VirginiaTech
College of Agriculture and Life Sciences

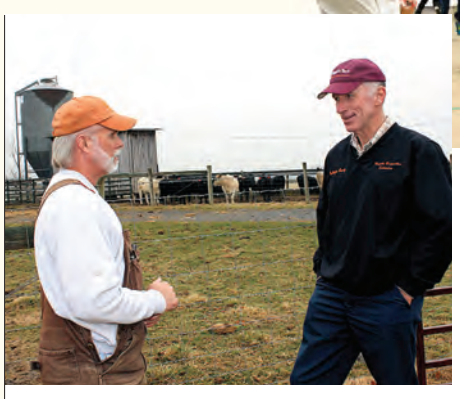
Volume 3, Issue 2

INNOVATIONS

HTTP://NEWS.CALS.VT.EDU/INNOVATIONS

Virginia Cooperative Extension celebrates 100 years of **helping people**

By Lori Greiner



Above: In a typical week, Sarah Burkett, senior family and consumer sciences agent in Pulaski County, Virginia, conducts more than 10 educational programs for children and adults.

Left: Cattle producer Joey Davenport (left) talks about upcoming educational opportunities with Phil Blevins, agricultural and natural resources Extension agent in Washington County, Virginia.

Since the 1914 Smith-Lever Act established the national Cooperative Extension System, Virginia Cooperative Extension has delivered the knowledge and resources of the state's two land-grant universities — Virginia Tech and Virginia State University — to the people.

Society and its issues have changed during the past 100 years, but Extension's mission has never wavered.

"We still work with people where they live and deal with the issues they face every day. We help them use the knowledge from the land-grant universities to improve their quality of life and economic prosperity," said Edwin Jones, director of Virginia Cooperative Extension. "The biggest difference between now and then is that today's issues are much more complex."

Today, Extension stretches well beyond the fields and kitchens of rural Virginia. Faculty members in 107 county and city offices conduct programming in classrooms, at workplaces, and online. In 2013, they reached more than 2.6 million participants statewide.

Sarah Burkett, senior family and consumer sciences agent in Pulaski County, Virginia, sees firsthand the challenges people are facing. In a typical week, Burkett conducts more than 10 educational programs for children and adults.

Burkett and other agents enlist the help of volunteers to further Extension's reach. Nearly 30,000 people volunteered in 2013, contributing more than 966,000 hours of service valued at $23.7 million.

> "We help people use the knowledge from the land-grant universities to improve their quality of life and economic prosperity."
>
> — Edwin Jones
> Director of Virginia Cooperative Extension

Among them is Andy Hullender, a bank manager and Master Financial Education volunteer from Dublin, Virginia. Hullender particularly likes teaching programs that tie financial education with nutrition.

"Finances and health go hand in hand," he said.

While Extension expands its knowledge base to address economic, environmental, and social concerns, agriculture remains at its core.

Cattle producers such as Joey Davenport, who manages a 200-head cow-calf operation in Washington County, Virginia, for Bill Hayter Farms, say they rely on Extension's programs, such as the Master Cattleman Course, to provide relevant industry information.

"If it weren't for Extension, I'd be lost," Davenport said. "Extension remains the go-between that brings research and new developments to the field."

Perhaps no other component of Extension has greater impact than its 4-H programs for young people.

Through hands-on experiences, youth develop their abilities to make good decisions, manage resources, work effectively, and communicate successfully.

"4-H has helped me gain leadership skills," said Kate Belcher of Abingdon, Virginia, a first-year student majoring in animal and poultry sciences and agribusiness. Belcher has been involved with 4-H for 13 years and is a past president of the Virginia State 4-H Cabinet.

Jones believes that educating youth is at Extension's core.

"Our programs help prepare Virginia's youth to take on today's challenges and contribute to their communities," he said.

According to Jones, those challenges will continue to get more complicated, but through Extension's access to cutting-edge research and a network of more than 3,000 local offices across the country, the organization will be able to find answers to issues and shape solutions.

"As long as we continue to listen to our clients at the grassroots level, we will be genuine in developing programs that address those needs," said Jones.

For more information on the history of Extension visit www.ext.vt.edu.

4-H participants in Alexandria, Virginia, learn about GIS mapping technology as part of 4-H National Youth Science Day.

Featured CONTENT

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.

INNOVATIONS

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Dean's Update

Alan Grant, dean

Greetings from the College of Agriculture and Life Sciences.

I hope you enjoy this issue of Innovations that explores the exciting programs and activities from the 2013-14 academic year. It highlights just a few of our many outstanding students, faculty and staff members, and alumni; a number of exciting academic, research, and Extension programs; and our capital building projects, and it provides some updates on the college's alumni programs.

Our college continues to grow in many ways. Student enrollment is maintaining its upward trend, and many new faculty members have joined the college as part of the research clusters that support the priorities of our strategic plan. Faculty members are developing effective learning environments that allow students to become immersed in experiential learning so they are better prepared to pursue successful careers and engage in lifelong learning. Our faculty and staff members are having tremendous success in obtaining a record level of extramural funding that is paying great dividends by giving students challenging research experiences and providing our industry and stakeholders with basic and applied research that is critical for the future.

As a result of new Virginia Cooperative Extension agents and new programs that serve communities in the commonwealth and beyond, our Extension programs are growing, too. In this issue, you can read about events celebrating the centennial of the signing of the Smith-Lever Act, which created the nationwide Cooperative Extension Service. Teaching, research, and Extension programs are integrated throughout the college, and everyone's creativity and hard work allows the college to help lead the land-grant mission of the university.

This year will be one of transition for the university as Timothy Sands begins his tenure as the 16th president of Virginia Tech. Former President Charles W. Steger concluded a long and impactful presidency during which he outlined and implemented a bold vision. He leaves for future generations a land-grant university widely regarded for its academic excellence — both nationally and abroad. I am fortunate to have worked with President Steger for nearly five years. I now look forward to serving under President Sands and ensuring that our college continues to be a leader at this great university.

I hope many of you are able to visit the college during the upcoming year — you are welcome at any time!

Sincerely,

Alan Grant

Dean

Faculty members are **developing effective learning environments** that allow students to become **immersed in experiential learning** so they are better prepared to pursue **successful careers** and **engage in lifelong learning**.

Middleburg AREC provides novel equine research opportunities

The Equine Studies Program allows students to contribute to all aspects of a large-scale research facility, outreach center, and commercial equine enterprise while simultaneously engaging in a full semester of coursework that includes practical, hands-on training.

Robert Jacobs, a Ph.D. student in animal and poultry sciences from Fort Lauderdale, Florida, spent part of his academic career at the Middleburg Agricultural Research and Extension Center. His research focused on equine reproduction and physiological interactions that occur during pregnancy between a mare and her unborn foal.

"The center gives me the opportunity to mentor undergraduate interns and help the faculty, staff, and undergraduate students with research trials or other activities," said Jacobs.

Students at the MARE Center such as Robert Jacobs, a graduate student in equine reproduction from Fort Lauderdale, Florida, get hands-on training at the large-scale equine research facility.

