all you do for CALS and for helping us prepare for the future.

Sincerely,

Alan Grant
Dean

Online extras at
<http://news.cals.vt.edu/innovations>



Alan Grant, dean

The National Science Foundation recently ranked Virginia Tech sixth among all U.S. universities for funding agricultural sciences research and development.

President Sands tours Eastern Shore

Virginia Tech President Timothy D. Sands recently visited the Eastern Shore of Virginia, where he met with area farmers and took a tour of the local Agricultural Research and Extension Center.

"The partnership between Virginia Tech and Virginia agriculture has never been stronger, and our commitment to support agriculture throughout the commonwealth is firm," Sands told a packed house at the Eastern Shore Ag Conference and Trade Show. "It is where we started, and it is still a major part of Virginia Tech."

Sands pointed out that the National Science Foundation recently ranked Virginia Tech sixth for funds spent on agricultural research, a move up from seventh place. He also said that one of the university's strong suits is putting its research into the hands of people through Virginia Cooperative Extension.

Virginia Tech Board of Visitors member Steve Sturgis, along with Alan Grant, dean of the college, and Saied Mostaghimi, associate dean of research, then took Sands to the Eastern Shore AREC in Painter, Virginia, where he met with director Steve Rideout and other faculty members.

There, Sands learned about the research that new faculty member Laura Strawn, an assistant professor in food science and technology, is doing with food safety. He also met with Mark Reiter, an associate professor in crop and soil environmental sciences, who works with farmers to address issues of nutrient and soil management.



Hampton Roads AREC director Pete Shultz (left) speaks with Virginia Tech President Timothy D. Sands (center) and Virginia Tech Board of Visitors member Steve Sturgis (right) at the Eastern Shore Ag Conference and Trade Show.



Associate Professor Mark Reiter (right) shows Virginia Tech President Timothy D. Sands his laboratory at the Eastern Virginia AREC.

Alumna learns that people are valuable part of agriculture equation

A typical day for Cassella Slater is anything but ordinary.

The 2014 animal and poultry sciences graduate works in Ghana as an AgriCorps member teaching 4-H skills to kids in her village. In the communities where AgriCorps operates, members serve as teachers, agriculture extension officers, and 4-H advisors, using agriculture as a mode for teaching life and livelihood skills. Slater uses classroom techniques, such as group discussion and employing a chalkboard to disseminate information, but she also incorporates the 4-H motto, "learning by doing."



She regularly takes her class out into the garden where students have started a compost pit and sowed seeds for a germination test.

"So far, the biggest thing I feel I have accomplished is the impact I have made on the students," said Slater. "They have established goals for their club that are inspiring yet achievable. Some of the students have even started gardens at home, taking what they have learned in school and 4-H and applying it to an entrepreneurial project of their own."

Among the many ways that the college prepared her for her experience in Africa was the leadership, organizational, time management, and teamwork skills she developed through events and groups such as Youth Swine Day, the Block and Bridle Club, and the Equestrian Club.

"I learned to work with a variety of people and came to understand that even if everything does not go as planned, it does not mean a project failed, only that you can learn even more from the experience," she said.

Perhaps another lesson Slater has learned is that the people, not her tools, are the most significant part of being an agriculture teacher.

Cassella Slater works as an AgriCorps member in Ghana where she teaches kids about agriculture.

Keep up to date with all the college's news and upcoming events at
www.cals.vt.edu

New VCE website provides better access to information

Virginia Cooperative Extension has revamped its online presence with a new website that improves access to research-based knowledge at Virginia's land-grant universities, Virginia Tech and Virginia State University, while also making Extension information more accessible.

The new site, www.ext.vt.edu, features an enhanced home page with a rotating banner and links to news, upcoming events, training opportunities, and a directory of the 107 local unit offices.

Topic pages were added and serve as the main navigation for the site, allowing users to more easily locate information on various topics, including

- Agriculture
- Community and leadership
- Natural resources
- Family
- Food and health
- Lawn and garden
- 4-H and youth programs

The topic pages include links to a variety of resources, such as publications, events, websites, videos, webinars, training materials, experts, and other helpful information.



Instructor sees bright future for Ag Tech students

While climate change, population growth, and dwindling natural resources pose a challenging environment for food and fiber production, Wesley Gwaltney, a new instructor in the Agricultural Technology Program, thinks it's a great time to be involved in agriculture and the green industry.

