

# VIRGINIA TECH

spring 2016

magazine

## **Fantastic Four**

Meet Virginia Tech's first quadruplets

## **Class of 2047**

Envisioning the university of the future

## **"Take Big Swings"**

Entrepreneur empowers online publishers

**"THEY DID NOTHING  
TO DESERVE THIS."**

Fighting for Flint: A Virginia Tech team exposes lead poisoning

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**23 Class of 2047**  
Envision the future: If, a generation from now, Virginia Tech has succeeded beyond its wildest dreams, what will it look like? And how will the university position itself to solve society's most vexing problems? These topics are on the minds of the university's leaders, three of whom share why they've chosen to make Blacksburg home.

**30 Fantastic Four**  
One is Evel Knievel, another is ever careful. One's a troublemaker, another a teacher's pet. While they share a birthday and a special bond, Virginia Tech's first set of quadruplets have found their own paths.

**40 Fighting for Flint**  
Poisoned by lead-tainted water and ignored by elected officials and government agencies, residents of Flint, Michigan, turned to Virginia Tech's Marc Edwards, who led a team of students into an ongoing crusade to protect the public's welfare.

**60 "Take Big Swings"**  
Ads are to the internet what April showers are to May flowers: inevitable, inconvenient, indispensable. Sourcepoint, the latest company launched by entrepreneur Ben Barokas (agricultural and applied economics '96), seeks to empower advertisers and provide compensation to publishers that provide us with all of that free content.

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**On the cover and at right:** Gavin Walters, with his mother Lee-Anne, holds a bottle of water taken from his home in Flint, Michigan—water that gave him lead poisoning. Photo by Logan Wallace.



**Eroding trust:** (Above) Ph.D. student Anurag Mantha, a key member of the Virginia Tech team that brought national attention to the crisis in Flint, Michigan, meets with a Flint resident during a spring break visit in March. (Left) On the city's decades-old unofficial community message board known as The Rock, one resident expressed disdain for PSI, a business the city hired to test the water, and its trust in Virginia Tech. See the full story on page 40.

LOGAN WALLACE

COURTESY OF LEE-ANNE WALTERS



# A sense of purpose

by TIM SANDS

People aspire to lead meaningful lives. This aspiration is a key factor that contributes to our overall sense of well-being—and it's also one of the reasons students choose Virginia Tech. This issue of Virginia Tech Magazine is being shared with families of our undergraduates. If you are a new member of the Hokie Nation, I want to take a moment to say welcome, and thank you for being part of our community. With the efforts of our dedicated faculty and staff and remarkable leadership from such people as Vice President for Student Affairs Patty Perillo and Provost Thanassis Rikakis, a Virginia Tech education can be a transformational experience for students, their families, and their communities.

I've often said that Virginia Tech can become known as the "service-to-humanity academy." We proudly live our motto, *Ut Prosim* (That I May Serve). The heroic work of Professor Marc Edwards and his team in Flint, Michigan, is an excellent example of the motto in action (see the story on page 40). Motivated by urgent concern, the Virginia Tech team employed scientific expertise, empathy, and collaborative skill in working with Flint residents to effect change in a critical situation. I was particularly struck by a comment Professor Edwards made in a Washington Post article in January: "I feel like I'm doing the job I was born to do. I get up every day with such a sense of purpose. I wish everyone could experience something like that once in their life." Indeed, we wish this for all of our students.

This is precisely why the future of education at Virginia Tech is in Destination Areas—interdisciplinary areas of study, now under development, that will expand opportunities for

guided, experiential learning and advance the causes of inclusion and diversity. In higher education these days, there is much discussion about the so-called "T-shaped" student, someone who achieves both a depth of knowledge within a discipline and a breadth of strong interdisciplinary skills. Here, we seek to educate the "VT-shaped" student, a person of such intellectual depth and breadth who also is inspired by the Virginia Tech experience to empathize with, serve, and improve the lives of others. Hokies—all of us—are here to make a difference, and I'm grateful that you're part of our community. □

*Tim Sands is Virginia Tech's 16th president.*

## VIRGINIA TECH MAGAZINE

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## letters to the editor

Have something to say? Send us a letter at vtmag@vt.edu.



### Early decision

This is our second-grader, Bryce, reading your spring 2015 article, "Firefighter Earns Sea Legs." This kid has been telling us for about a year that he wants to go become a robotics engineer at Virginia Tech! This article is awesome. Not only are you showing how great Virginia Tech's programs are, you're inspiring the next generation.