Matthew Hulver named head of human nutrition, foods, and exercise

Matt Hulver

Associate Professor Matthew Hulver was tapped to lead the Department of Human Nutrition, Foods, and Exercise in January 2014.

Hulver heads a department with an enrollment of more than 900 undergraduates and 55 graduate students. He is also an affiliated faculty member of the Fralin Life Science Institute. Hulver's research seeks to understand the negative consequences of an overconsumption of dietary fat on whole body and skeletal muscle metabolism. Hulver has been a faculty member at Virginia Tech since 2006.

Alumni making a difference

By Amy Loeffler

It's no surprise that many graduates from Virginia Tech go on to serve in volunteer organizations like the Peace Corps, where agricultural knowledge and leadership skills are widely sought-after. In fact, Virginia Tech is among the top 25 large universities when it comes to the number of alumni who volunteer for the Peace Corps.

A career in the Peace Corps seemed like a logical step for Elizabeth Riley, of Hopkinsville, Kentucky, who received her master's degree in animal and poultry sciences in 2012. Her family has a history of military service, but Riley was looking for a way to give back that would draw on her training in animal and poultry sciences and her experience growing up as a member of 4-H.

Riley saw the Peace Corps as a way to incorporate the 4-H "learning by doing" mission in her career.

She currently serves in the Parish of Saint Ann, Jamaica, where she helps students establish school gardens that teach them about healthy eating habits, sustainable agriculture, and environmental science.

Elizabeth Riley and some of her students in one of their school gardens.

"Teaching kids about natural resources is important for 4-H goals and the Peace Corps mission," she said.

Mary Elmer, of Surry County, Virginia, who received her bachelor's degree in agricultural and applied economics and agricultural sciences in 2012, is currently serving as a Peace Corps volunteer in Panama. She started traveling abroad in high school and studied in Australia as an undergraduate at Virginia Tech.

One of Elmer's projects is a collaboration with the University of Panama where she leads seminars that introduce volunteers to farming and business practices. "I can see a measurable change and really feel like I am empowering people," she said.

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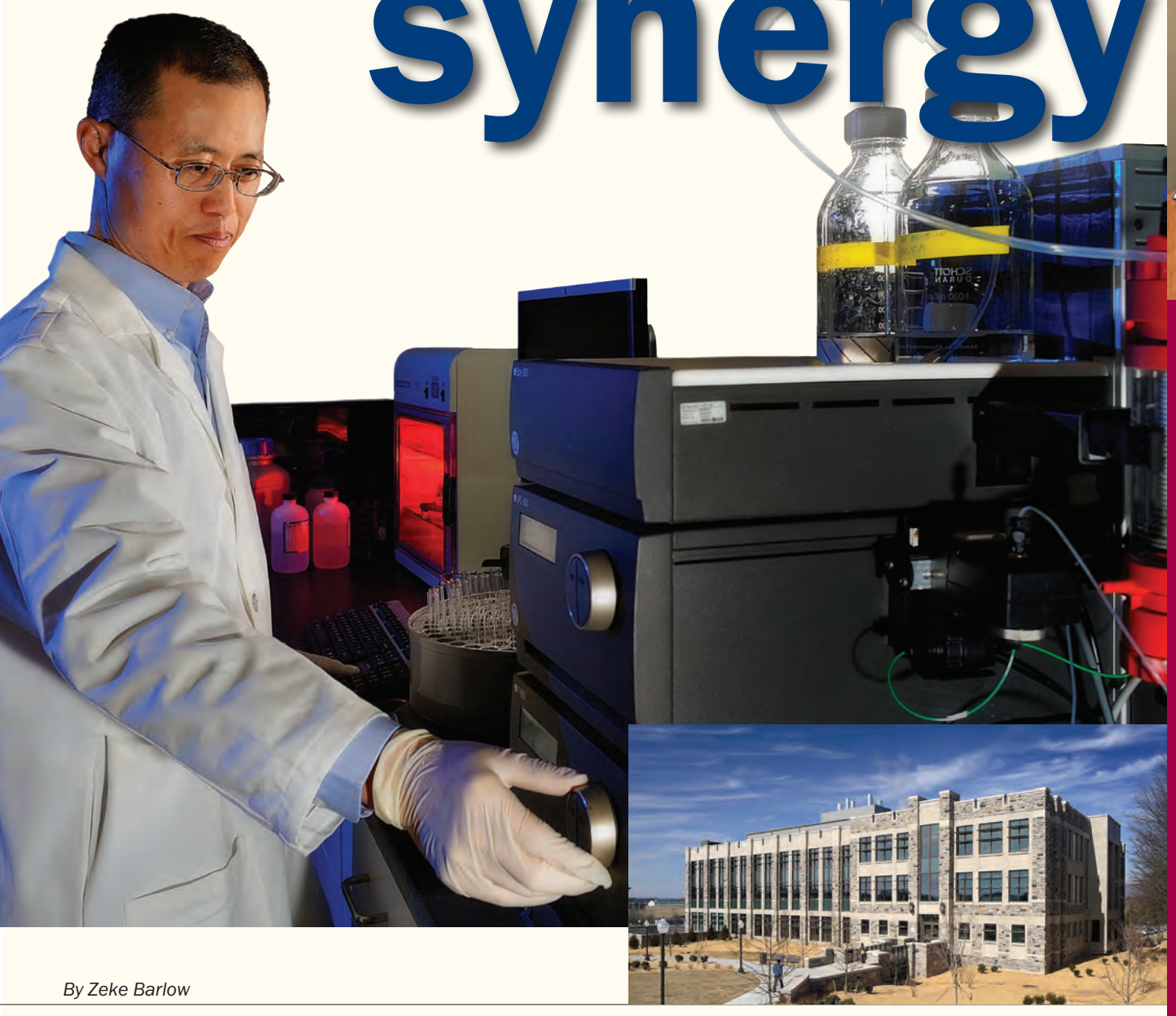
College's newest building promotes scientific synergy



By Zeke Barlow

On March 21, the college celebrated the formal opening of its newest addition — Human and Agricultural Biosciences Building 1 — with a ribbon-cutting ceremony, a reception, and speeches by President Charles W. Steger, Dean Alan Grant, and students who will conduct research in the state-of-the-art facility.

"The research activities and discoveries made in this building will become the cornerstone of programs that will directly benefit the citizens of the commonwealth and the agriculture, food, and health industries," Grant said during the event that was attended by more than 250 people. "The work that is happening in the new building will bring the promise of a healthy planet, healthy food, and healthy people."

In the 93,860-square-foot building, researchers and students from multiple disciplines will collaborate on issues ranging from fermentation and food safety to bioprocessing and biofuels and further research, academic, and Virginia Cooperative Extension efforts.

These synergistic relationships allow the college to expand its scientific reach to address critical issues concerning agriculture, food security, human health, energy, and climate change that will impact people the world over.

> "This new building and the future biosciences precinct are going to help the agriculture and life sciences disciplines and industries thrive while looking to the future to solve emerging challenges."
>
> *— Dean Alan Grant*

The $53.7 million building at the intersection of Duck Pond Drive and Washington Street is the first of four planned for the Human and Agricultural Biosciences Precinct.