"In their lifetimes, students will likely see the world population reach 10 billion," said Gwaltney, who teaches crop option classes. "The advancements in agriculture that will take place in order to feed and clothe the world are going to be exciting. I think now is a very interesting and promising time to be involved with agriculture."

Gwaltney has been a Hokie since 2000 when he received his associate degree in farm business management. He subsequently obtained a bachelor's in agricultural and extension education in 2003 and a master's in crop and soil environmental sciences in 2005.

One of the strengths of the Agricultural Technology Program is the amount of practical experience students gain.

"I look forward to working with our industry partners to provide our students with unique, hands-on learning experiences that utilize the newest technologies."



Wesley Gwaltney

Agritourism can boost farmers' revenue

A recent statewide study by Virginia Tech found that agritourism is not just a pleasant way to spend a Sunday — it's also a viable way for farmers to supplement their income.

The study defined agritourism as a value-added activity that generates additional net farm income and creates a loyal consumer base for branded farm products.

"In addition to identifying impediments to the agritourism industry in general, the study dealt with a decline of midsize farms in the commonwealth, so finding ways to help the entrepreneur who would be likely to start a farming operation of this size was important," said Gustavo Ferreira, assistant professor of agricultural and applied economics and Extension specialist.

The study, which had a response rate of 52 percent, found that half of the farmers who responded described themselves



A recent Virginia Tech study found that agritourism, from pick-your-own apple orchards to pumpkin patches, can help increase farmers' profits.

as somewhat profitable while roughly 10 percent identified themselves as very profitable.

Forty-two percent of operators surveyed stated that agritourism contributed between 76 and 100 percent of their farm income.

Programs in real estate and CSES build their academic homes on strong showings at national competitions

As academics go, two successes last semester by the teams in the Department of Crop and Soil Environmental Sciences and the Virginia Tech Program in Real Estate couldn't illustrate the wide-ranging nature of majors available to students in the college any better.

The 2014 Crop Judging Team did well at the National Crops Judging Contests held in Kansas City and Chicago. The team came in third place in seed analysis for purity, commercial grain grading, and plant and seed identification and also won third place overall. Team members were all seniors majoring in crop and soil sciences: Robert Longest of Hanover County, Virginia; Evan Harver of Richmond, Virginia; Jenna Swanson of

Shenandoah, Virginia; and Patrick Ransom of Mt. Airy, Maryland.

Meanwhile, a team of students from the Virginia Tech Program in Real Estate competed in the Meritage Homes Residential Real Estate Challenge held at the University of Arizona and captured the No. 1 spot. The program is headed up by Kevin Boyle, professor of agricultural and applied economics.

The \$5,000 prize will be shared among team members Amy Cohen of Virginia Beach, Virginia, a senior double majoring in real estate and finance; Christopher Lomaka of Henrico, Virginia, a junior double majoring in real estate and building construction; Cody Owens of Abingdon, Virginia, a senior majoring in real estate; and Jack Senske of Long Beach, California, a senior double majoring in real estate and property management.



Two Virginia Tech teams wrap up 2014 with strong showings at national competitions. The Crop Judging Team (above, left to right) Robert Longest, Professor Ozzie Abaye, Evan Harver, Jenna Swanson, and Patrick Ransom. The Virginia Tech Program in Real Estate Team (right, left to right) Cody Owens, Chris Lomaka, Jack Senske, and Amy Cohen.



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Helping make FOOD SAFE

Taking a food product from an idea to the grocery shelf can be expensive, time-consuming, and even deadly if not done properly.

For more than 15 years, Virginia Cooperative Extension's Food Innovations Program has been offering technical assistance for food business startups by helping to make sure their products meet safety standards while providing a wholesome food product.

"We serve as a technical advisor for companies that could not otherwise afford it," said Joell Eifert, director of the Food Innovations Program. "The program strives to increase the awareness of Virginia's food producers about matters of food safety, food regulations, and concerns associated with starting a food business."

Formerly known as the Virginia Food Processor Technical Assistance Program, the group housed in the Department of Food Science and Technology offers testing services to ensure the safety of new and existing food products. The program also provides nutrition facts and support for regulatory compliance and inspections. It also helps clients improve their processing techniques and extend product shelf life, which allows for expanded market opportunities.