In the building, scientists from the Department of Biological Systems Engineering are developing new energy sources to power the world, building water delivery systems that ensure people have clean water, finding ways to combat addiction through vaccines, and creating targeted drug delivery systems to fight diseases.

At the same time, researchers from the Department of Food Science and Technology are helping industries provide healthy food for the world through pasteurization, fermentation, packaging, emulsion stability, probiotic culture viability, ingredient technology, and product and process development.

"This is an exciting time for the college," Grant said. "This new building and the future biosciences precinct are going to help the agriculture and life sciences disciplines and industries thrive while looking to the future to solve emerging challenges."

Left: Joe Marcy, head of food science and technology, and Mary Leigh Wolfe, head of biological systems engineering, in the pilot plant.

About the building

- The Human and Agricultural Biosciences Building 1 is a 93,860-square-foot research facility that is home to scientists from the departments of Biological Systems Engineering and Food Science and Technology.
- Natural lighting, passive heat, and recycled building materials are among the many environmentally friendly features of the LEED-certified building.
- Funds from Agency 229, which comprises the Virginia Agricultural Experiment Station and Virginia Cooperative Extension, were used for the building's construction. Private gifts are being sought to pay for high-tech equipment and to support students, faculty members, and research initiatives.
- The biosecurity level 2 certified food processing facility allows scientists to conduct experiments involving E. coli, salmonella, and other pathogens that require a heightened level of security and training.
- This is the first of four buildings planned for the Human and Agricultural Biosciences Precinct, where many researchers from the College of Agriculture and Life Sciences will be located.

Virginia Tech
College of Agriculture and Life Sciences

INNOVATIONS EXTRA

Volume 3, Issue 2

WWW.CALS.VT.EDU/FACILITIES/CALSCONSTRUCT

Justin Barone develops synthetic fibers that could eventually be used to create artificial limbs.

Scientist makes fibers in a bottle

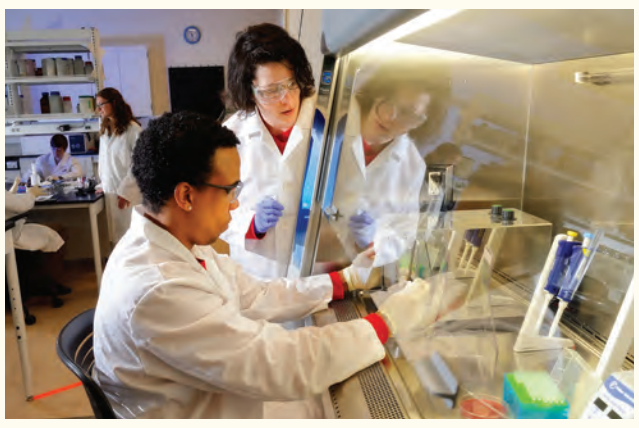
Justin Barone may just be a modern-day alchemist.

But instead of turning ordinary metals into gold, he makes synthetic fibers that reproduce according to a genetic code embedded in their DNA.

“We live in a world today where we’re not stuck with what nature gave us,” said Barone, an associate professor in the Department of Biological Systems Engineering, whose new lab is bathed with natural light.

Knowing the genetic recipe of a fiber allows Barone to control its shape and how much its proteins should interact with each other. He can then create fibers that are stronger and tougher or more pliable.

The larger lab space will help garner interest from industry for Barone’s other research endeavors that use keratin products like chicken feathers, animal hooves, and corn and soybeans to make biodegradable plastics.



Monica Ponder can replicate contamination challenges facing industry food processors in the biosecurity level 2 pilot plant.

Food science and technology research helps to ensure safer global food supply

Monica Ponder, assistant professor of food science and technology, is making the spice supply safer for U.S. consumers.

Spices are typically grown in developing countries where there are numerous opportunities for tainting the product due to poorer sanitation practices. Additionally, the minimal processing of spices after harvest presents a contamination risk for common pathogens, including salmonella. The pathogen can adhere to berry-like spices such as peppercorns during processing, and contamination risk increases exponentially when spices are added to finished products, such as cured meats.

The research Ponder is performing in the new building is helping to discover how and why spices become contaminated with disease-causing bacteria. She is studying how the pathogen travels through the supply chain tightly adhered to whole spices within biofilms. Biofilms formed during growth or during processing may improve the survival of salmonella by encasing it within layers of polysaccharides, protecting the cells.

“The new facility will allow companies to find vulnerabilities in elimination and containment strategies in a controlled environment,” she said.

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

About BSE and FST

The work being done by the Department of Biological Systems Engineering and the Department of Food Science and Technology, both located in the newly opened Human and Agricultural Biosciences Building 1, is representative of the research happening in the college that seeks to solve some of the most pressing problems related to food security, energy, and water resources.

Biological systems engineering is the discipline that applies concepts of biology, chemistry, physics, engineering science, and design principles to solve problems and improve animal, human, and environmental health. The new facilities help scientists perform nanoscale and pilot-scale research to study the conversion of renewable resources to biofuels, valuable chemicals, and pharmaceuticals.

The Department of Food Science and Technology’s programs cover both core areas and specific commodities, including enology and aquaculture. Emphasis is placed on areas critical to Virginia’s economy and where faculty expertise can make the greatest impact, such as food microbiology and safety, food processing and packaging, food chemistry, sensory analytics, and food quality.

Scientist pushes boundaries of food sensory research

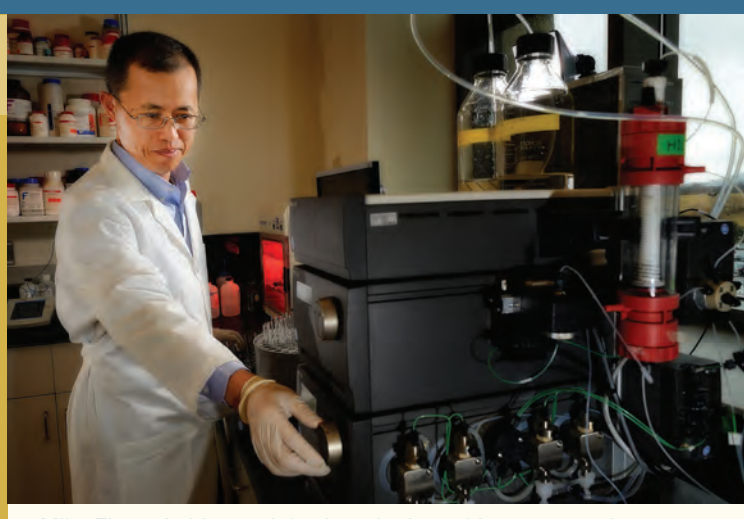
“For better or for worse, people don’t realize the subconscious food consumption decisions happening before they get to the point of eating,” said Susan Duncan, professor of food science and technology. “Our research strives to understand how people emotionally interact with foods, the relationship to obesity, and the science associated with decision-making and choice.”

In the new building, Duncan has a state-of-the-art laboratory where she can measure emotions using software that translates facial expressions into emotional response.

“I’m really excited that we have this showcase spot that really accentuates the lab,” she said.

The new sensory research lab will enhance research collaborations with industry clientele and product testing, and the facility has already allowed greater interaction with faculty members from other departments. Duncan is currently working on a research project that involves examining physiological responses of participants to find out what factors into the decision-making processes deep inside the brain. Working with colleagues across campus, she will be able to measure the skin response and heart rate of study participants as well.

Susan Duncan uses state-of-the-art video technology to study the behavior response to food.



Mike Zhang in his new lab where he is working on a vaccine for the porcine pandemic.

Scientist develops critical vaccines for human, pig diseases

Mike Zhang is helping pigs and humans breathe easier.

Zhang, a professor in the Department of Biological Systems Engineering, is researching the development of a vaccine to combat a porcine pandemic that costs U.S. farmers as much as $560 million per year.

The expanded lab space in the new building will be good for productivity, he said.

He also works on developing vaccines for humans, but in a vastly different endeavor that seeks to eliminate addiction to nicotine in tobacco products.

Zhang uses a nanocarrier system that can effectively present nicotine haptens to the immune system. Haptens are small molecules that elicit an immune response when attached to a larger carrier, such as a protein.

“All of my research is very different,” said Zhang. “But it all has the potential to benefit society.”

Touch the Future

Gordon E. “Gene” Barlow Jr., agricultural engineering ’44, never saw Virginia Tech’s new Human and Agricultural Biosciences Building 1, but his legacy touches the future of College of Agriculture and Life Sciences students who will conduct research there.

Dedicated to lifelong learning, Gene Barlow was a World War II veteran, teacher, and farmer who was still taking classes at age 80. The Gordon E. Barlow Scholarship, endowed through a gift in Barlow’s will, exemplifies his love of learning, his confidence in Virginia Tech, and his faith in the ability of future generations to provide real-life solutions to global needs for food safety, bioenergy, and much more.

You, too, can support the college with an estate gift that perpetuates your values without affecting your assets during your lifetime. Estate gifts include a bequest in a will or revocable trust, certain gifts of life insurance, and retirement account beneficiary designations.

Gordon E. Barlow Jr.

Along with estate gifts, other opportunities to support the building and the researchers and students who work in it are also possible. Outright gifts make an immediate impact and are an important funding stream to help outfit the building with state-of-the-art equipment. Outright giving also fuels research by helping academic departments recruit and retain top faculty members and the graduate students who work with them.

The opening of this facility provides an opportunity for alumni, friends, and industry partners of the college to make powerful philanthropic commitments to research excellence. Naming opportunities are available for a range of highly visible spaces within the building.

To learn more about these and other ways you can touch the future, contact the college’s development office.

540-231-5546 or 800-533-1144
CALS.Giving@vt.edu
www.cals.vt.edu/giving

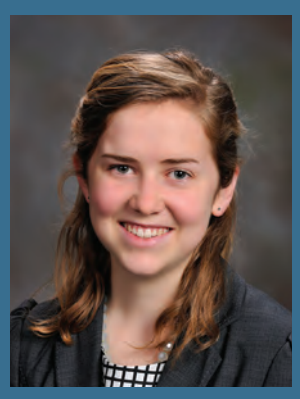
Boris Vinatzer's new naming system could enhance the Linneaus system of taxonomy, which has existed for nearly 300 years.

Scientist proposes revolutionary naming system for all life on Earth

Boris Vinatzer, an associate professor of plant pathology, physiology, and weed science, has developed a new way to classify and name organisms based on their genome sequence and, in doing so, has created a universal language that scientists can use to communicate with unprecedented specificity about all life on Earth.

In a paper recently published in the journal PLoS ONE, Vinatzer proposes moving beyond the current biological naming system to one based on the genetic sequence of each individual organism. This creates a more robust, precise, and informative name for any organism, be it a bacterium, fungus, plant, or animal.

Student receives prestigious **Udall Scholarship**



Catherine Goggins

Pamplin Scholar Catherine Goggins of Newport News, Virginia, a junior majoring in agricultural and applied economics and a University Honors student, received a 2014 Udall Scholarship from the Morris K. Udall and Stewart L. Udall Foundation.

She is one of 50 students selected from 489 applicants representing 228 colleges and universities — and the only one from Virginia — to receive the 2014 scholarship.

Among Goggins' many accomplishments recognized by the scholarship was her collaboration with a nonprofit, the Alderson Hospitality House in Alderson, West Virginia, where she established a community garden. The organization provides meals and lodging to families and friends of women incarcerated in the federal women's prison in the town.

Department changes name

In order to better reflect its evolving mission, the Department of Agricultural and Extension Education has changed its name to the Department of Agricultural, Leadership, and Community Education.

"While the department's current teaching, research, and outreach programs continue to include pre-service and in-service education for agriculture teachers and Extension agents, they also include extensive programs in leadership education and community viability that complement the ongoing efforts of the college," said Rick Rudd, department head.

Three college students selected as Truman Scholar finalists

Sarah McCay, Austin Larrowe, and Wes Williams were finalists for a Truman Scholarship, a prestigious award that prepares students for careers in government and public service.

By Alison Matthiessen

Three College of Agriculture and Life Sciences students were honored as finalists for the 2014 Truman Scholarship, a prestigious award that goes to college students to help them attend graduate school in preparation for careers in government or other types of public service.

That three students from Virginia Tech were finalists was unusual, but having three with the same major — applied economic management — was extremely rare.

The students honored were Austin Larrowe of Woodlawn, Virginia; Sarah McKay of Barboursville, Virginia, who is also majoring in animal and poultry sciences; and Wes Williams of Roanoke, Virginia. All are juniors.

"Virginia Tech has never had more than one finalist in a year, so we are very proud of Austin, Sarah, and Wes," said Christina McIntyre, associate director of University Honors and advisor for applicants to major scholarships.

"Even though Austin, Sarah, and Wes are undergraduates, they are already working on solving some of the most pressing issues in society today," said Steve Blank, the department head of agricultural and applied economics. "This is a testament to the high caliber of students in our department."

Between high school and college, Larrowe was a state officer of the National FFA Organization and traveled to more than 30 countries. The experience opened his eyes to international agriculture and education needs and prompted him to found Feed by Seed during his first year at Virginia Tech. The organization focuses on global agriculture education, development, and advocacy and runs an 18-acre farm in Nicaragua, teaching local people how to farm to provide food for their families.

McKay is active in undergraduate research, campus and community organizations, global education, and government internships. She founded a garden program at the Virginia Tech Child Development Center for Learning and Research and works with children ages 2 through 5 and special-needs seniors to plant herbs and vegetables together. The garden allows intergenerational learning, sparking conversations about agriculture, nutrition, and diversity and reconnecting people with their food.

While on the Presidential Global Scholars international experience, Williams conducted a group research project on sex trafficking in Europe. The project ignited a passion for fighting human trafficking and slavery. Working with two other University Honors students, Williams won first and second places in a Challenge Slavery contest organized by the U.S. Agency for International Development and partnering agencies. The team launched the first-place idea, AboliShop — a Web browser extension that allows online consumers to check their shopping carts to identify products that likely used forced or exploitative labor in their manufacturing or distribution. Williams was also able to visit the White House to talk about anti-trafficking technologies.