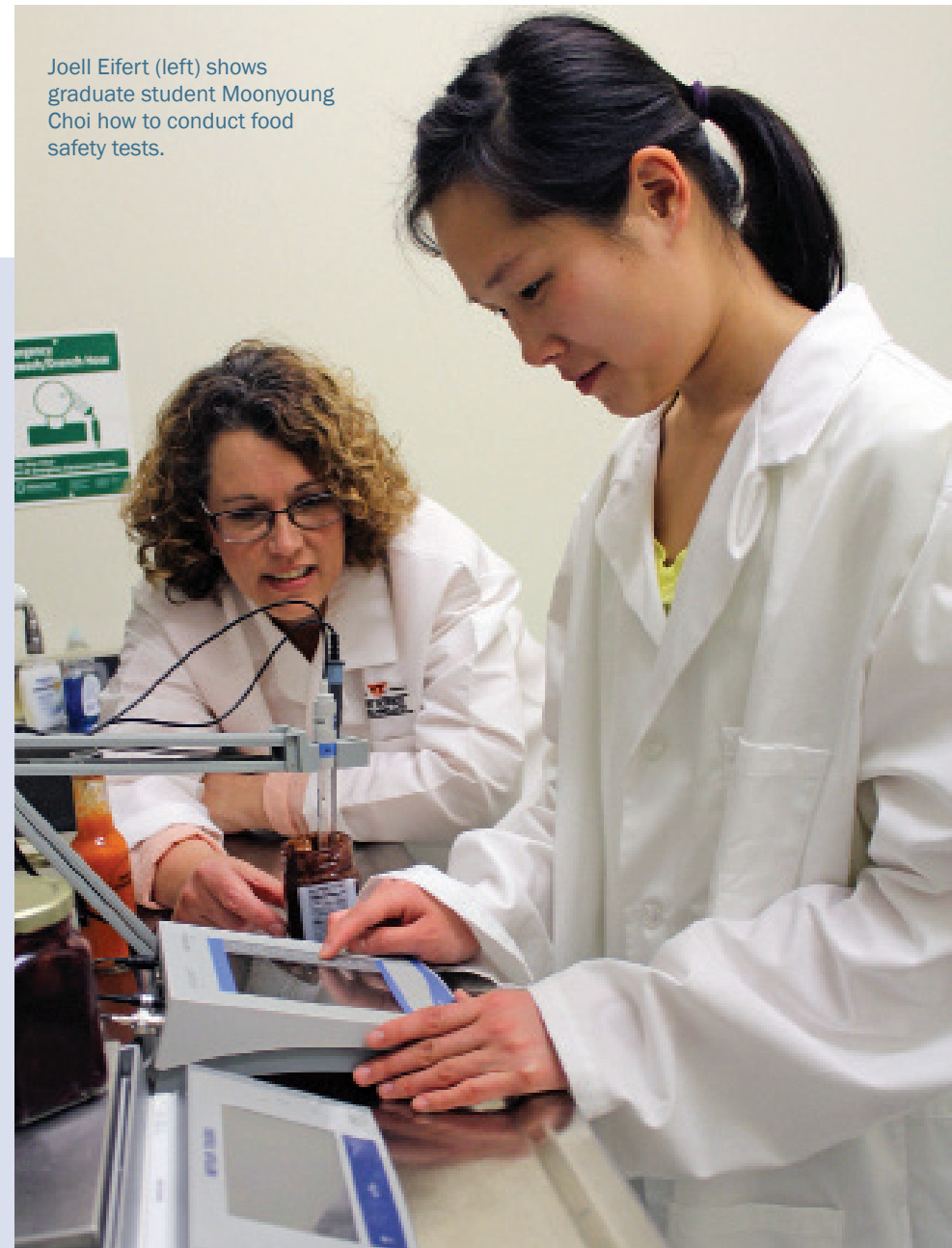
"Our fees are minimal, which helps keep costs low for new companies entering into the market," said Eifert.

The program usually works with companies that have already developed a product and want to make sure that their processes are safe.

"If their product were to cause a foodborne illness, it is likely that they would not be able to overcome it," said Eifert.

The Food Innovations Program has also expanded its mission to support established national and international companies.

"A lot of the food science research we are doing can help these companies," Eifert said. "We are pairing our research expertise with companies that have related needs and looking at ways to translate our research into solutions."



Joell Eifert (left) shows graduate student Moonyoung Choi how to conduct food safety tests.