Diversity Enhancement Awards presented

Two people were recently recognized by Dean Alan Grant and the College Diversity Council for their commitment to diversity and the efforts they put forth to promote it.

Brielle Wright, a master's student in agricultural, leadership, and community education, received the Dr. Randolph Grayson Student Diversity Enhancement Award in recognition of her many activities to promote inclusion on campus. She started the VT Forward mentoring program; participated in Minorities in Agriculture, Natural Resources, and Related Sciences; and the NAACP, among other programs.

John Galbraith, associate professor of crop and soil environmental sciences, was given the faculty award. Among his many accomplishments, Galbraith has helped establish a mentoring program for American Indian students and assisted in securing funding for the Virginia Indian Pre-College Outreach Initiative.

At a reception celebrating their accomplishments, each received a letter of commendation, a plaque, and a $500 award.

Dean Alan Grant (center) congratulates Brielle Wright and John Galbraith on their Diversity Enhancement Awards.

College engages in **(agri)cultural exchange with Senegal**

Crop and soil environmental sciences graduate students Fatou Tine and Mariéme Drame conduct research in a greenhouse.

By Amy Loeffler

"Ñit, nittay garabame" is a proverb in Wolof, a language spoken in Senegal that loosely translated means, "People are medicine for people."

It couldn't be more true of the cultural exchange between Virginia Tech and the West African nation of Senegal. Seven Senegalese graduate students now call Virginia Tech home, and 13 students from the college visited the country over winter break. The exchange is having profound impacts on students from both sides of the Atlantic Ocean.

"I've only spent three months here so far, but it's already been very important for me professionally and as a scholar," said Sekouna Diatta, a master's student in the Department of Crop and Soil Environmental Sciences.

Diatta is one of six students conducting research in the department. Over the next two years, he will perform trials at research plots that will help farmers in Senegal grow crops like millet in the saline soil that has become a plague on farmland — an important task in a country where 50 percent of the population is involved in some type of agricultural activity.

Another graduate student is examining strategies to fight malnutrition with nutrient-dense beverages. They are all here through the Education and Research in Agriculture project in Senegal, which is funded by the U.S. Agency for International Development and led by Virginia Tech.

"The Senegalese students are finding out how the integration of learning, discovery, and outreach at a land-grant university can result in the whole being greater than the sum of the parts," said Tom Thompson, department head of crop and soil environmental sciences.

Students from Virginia Tech say they have a lot to learn from Senegal, too.

They traveled to Africa for a 14-day program where they deployed a mango dehydrator and a silage compactor and demonstrated a water purifier, among other initiatives.

Aubrey Stephenson, a sophomore from Dumfries, Virginia, majoring in human nutrition, foods, and exercise, went on the trip to learn how to better manage global health.

"Going to Senegal totally changed my life," said Stephenson. "I was nervous about what our host partners would think, but they were all very patient. I learned a lot about interacting with a completely different culture."

Brent Ashley, a senior from Felton, Delaware, double majoring in dairy science and animal and poultry sciences, also felt empowered by putting his academic knowledge to practical use in a multicultural environment.

"Being able to take what I've learned over the last four years and use that knowledge to benefit others is a way to recognize that we may live in a small town in Southwestern Virginia, but we exist in a global community," he said.

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

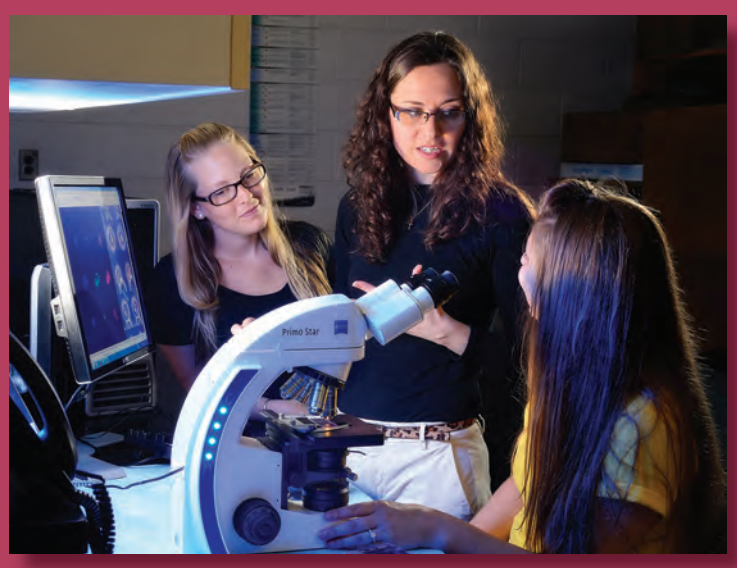
Virginia Tech students stand under a large baobab tree as they show off their Hokie pride.

Research closes in on **stopping malaria in its tracks**

The parasites responsible for mosquito-borne infectious diseases, such as malaria, are increasingly resistant to current drugs.

In order to identify new drug targets, Assistant Professor of Biochemistry Maria Belen Cassera is conducting new research that examines the crucial time when malaria is transmitted — when reproductive cell precursors known as gametocytes develop. She wants to understand the role that specific metabolites called isoprenoids play in the early stages of development.

"This will allow us to design more efficient drugs to block malaria transmission, which is one of the key components for malaria elimination and eradication," Cassera said.



Assistant Professor of Biochemistry Maria Belen Cassera (center) is studying how to stop malaria transmission.

Outstanding alumni recognized

The Horsley family was inducted into the college's Hall of Fame at the annual alumni awards program held in March, and Kimberly Lane Tabor Kreitlow of Apex, North Carolina, was recognized with the college's Outstanding Recent Alumni Award at the same event.

Donald and Diane Horsley, along with sons Shane and Ryan, received the award for their longstanding commitment to agriculture in the state and to Virginia Tech. Donald graduated with a B.S. in animal science in 1970; Shane received a B.S. and M.S. in animal and poultry sciences in 1999 and 2002; and Ryan earned the same degrees in 2002 and 2004.

The Horsleys own Land of Promise Farms in Virginia Beach, a successful farming operation that produces soybeans, corn, wheat, swine, and beef cattle. Their swine enterprise supplies project pigs to 4-H and FFA members in Virginia and across the country.

Kreitlow earned her Ph.D. in entomology in 2004 and was recognized for her extensive research and forensic work. She was the first person to earn a degree in forensic entomology from the university. Considered a pioneer for women in the field, she is an adjunct assistant professor at North Carolina State University.

Other award winners included:

Outstanding Ambassador: Olivia Ellis, of McLean, Virginia, a senior majoring in human nutrition, foods, and exercise.

Outstanding Faculty Service Award: Vernon Meacham, of Blacksburg, Virginia, director of development for the College of Agriculture and Life Sciences.

Outstanding Alumni Leadership Award: James Pearson, of Lavonia, Georgia, CEO of American Trailer Works.

Outstanding Alumni in International Programs: Jackline Bonabana-Wabbi, of Kampala, Uganda, a lecturer in the Department of Agribusiness and Natural Resource Economics at Makerere University.

For more information on these and other departmental award recipients, visit www.cals.vt.edu/alumni/awards.

Dean Alan Grant (right) congratulates Shane, Donald, Diane, and Ryan Horsley as they are inducted into the college's Hall of Fame. Ryan's wife, Anne, is also pictured second from right.

Dean Alan Grant, Lane Kreitlow, and Loke Kok, head of the Department of Entomology, celebrate Kreitlow's Outstanding Recent Alumni Award.

Austin Larrowe and Ashley Francis named to Board of Visitors

The Virginia Tech Board of Visitors recently selected a current student and a college alumna to serve as liaisons between the student body and the board.

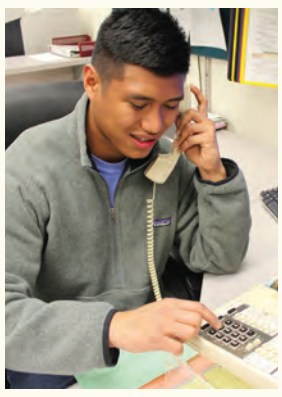
Austin Larrowe, a fourth-year University Honors Program student majoring in applied economic management and agricultural sciences from Woodlawn, Virginia, is now the board's undergraduate student representative. Larrowe is a member of University Council, as well as Omicron Delta Kappa, a national leadership honor society.

Ashley Francis, who received her undergraduate degree in human nutrition, foods, and exercise, is the graduate student representative to the board. The Blacksburg resident is currently a master's student in public health in the Virginia-Maryland Regional College of Veterinary Medicine.

Austin Larrowe and Ashley Francis are named to the Board of Visitors.

Students help recruit next generation of Hokies

Le Mar Baliwag loves being a Hokie, so it's only natural that he's trying to get others to have the same experience he has had at Virginia Tech.



Le Mar Baliwag calls prospective students around the country as part of Hokie Callers.

During peak student recruiting time, Baliwag, a senior majoring in food science and technology, is on the phone as part of a project known as Hokie Callers, where current students call high school seniors who have been offered admission to the College of Agriculture and Life Sciences.

"Virginia Tech has been a great experience for me, and I want to be able to share any insights I can with others who are thinking about coming here," said Baliwag, of Potomac Falls, Virginia.

Hokie Callers is one of many ways the students in the College Ambassadors Program are involved in recruiting during the year. They may also visit their former high schools as part of the Take Tech Home project; participate in Fall Open House events, high school spring break visits, and the college's popular individual information sessions; and lead tours when high school students are on campus.

"Our students are our best ambassadors because they know firsthand what it is to be a Hokie," said Susan Sumner, associate dean and director of academic programs.

For more information and to schedule a campus visit, go to www.cals.vt.edu/prospective.

Tiny bugs may help save hemlocks from extinction

Twenty years ago, massive old-growth hemlock trees that sprouted from the banks of Little Stony Creek shaded hikers making their way up the Cascade Falls trail not too far from the Virginia Tech campus.

But during the last two decades, the hemlocks were cut down because an invasive insect — the hemlock woolly adelgid — infected and killed the evergreen trees that are a cornerstone of the forest ecosystem. The same scenario played out from Vermont to Georgia as the hemlock woolly adelgid expanded its deadly range and threatened to change the composition of forests across the Eastern United States.

Scott Salom, professor of entomology, isn't going to sit by and watch that happen.

In 2013, he and his team of researchers released one of the hemlock woolly adelgid's predators from its native habitat in Japan into the woods in Virginia and West Virginia. If all goes as planned, the *Laricobius osakensis* beetle will be another tool that resource managers will have to save the treasured trees.

So far, the project is succeeding: The beetles are adapting to the new climate and are reproducing on their own in the wild.

"We don't want to lose the hemlocks, and we have to explore every avenue we can to save them," Salom said. "This is a battle we feel compelled to take on."

Entomology graduate student Katlin Mooneyham, of Wilmington, North Carolina (right), and research technician Emily Lawrence collect and count beetles in hemlock trees.

The *Laricobius osakensis* beetle was discovered in Japan in 2005, where it is native.

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

Kanevsky-Mullarky honored at White House

This spring, President Barack Obama recognized Isis Kanevsky-Mullarky, an associate professor of dairy science, for being a recipient of the Presidential Early Career Award for Scientists and Engineers.

The award, presented at the White House, is the highest honor bestowed by the U.S. government on outstanding scientists and engineers beginning their careers. She was one of 102 recipients of the award and one of three funded by the Department of Agriculture.

Award winners were selected for their pursuit of innovative research and their commitment to community service as demonstrated through scientific leadership, public education, or community outreach.

"To say I'm thrilled to receive this award doesn't do my feelings justice," said Kanevsky-Mullarky, who is an affiliated faculty member of the Fralin Life Science Institute. "Not only are there few scientists in agriculture who receive this prestigious award, the number of women is even fewer. It is a great honor to serve as a representative of my department and university as a recipient."

Kanevsky-Mullarky's research centers on enhancing the immune response to *Staphylococcus aureus* infections, identifying biomarkers and vaccine targets, and delineating immune system development in the neonate. She currently teaches mammary immunology, mentors both master's and doctoral students, and serves as chair of the graduate committee.

Isis Kanevsky-Mullarky

President Barack Obama talks with the Presidential Early Career Award for Scientists and Engineers recipients in the East Room of the White House on April 14.

College builds relationship with Maryland magnet school

College faculty and staff members recently visited the Natural Resources and Agricultural Sciences Magnet Program at North Harford High School in Pylesville, Maryland — a magnet school that produces candidates who are uniquely qualified for entrance into the college.

The visit established a relationship with high school faculty members and students who are seeking a variety of academic opportunities after high school. The school program offers students three tracks of study: large animal and equine science, plant science, and natural resources.

From left: Linda Granata, Matt Spindler, Rebecca Splan, Rebecca Cockrum, and Whitney Perkins, a graduate of the high school and Virginia Tech, stand in the school's horse barn.

Faculty and staff **rewarded for excellence**

Three people from the college were recently honored with Excellence Awards from the Office of the President and the Virginia Tech Alumni Association.

Tom McAvoy, senior laboratory specialist in entomology, received the university's 2014 President's Award for Excellence. Kelly J. Liddington, unit coordinator and senior Virginia Cooperative Extension agent in Richmond County, Virginia, and Brian L. Benham, associate professor of biological systems engineering and Extension specialist, both received the 2014 Alumni Award for Excellence in Extension.


Tom McAvoy


Kelly J. Liddington


Brian L. Benham

Excellence Fund renamed in memory of Glenn A. Anderson

The CALS Alumni Organization board of directors has renamed its most recent endowment the CALS Alumni Organization Excellence Fund in Memory of Dr. Glenn A. Anderson.

Anderson ('68, agricultural and extension education) was a long-term board member and a CALS Hall of Fame member who had a distinguished career serving agricultural education in the commonwealth. Once fully endowed, the fund will support experiential learning opportunities outside of the classroom.

For information about the fund, please contact Jamie Lucero, director of alumni relations, at 540-231-9666.

Students recognized for **academic excellence**

Four students in the College of Agriculture and Life Sciences were recognized as outstanding in their fields this spring.