Student creates flood of participation in water quality program

By Amy Loeffler

Jacob Cantor's path to educating residents of Virginia's Eastern Shore about household water quality started in faraway Oaxaca, Mexico.

A senior from Fairfax, Virginia, majoring in biological systems engineering, Cantor became interested in how his academic training could benefit international development projects. So he volunteered south of the border at the Hunger Project and worked on water quality issues in a small village.

But Cantor wanted to do more. He received funds from the Austin Michelle Cloyd Honors Scholarship and thought they would stretch further if he stayed closer to home. He decided to work with water quality issues in the commonwealth through Virginia Cooperative Extension's Virginia Household Water Quality Program.

The program provides practical information to homeowners about maintaining and protecting private

water systems, such as wells, springs, and cisterns.

And Cantor was a big part of the program's success on the Eastern Shore in 2014.

He raised the participant level of the water quality program by speaking at high schools, farmers markets, and at the local community college to help educate residents about things that can affect private well water quality, including bacteria and other contaminants.

"It was rewarding talking to the people about things that they might not know about but could do to make the quality of their water safer," Cantor said.

In the future, Cantor says he'd like to continue to work with communities to maintain high standards of water quality.

"It's really what we do in our everyday activities that makes the difference between poor and sustainable water quality," he said.



Jacob Cantor (right) presents a poster to Virginia Tech President Timothy D. Sands (left), Provost Mark McNamee, and Erin Ling, coordinator of the Virginia Household Water Quality Program, that illustrates the results of his outreach on the Eastern Shore.

CALS Alumni Organization board of directors elects officers and new board members

At its fall meeting, the CALS Alumni Organization held its biennial election of the executive committee and welcomed three new board members.

The new executive committee consists of Tim VanReenen (AAEC '06, EDCT '08) of Hillsboro, West Virginia, president; Dixie Dalton (AAEC '86, M.S. '89) of Kenbridge, Virginia, vice president; and Ryan Burnette (BCHM '99, '04) of Richmond, Virginia, past president.

Newly elected board members are Heidi Hertz (HNFE '04) of Richmond, Virginia; Shane Horsley (APSC '99, '02) of Virginia Beach, Virginia; and Rachael Nuzzo (APSC, DASC '07) of Stephens City, Virginia.

Please visit the organization's website at www.cals.vt.edu/alumni/cao for biographies of the organization's leaders.

Thanks to the members of the 2012-14 executive committee, which included Burnette, VanReenen, and Ronnie Gill (AGRN '82) of Tappahannock, Virginia, for their outstanding service to the organization.

All graduates of any degree program offered by the College of Agriculture and Life Sciences are automatically members of the CALS Alumni Organization. There are no dues to join.

Please reach out to a board member or the college's director of alumni relations, Jamie Lucero, at 540-231-9666 or jlucero@vt.edu, to discuss upcoming events, activities, and how you can be involved. There are opportunities to serve on several committees that focus on student activities and scholarships, alumni engagement, and fundraising.

We welcome your participation!



Tim VanReenen, president



Dixie Dalton, vice president



Ryan Burnette, past president

Agriculture Future of America conference preps students for working world

As a sophomore pursuing a degree in agricultural sciences, Elizabeth Galbreath is learning plenty about the business and science of agriculture. But last fall, Galbreath and other students from the college got to learn about a completely new side of the agricultural world when they attended the Agriculture Future of America conference.

“It really gave me an understanding of what agriculture is on a national scale,” said Galbreath, of Street, Maryland. “I never had an opportunity like that before.”

Susan Sumner, associate dean and director of academic programs, took three students to the Kansas City, Missouri, conference for a whirlwind experience that taught them everything from resume writing and public speaking to dining etiquette and body language — all while networking with some of the most influential leaders in the agriculture industry. AFA provides free conference registration to attendees and partners with universities to assist with travel costs.

“This conference is a great opportunity for our students to apply what they have learned and to develop relationships with the companies that may be their employers in the future,” Sumner said.

That was one of the biggest benefits of the conference, said Michael Granche, a freshman from Catlett, Virginia, who is pursuing degrees in both agribusiness and animal and poultry sciences.

“The conference has absolutely prepared me for my future career,” he said. “One thing that unifies every man, woman, and child on this earth is that we all need to eat. By learning how to feed more people more efficiently, we are better securing our future posterity.”



Elizabeth Galbreath and Lester Schonberger were two of the three students who attended the Agriculture Future of America conference last fall.

Hazelwood named new director of student recruitment

Sherry Hazelwood is now the main point of contact for all undergraduate student recruitment for the college and will be the Office of Undergraduate Admissions liaison with community colleges, high schools, and internal and external stakeholders.



Sherry Hazelwood

Hazelwood started as director of student recruitment on Dec. 1, 2014.

“I’m excited to be back in the recruiting realm,” said Hazelwood. “Knowing that I have a part in helping someone take a step in achieving a big goal is fulfilling.”

Hazelwood will develop teams to enhance recruitment efforts for first-year and transfer students. She has more than 15 years of experience at Virginia Tech in various roles, including as assistant dean of students.

College helps cider industry shine in the commonwealth



Virginia Tech senior Meg McGuire works at Foggy Ridge Cider in Dugspur, Virginia, where she helps process apples used to make hard cider.

By Lindsay Key

It’s been said that the apple doesn’t fall far from the tree. But one Virginia Tech student researcher is interested in a different phenomenon: how many apples fall from the tree, and how does this affect the cider?

Meg McGuire of Dublin, Virginia, a senior majoring in food science and technology, is curious how the crop yield of apple trees affects apple quality and, ultimately, the quality of hard, alcoholic cider.

Cider is one of the fastest growing segments of the nation’s alcohol beverage industry, with production rising from 9.4 million gallons in 2011 to approximately 32 million gallons in 2013, said Virginia Agriculture Secretary Todd Haymore as he announced the designation Cider Week. Thanks to a collaboration of scientists in the college, the commonwealth is poised to capitalize on the exploding hard cider industry in the U.S.

McGuire works with two faculty members — Amanda Stewart, an assistant professor of food science and technology, and Greg Peck, an assistant professor of horticulture and an Extension specialist — to better understand the optimal orchard management practices for hard cider production.

Her goal is to see how much apple yield can increase before it negatively impacts cider quality and thus help growers produce fruit that has a balance of tannins and acids to create a crisp, tart, and refreshing cider.

“In trees with higher crop loads, the nutrients and water are partitioned more sparsely than in trees with lower crop loads. We are trying to figure out exactly how this translates to cider quality,” she said.

McGuire’s field research occurs at the Alson H. Smith Jr. Agricultural Research and Extension Center in Winchester, Virginia, where Peck’s research program is based.

“We are leveraging Virginia Tech’s expertise in horticulture, food science and technology, and agricultural and applied economics to develop research-based resources for the rapidly expanding cider industry in Virginia and North America,” Stewart said. “We are excited that undergraduate students like Meg are finding opportunities to contribute to the land-grant mission through our research and Extension programs.”

Flower POWER

By Amy Loeffler

Barbara Leshyn starts her Floral Design II class lecture on a blustery winter day talking about rhythm, balance, and unity — concepts more closely associated with auditory pleasure, like the guitar riff of a favorite pop song.

Music is not far from the mark, however, when considering the way flowers have the ability to affect our moods depending on color, smell, and arrangement.

“Appreciating flowers is an innate human characteristic,” said Leshyn, an advanced instructor in the horticulture department. “The smell and beauty of flowers draws us to them.”

Her class is an elective, and students from various colleges enroll to supplement their background in horticulture or, pardon the pun, to stop and smell the flowers outside of their major.

Abby Youmans, a senior accounting major from Winchester, Virginia, took the floral design class to engage the artistic side of her brain.

“In accounting there’s not a lot of room for creativity,” said Youmans. “This class gives me a creative outlet.”

Floral design classes are also part of the fabric of the Virginia Tech community. Anyone who has attended a public function at the university has most likely enjoyed floral bouquets made by students in floral design classes. In the fall students put their creativity to the test by assembling pumpkin-themed arrangements. In spring the students produce arrangements that showcase spring flowers.

Online extras at
<http://news.cals.vt.edu/innovations>



Abby Youmans, a senior majoring in accounting, says the floral design classes are a good creative outlet.

The biggest community initiative Leshyn coordinates is the two floral design classes available to residents in the New River Valley in the fall and spring.

On a smaller scale, Leshyn and her students also practice random acts of floral kindness by leaving arrangements on the doorsteps of professors, her childrens’ teachers, or sick friends.

“From the beginning of recorded history, people have been using flowers to express grief and joy,” said Leshyn.