Stephanie Myrick, of Woodbridge, Virginia, received Virginia Tech's 2014 College of Agriculture and Life Sciences Outstanding Senior Award.

A member of the University Honors Program, Myrick received numerous scholarships and also served as a research assistant during a six-week summer research internship on conservation agriculture in Ecuador last year.

The college's Outstanding Graduate Student is Shuai Zhang, of Jinan, China, an animal and poultry sciences master's student. He has crafted an academic career characterized by a meticulous and organized approach to experimentation and a willingness to work outside his comfort zone. Zhang has a 3.9 grade point average.


Stephanie Myrick is the 2014 College of Agriculture and Life Sciences Outstanding Senior.

Devin Ridgely, of Monett, Missouri, a biological systems engineering student, received the Outstanding Doctoral Student Award. In his young career, Ridgely has become a respected member of the department and is active in organizing the Biological Systems Engineering Fall Expo, among other activities. He is also listed as first author on six published, refereed articles.

Sebastian Ignacio Arriola Apelo, of Montevideo, Uruguay, a Ph.D. candidate in dairy science, received an honorable mention for the university's Outstanding Dissertation Award. He works with the regulation of protein synthesis in animal nutrition.

College hosts first **international trade seminar** panel discussion

The first of a new International Trade Seminar Series hosted by the college explored the importance of agriculture and forestry exports to Virginia's economy.

Virginia Secretary of Agriculture and Forestry Todd Haymore gave opening remarks and served on a panel along with Ambassador Richard Crowder, professor of agricultural and applied economics; C. Gordon Thornhill Jr., a college alumnus and owner of one of America's largest livestock export companies; and other prominent members of the state agriculture and forestry sector.

The panel discussion was a follow-up to the Governor's Conference on Agricultural Trade that touted a record-breaking $2.85 billion in Virginia exports last year. The panel discussion addressed the steps needed to expand Virginia's export trade and emphasized the need for Virginia's future producers of agricultural and forestry products to understand the global nature of the state's exports in the marketplace.


Virginia Secretary of Agriculture and Forestry Todd Haymore fields questions from students during the International Trade Seminar Series.

Learning about the culture of nutrition in Ecuador

Alexandra Thompson learned a lot more than Spanish during her global education experience in Ecuador.

Thompson, a senior from Hebron, Connecticut, majoring in human nutrition, foods, and exercise, studied in a program at the Universidad San Francisco de Quito where she had the opportunity to learn about nutrition as a social science.

Thompson, who hopes to attend medical school and study preventive medicine, examined the obesity problem in urban centers, where processed foods have crept into the diets of city dwellers and replaced more traditional fare.

"We're really going to need more of a preventive approach in the future — not just in the United States but across the globe," she said.


Alexandra Thompson studies the role cultural traditions play in nutrition and health care administration in Ecuador.

Soil judging team **wins fifth championship**

The 2014 Virginia Tech Soil Judging Team took first place overall at the Soil Science Society of America National Intercollegiate Soil Judging Contest on April 4. This is the fifth national championship for the Virginia Tech team and the third win in the past five years.

Julia Gillespie, of Ashburn, Virginia, a senior majoring in environmental science, and Emily Salkind, of Springfield, Virginia, also a senior majoring in environmental science, earned spots on the teams representing the U.S. at the International Union of Soil Sciences 20th World Congress of Soil Science's First International Soil Judging Contest, to be held in South Korea in June. Virginia Tech is the only school that has more than one student qualified to represent our country.

John Galbraith, associate professor of crop and soil environmental sciences, was selected as the winning coach at the competition, an honor that granted him the opportunity to coach the first-tier team in Korea.


Virginia Tech's national championship team (from left): Coach John Galbraith, Brian Nester, Nick Hebel, Emily Salkind, Stephanie O'Neil, Natasha Nahas, Julia Gillespie, Miranda Livas, Emily Baer, and Ruth Anderson.

Foundations of campus buildings trace back to Extension

Virginia Cooperative Extension, which is celebrating the 100th anniversary of the Smith-Lever Act that established the national Cooperative Extension System, has its roots at Virginia Tech, and many of the people who have served Extension also made a large impact on the university. A number of buildings around campus are named for people who were proud to be part of the Extension family.

Sandy Hall – Sandy Hall memorializes Thomas Oldham Sandy, Virginia's first demonstration agent (1907-17). Called the father of farm demonstration and extension work in Virginia, Sandy was a progressive farmer who promoted the improvement of scientific education in agriculture.

Agnew Hall – Ella Graham Agnew was the first woman to receive a field appointment from the U.S. Department of Agriculture and served as an Extension agent at Virginia Agricultural and Mechanical College and Polytechnic Institute from 1914 to 1919. Her work in Virginia was a precursor to today's 4-H and Extension Homemaker clubs.

Horticulture students place in **PLANET competition**

Twenty-seven students traveled to Colorado State University in Fort Collins, Colorado, this spring to compete in the Professional Landcare Network's 38th Annual Student Career Days — a national collegiate landscape competition sponsored by several national landscaping and construction companies. The students came from the Department of Horticulture and the Agricultural Technology Program.

The Virginia Tech PLANET competition team placed 13th overall this year, and many individual members placed in the top 10 of their categories.

The Virginia Tech students competed against 720 other students from 65 different schools and placed 13th as a team. Many individuals placed in the top 10 of their categories, including Ned Harm, who won seventh place for interior landscape design.

"Virginia Tech's presence is very important at PLANET because we are one of the largest schools that goes with the largest team. We place in the top 15 normally and have great team members who place top 10 throughout the competition," said Harm, a horticulture senior from Martinsville, Virginia.

For students, the benefits are practical as well. Harm secured a job while attending the event and will be relocating at the end of May to begin his landscaping career with a company in Texas.

The PLANET team was led by Barbara Leshyn, instructor in the Department of Horticulture; John James, senior research specialist in horticulture; and Tom Martin, advanced instructor in the Agricultural Technology Program.

May 8 declared **Virginia Cooperative Extension** Day

More than 500 people gathered on Virginia Tech's Ag Quad on May 8 to celebrate Virginia Cooperative Extension Day and the 100-year anniversary of the Smith-Lever Act. Congress passed the Smith-Lever Act on May 8, 1914, creating the Cooperative Extension Service, a state-by-state national network of educators who extend university-based knowledge to the people. In recognition of Extension's centennial, Gov. Terry McAuliffe proclaimed May 8 Virginia Cooperative Extension Day in Virginia.

Faculty and staff members from the College of Agriculture and Life Sciences, the College of Natural Resources and Environment, and the Virginia-Maryland Regional College of Veterinary Medicine shared information and exhibits that represented more than 40 different Extension programs and departments. Attendees enjoyed cake and ice cream while visiting with representatives from the college and Extension about their programs.

Prior to the showcase event, a luncheon was held where Virginia Tech President Charles W. Steger and Virginia State University President Keith Miller addressed those in attendance. John Dooley, chief executive officer of the Virginia Tech Foundation; Jewel Hairston, dean of the College of Agriculture at Virginia State University and administrator of the 1890 Extension Program; and Edwin Jones, associate dean of the College of Agriculture and Life Sciences at Virginia Tech and director of Virginia Cooperative Extension, provided insight on Virginia Cooperative Extension — then, now, and in the future.