The other thing that draws us to flowers? You don’t have to know how to play the guitar to appreciate them.

Students learn business and entrepreneurial skills through the Kohl Centre

By Amy Loeffler

The Kohl Centre Experiential Learning course may be the only program of its kind in the country that allows undergraduates to work alongside land-grant Extension agents and specialists to address problems faced by Virginia’s citizens and agricultural entrepreneurs.

Students recently evaluated New River Valley agritourism venues and investigated public interest in and local business owner support for an on-campus market that features food and fiber products produced by student-run enterprises.

“It is increasingly apparent that our students need to have applied research experiences and the opportunity to build their own networks to achieve workplace success and add value to their classroom learning,” said Kim Morgan, assistant professor of agricultural and applied economics.

During the Kohl Centre course, project teams craft integrated solutions related to market, production, human resource, and legal, and financial risks faced by clientele. Students work directly with Kohl Centre clients across a range of diverse subjects involving a variety of disciplinary expertise.



Chelsea Abbott, a junior majoring in dairy science from Fairfield, Vermont, presents a heifer at the Dairy Showcase. The Dairy Showcase was an event that students assessed for the Kohl Centre experience this semester.

At the end of each project, student teams publish a Virginia Cooperative Extension fact sheet to inform statewide audiences about real-world applications resulting from their research.

“The agriculture industry is demanding students who have practical, hands-on experience necessary to address the varied responsibilities that fall on agribusinesses,” said Katie Frazier, president of the Virginia Agribusiness Council. “The education and real-world experiences that the Kohl Centre provides not only give students this skill set, but also help develop the next generation of agricultural leaders in Virginia and beyond.”

Animal welfare advocate Temple Grandin speaks at Virginia Tech

Temple Grandin, a world-renowned autism activist and authority on animal welfare and behavior, spoke to a standing room-only crowd at the Virginia Bioinformatics Institute on Dec. 4, 2014.

Grandin began her speech by emphasizing the importance of mitigating the fear factor in animal production.

“Fear is a scientific word,” said Grandin.

She primarily spoke about animal behavior and how to ease stress levels in livestock.

“For many students, regardless of the segment of the industry in which they work, Temple Grandin will have an effect on their business,” said David Gerrard, department head of animal and poultry sciences. “As

good stewards of agriculture, it is imperative to have a solid understanding of how animals behave and respond to their environments.”



Temple Grandin signs books after speaking to a standing room-only crowd at the Virginia Bioinformatics Institute.

Researchers make strides in malaria research



A species of mosquito known as *Anopheles stephensi* is especially good at evolving rapidly in urban environments to spread malaria.

Certain species of mosquitoes are genetically better at transmitting malaria than some of their cousins, a team of Virginia Tech researchers has found.

Of about 450 different species of mosquitoes in the *Anopheles* genus, only about 60 can transmit the *Plasmodium* malaria parasite that is harmful to people. The team chose 16 mosquito species currently found in Africa, Asia, Europe, and Latin America that evolved from the same ancestor approximately 100 million years ago.

Today, the 16 species have varying capabilities for transmitting malaria and adapting to new environments. The team sequenced their genomes to better understand the evolutionary science behind the differences.

“With the availability of genome sequences from *Anopheles* mosquitoes of divergent lineages, variable adaptations, and differing disease-transmission abilities, we now have the exciting opportunity to significantly improve our understanding of these important malaria vectors and develop new strategies to combat malaria and other mosquito-borne diseases,” said Zhijian Tu, a professor of biochemistry, who published a paper on his findings in *Science*.

The results support the idea that introgression — a process where genes from one species flow into another — plays a role in evolution, in this case by enhancing the capacity of mosquitoes to transmit the malaria parasite.

In a further unraveling of the malaria transmission mystery, scientists analyzed the genome of a mosquito species notorious for transmitting malaria in urban environments. They discovered how the mosquito evolves rapidly to withstand a variety of environmental conditions, said Igor Sharakhov, an associate professor of entomology and co-senior author of another paper the team published.

New faculty in CALS

From improving crop irrigation methods and building disease resistance in dairy cows to developing new forms of biofuels and ways to combat diabetes, the new faculty members in the college are finding solutions to some of the biggest challenges facing our world today.

Learn more about their exciting research and extension programs at www.research.cals.vt.edu/people/new-faculty-directory.html



Among the many new faculty members in the college are (left to right) Samantha Harden, assistant professor of human nutrition, foods, and exercise; Venkat Sridhar, assistant professor of biological systems engineering; Ramon Arancibia, assistant professor of horticulture and Virginia Cooperative Extension specialist; and Rebecca Cockrum, assistant professor of dairy science.

Teen Cuisine spices up nutrition education for Virginia students

By Emily Halstead

Teens across the commonwealth are taking a new approach to nutrition education during Teen Cuisine classes offered by Virginia Cooperative Extension's Family Nutrition Program. Launched in the summer of 2013, Teen Cuisine was designed to provide young people with cooking classes and information about food safety and nutrition.

"Teen Cuisine has contributed significantly to the increase in nutrition education statewide because, in the past, we haven't really had a curriculum to offer to older students," said Lynn Margheim, a Family Nutrition Program trainer. "I think the students like the program because they also get a book that is full of recipes and other practical food safety and nutrition knowledge."

The six-lesson curriculum — offered to students in grades 6 to 12 — includes a mixture of classroom training and hands-on food preparation and cooking.

"Many students tell me that they now prepare family meals at home because of what they have learned from our lessons in Teen Cuisine," said Kim Russell, a program assistant in Smyth County.

Currently there are 70 Family Nutrition Program assistants conducting nutrition education programs throughout the state. Fifty of those assistants are in classrooms, after-school programs, and summer programs where they can focus on educating youth.

"A lot of the career and technical funds are being cut around the state, including many family and consumer sciences classes where the students have the chance to learn about nutrition and to practice food preparation skills," Margheim said. "Teen Cuisine offers them a short course that administrators and teachers can bring into the schools at a very low cost and have someone else provide the classes for them."



Students in the Teen Cuisine program learn about nutrition education.

Innovations survey

In order to better deliver news from the college, we'd like to ask your opinion of Innovations.

Please take a moment to fill out a survey online at <http://bit.ly/1FH5OBX> (the website is case-sensitive and the final letters are OBX) or complete this paper version and mail it to Innovations Editor, 131 Smyth Hall (0904), 185 Ag Quad Lane, Blacksburg, VA 24061. Ten people who complete the survey will be picked at random to win a Virginia Tech T-shirt. To be eligible, please include your contact information in the comment section at the end of the survey.

Thank you for your time and participation.

- How would you rate Innovations overall?
 Excellent Above average Satisfactory Poor
 - How frequently do you think Innovations should be published?
 Once a year Twice a year Three times a year
 - How much time do you spend reading each issue?
 More than an hour 15-60 minutes Less than 15 minutes I do not read it
 - What do you think of the length of the stories?
 Too long Too short Nice mix
 - What do you think of the quality of the stories and photos?
 Excellent Above average Satisfactory Poor
 - How do you prefer to read Innovations?
 In print Online – website Online – interactive issue Both
 - What format do you think Innovations should be in?
 Broadsheet (like the current format) Traditional magazine format
 Other _____
 - What do you think of the Innovations website, <http://news.cals.vt.edu/innovations/>?
 Excellent Above average Satisfactory Poor Have not looked at it
 - How many stories to do you read in the online version of Innovations?
 5 or more 3-4 1-2 None
 - Please rank each of the following Innovations sections in order of preference, 1 thru 7 (1 = read the most; 7 = read the least)
 Dean's Update Cover story Alumni stories Academic achievements
 Virginia Cooperative Extension stories Research developments Donor articles
 - What topics would you like to see covered in Innovations (choose all that apply)?
 Research developments Academic programs Extension impacts Alumni achievements
 Student successes Ways to support the college
 Other _____
 - Do you think that Innovations strengthens your connection to the college? If so, how?
 Check all that apply.
 Reminds me of my experience at CALS Encourages me to support the college
 Helps me feel more in touch with alumni Provides useful career and networking information
 Keeps me informed about what's happening around the college
 N/A Other _____
 - Do you receive the monthly alumni e-newsletter, CALS Connections?
 Yes No
 - How many stories to do you read in CALS Connections?
 5 or more 3-4 1-2 None
 - Do you ever forward CALS Connections to someone else?
 Yes No
 - What is your main source of information about the college?
 Innovations News media CALS Connections (alumni e-newsletter) Social media
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 - What is your relationship with the college? Select all that apply.
 Alumnus/alumna Retired faculty/staff Donor Parent Industry representative
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 - What is your age?
 Under 25 26 to 35 36 to 45 46 to 64 65+
- How can we improve Innovations? _____

- Please leave your address and email to be eligible for the drawing. _____

G.W. Carver Program promotes diversity and inclusion

When Shavonn Whiten started her Ph.D. in entomology at Virginia Tech, she found more than just an academic home — she found a place where she feels at home.