These events were just two of many special activities taking place over the next several months to celebrate Extension's centennial. To see the events being held in communities across the commonwealth, visit www.ext.vt.edu.

The celebrations for Virginia Cooperative Extension Day included a luncheon, a showcase of Extension programs, and a cake that was cut by Ed Jones, director of Virginia Cooperative Extension, and Jewel Hairston, dean of the College of Agriculture at Virginia State University.

Gifts provide endowed positions

The Virginia Tech Board of Visitors recently named and reappointed a number of college faculty members to endowed positions.

Katharine Knowlton

Katharine Knowlton, professor of dairy science, was named the Colonel Horace E. Alphin Professor in Dairy Science.

The professorship was established in 2013 through a gift from Alphin, a member of the Class of 1934, to support outstanding teaching and research faculty in dairy science. Knowlton has been a member of the Virginia Tech community since 1998 and has been widely recognized for excellence in teaching, advising, and scholarship.

Rick Rudd

Rick Rudd, professor and head of the Department of Agricultural, Leadership, and Community Education, was reappointed the Virginia Cooperative Extension Chair of Excellence in Community Viability.

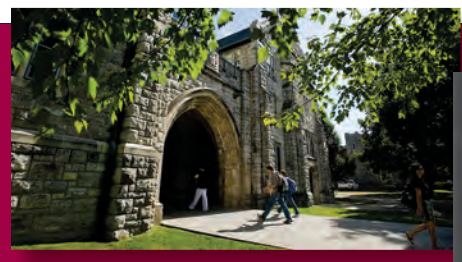
The position was established in 2004 by an anonymous donor in honor of R. Michael Chandler, Donald P. Lacy, and J. Douglas McAlister in recognition of their service to Virginia Cooperative Extension. Rudd has gained national and international recognition for his work in rural leadership development and viable rural communities.

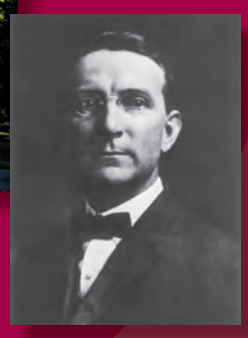
Dennis R. Dean

Dennis R. Dean, a University Distinguished Professor and director of the Fralin Life Science Institute at Virginia Tech, was recently reappointed the J.B. Stroobants Professor of Biotechnology.

Established in 1986 by a gift from Alphonese and Maria Stroobants of Bedford County, Virginia, in memory of Alphonese Stroobants' father, the professorship supports a researcher in the college who is advancing knowledge and discoveries in biotechnology. Dean's research centers on two related projects — the chemical mechanism of biological nitrogen fixation and how iron and sulfur are combined and mobilized to support various essential life processes, such as nitrogen fixation, photosynthesis, and respiration.

Hutcheson Hall – Hutcheson Hall was named in 1956 for two brothers: Thomas Barksdale Hutcheson (above) and John Redd Hutcheson, alumni who graduated in 1906 and 1907, respectively. Thomas, who was known for his agricultural research and writing, served from 1914 to 1950 as the agronomy department head and then as dean of agriculture. John, an agricultural leader, worked from 1919 to 1962 as director of agricultural extension and as president of Virginia Tech from 1945 to 1947.





Eggleston Hall – In 1952, Eggleston Hall was named for Joseph Dupuy Eggleston, the first director of Virginia Cooperative Extension Work in Agriculture and Home Economics programs. He served as Virginia Tech's president from 1913 to 1919, during which time he spurred the move toward collegiate Gothic architecture, created an agricultural education department, and established several Reserve Officer Training Corps units.

Other buildings that have ties to Extension faculty include Dietrick Hall, named for Leander B. Dietrick; Turner Place at Lavery Hall and the William E. Lavery Animal Health Research Center, named in honor of Virginia Tech's 12th president, William Lavery; Saunders Hall, renamed for William Dabney Saunders in 1949; Seitz Hall, named for Charles Edward Seitz; and Cassell Coliseum, which was named for Stuart Kent Cassell. For more information visit www.vt.edu/about/buildings.

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Wampler leaves lasting legacy of generosity

By *Amy Loeffler*

William “Bill” D. Wampler had many meaningful relationships that started on the Virginia Tech campus, but the one that blossomed in the 1940s was his most personal.

Bill Wampler

As a teenager from the Shenandoah Valley, Wampler was in Blacksburg for the annual 4-H Congress when he met fellow 4-H’er Bonnie Lou May. The two hit it off instantly and before long, fell in love and married.

The couple maintained a deep connection to Virginia Tech even after Bill graduated in 1950 with a degree in poultry husbandry and joined the family business of raising turkeys. After he graduated, he not only looked to his alma mater for advice, he also opened up the Wampler farms and facilities to Virginia Tech faculty members for field-testing and applied research.

“When you talk about someone who is a benefactor, you usually talk about their financial gifts. But Bill Wampler was interested in sharing gifts of information and expertise, too,” said Paul Siegel, university distinguished professor emeritus of animal and poultry sciences. Siegel became a close friend of Wampler’s when he was enlisted to help Wampler in determining the best way to increase production of his flock of turkeys.

Wampler passed away in March at the age of 86, but the impact he made on Virginia Tech — and on Virginia agriculture — will live on for generations.

“In addition to his significant leadership and service to the poultry industry, Bill exemplified the Virginia Tech motto, *Ut Prosim* (That I May Serve),” said Alan Grant, dean of the college. “His service to Virginia Tech and the College of Agriculture and Life Sciences includes gifts of time, treasure, and talents that have spanned many decades.”

As a youth, Wampler served on the state FFA executive committee and as state 4-H president in 1947. Both he and Bonnie Lou remained active supporters of 4-H and FFA over the years and received state and national recognition for their participation in the organizations.

The couple also supported the construction of the Alphin-Stuart Livestock Teaching Arena where the Wampler Classroom is housed. Today it is a space that hosts numerous Virginia Cooperative Extension events, outreach, and youth activities.

Another testament to his legacy at Virginia Tech is the Wampler Conference Room, a hallmark of the college, located in Litton-Reaves Hall. The room chronicles the evolution of the Wampler family’s development of innovations that led to the creation of the modern poultry enterprise through a museum-quality pictorial timeline. The Wampler family is universally credited for establishing modern scientific methods and pioneering vertical integration in the poultry industry.

Wampler also established and supported numerous endowments benefiting the college and Virginia Cooperative Extension.

In 2004, Wampler was named to the College of Agriculture and Life Sciences Hall of Fame, a distinction that honors those individuals who have given outstanding service to the college.

Bill Wampler had a lifelong connection to Virginia Tech and was a generous contributor to programs that he once participated in. He met his wife, Bonnie Lou, when the two were on campus for 4-H Congress.

“When you talk about someone who is a benefactor, usually you talk about their financial gifts. But Bill Wampler was interested in sharing gifts of information and expertise, too.”

— Paul Siegel
university distinguished professor emeritus of animal and poultry sciences

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