“Virginia Tech has a great environment where I can learn and grow while feeling like I’m in a supportive atmosphere where I can identify with other minority students,” said Whiten, whose passion for entomology and molecular toxicology complement each other perfectly in Professor Dini Miller’s bed bug laboratory.

Whiten is one of the members of the George Washington Carver Program for graduate students. The program provides assistantships to students from historically black colleges and universities, Hispanic-serving institutions, tribal colleges and universities,

students from the Appalachian region, and nontraditional students. It not only gives students an opportunity to earn a graduate degree they may not have had otherwise, it also helps to increase the diversity of the college. This in turn creates a student population that is more reflective of societal demographics and helps build an inclusive environment.

The funding helps Whiten focus on her work, and it has also inspired her to share her success story with other budding scientists.

“I want to be a role model for minority youth interested in science and show them that an advanced education in science is a possibility,” she said.



The George Washington Carver Program helps Shavonn Whiten achieve her goal of earning a Ph.D.

The lasting impact of John Lee Pratt

By Zeke Barlow

John Lee Pratt never set foot in Eric Wong’s laboratory, but his presence is felt there every day.

Pratt is there in the microscopes and thermal cyclers that Wong uses to solve issues surrounding nutrient uptake in young chickens and to develop ways to overcome infections naturally found in the birds.

The graduate students who work alongside Wong examine some of the biggest challenges facing the poultry industry, and their laboratory training is possible because of the legacy of John Pratt. Undergraduate students are gaining hands-on experience in Wong’s laboratory because of the Pratt Endowment.

“The legacy and funding that John Lee Pratt left behind have a real and meaningful impact on my work every day,” said Wong, a professor of animal and poultry sciences. “So much of the research we do has been made possible by the Pratt Endowment.”

More than 50 years after Pratt gave his first gift to the college, both the monetary value and the impacts of his contributions have grown. Today, the John Lee Pratt Endowment is the largest endowment fund in the college, and it continues to support essential research and training in animal nutrition.

“It is hard to overstate the importance or impact of this gift,” said Saied Mostaghimi, the associate dean of research in the college who oversees the fund. “From supporting undergraduate research projects to funding graduate students to paying for valuable scientific equipment, the fund has allowed us to grow the field of animal nutrition in a way that advances scientific knowledge and has a direct benefit to industry.”

And it all started in the 1940s when Pratt had a sick cow.

Pratt, of King George County, Virginia, was a chemical engineer for some of America’s largest companies, but he always maintained

Pratt Endowment by the numbers

185 Graduate students who have received stipends over the last 10 years

\$2.7 million Amount spent on research equipment over the last decade

60 Number of undergraduates who receive funding annually

4x Amount the fund has grown since the initial investment

the love of agriculture that was instilled in him growing up on a farm. As an adult, when his cows became ill, he was certain it had to do with their diet. His conversations about the importance of understanding nutritional biochemistry encouraged the director of the Virginia Agricultural Experiment Station to start the Department of Biochemistry and Nutrition in 1952. Shortly thereafter, Pratt gave \$100,000 and then \$150,000 more to support the department’s work.

When Pratt died in 1975, his estate gave \$11.5 million to Virginia Tech. These funds were split between the College



Graduate student Ben Zhu (left) said the funds he received from the Pratt Endowment helped him concentrate on his research he does on birth weight in pigs with Assistant Professor Samer El-Kadi. “It’s great to have a student here for two years who can concentrate on the work and complete a research project,” El-Kadi said. “The Pratt funds have made all the difference in how I can run my lab and teach the next generation of animal nutrition scientists.”

of Engineering and the College of Agriculture and Life Sciences. The money for agriculture was to be used to “promote the study of animal nutrition.”

Today, the original \$5.75 million contributed to the College of Agriculture and Life Sciences is worth more than \$22.5 million. In a time when federal research dollars continue to wane, these funds are more important than ever for supporting research of direct relevance to animal nutrition.