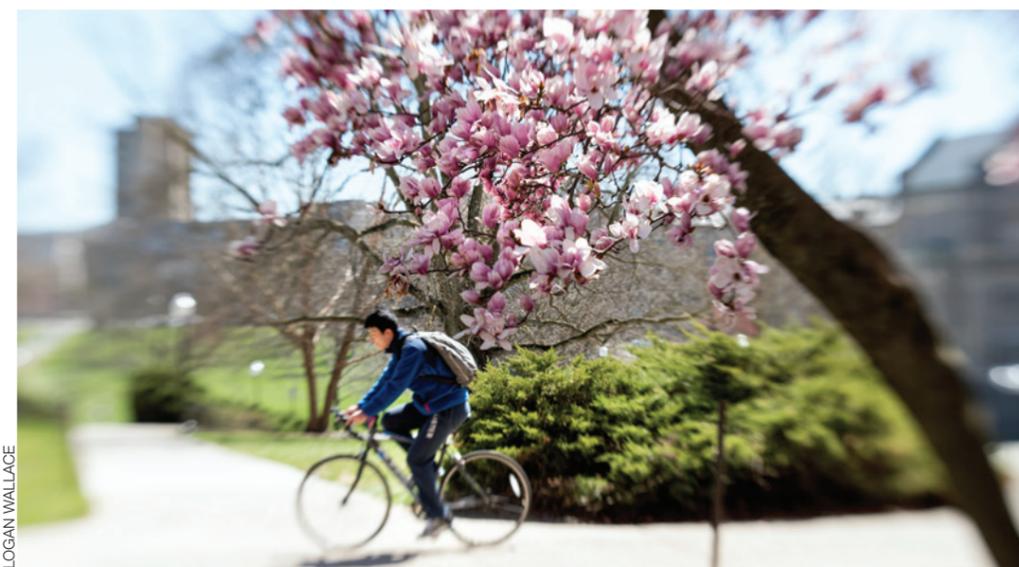
*Valerie Moore Mullins (management '02), Clayton, North Carolina*

### Cover concerns

To all of the young women (and men) preparing to enter the working world: Please, please disregard the letters in the prior edition of the magazine. Any employer who would give even the slightest weight to the nature of the shoes you wear to an interview does not deserve to have you as an employee.

*Dina Haines Appleby (chemical engineering '83), Kennett Square, Pennsylvania*

**Correction:** In the winter edition's How Tech Ticks story on food processing and French fries, we misspelled the last name of Michael Vanidestine, Squires food production manager.



# Around the Drillfield

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## The Virginia Tech experience: A parental perspective

**All in the family:** Terri and Steve Tunick and their children, soon-to-be alumnus David and daughter Rachael, have relished their connection to Tech.

When David Tunick graduates this spring, he will leave with a degree in chemical engineering and a wealth of career-related experience. Alongside his academic pursuits, David found a mentor, joined a fraternity, was a member of a living-learning community, and lived the university motto, *Ut Prosim* (That I May Serve).

We recently had a chance to talk with David's parents, Steve and Terri Tunick of Sewickley, Pennsylvania, who are members of the Division of Student Affairs Parent Committee at Virginia Tech.

### Family matters:

For the full Q-and-A, visit [vtmag.vt.edu](http://vtmag.vt.edu). For more information on the Division of Student Affairs Parent Committee and other resources for Hokie families, contact Penny Helms White, director of family and alumni relations, at [phwhite@vt.edu](mailto:phwhite@vt.edu) or 540-231-3284.

#### What made David choose Virginia Tech?

In high school, David liked his chemistry and physics classes. He wanted to major in chemical engineering. David wanted a large campus and a college with great school spirit. David also liked the architecture of the buildings, the large Drillfield, and the overall welcoming feel on campus.

#### What did David do outside the classroom that enhanced his education?

David developed a mentor relationship with Preston Durill, one of his chemical engineering professors. Working with Career Services, David secured an internship with Bayer and a co-op with Cargill, giving him opportunities to "test-drive" the direction he wanted to go.

#### Why is it important for families to be involved in their students' education?

The college experience is what you make of it. That includes the students and their families. When families are involved and knowledgeable, they can help guide their children's education and pursuit of a career.

#### What are you most proud of?

We are most proud of David's perseverance. He has a can-do attitude. Chemical engineering is a difficult major and David had to study hard. He learned not to be disappointed by setbacks and to overcome barriers. Due to an unfortunate childhood injury, David learned during his first year at Tech that he would need two additional surgeries on his right knee. During winter break, he had his first surgery and returned to campus in January. Schiffert Health Center removed his sutures. His next knee surgery, a cartilage transplant and bone graft, occurred that summer. He had 10 weeks of physical therapy. Again, David returned to college, navigated the large campus, and maintained his academic schedule.

#### Why did you become involved with the parent committee?

Our daughter, Rachael, attended Indiana University. We attended parents weekends and football games but never felt connected to the university. When we were asked to join the parent committee at Virginia Tech, however, we thought it was a great opportunity to learn about the university's past, present, and future. We feel like Hokies and are connected to a great community.

### College of Science dean named

Sally C. Morton, professor and chair in the Department of Biostatistics in the Graduate School of Public Health at the University of Pittsburgh, will begin July 1 as Virginia Tech's College of Science dean, succeeding Lay Nam Chang.

Provost Thanassis Rikakis said that Morton "has a strong record of research and scholarship and brings great strength in her collaborative, multidisciplinary approach to programs, research, and leadership. Her unique combination of experience and leadership bridging academia and industry will enable the college to continue building innovative programs and leverage existing and emerging strengths in ways that will advance the college and the university."

At the University of Pittsburgh, Morton also directs the Comparative Effectiveness Research Center in the Health Policy Institute and holds appointments in the university's Graduate School of Public and International Affairs, Department of Statistics, and Clinical and Translation Science Institute. She has more than 30 years of experience in academic and research settings, focusing on patient-centered comparative effectiveness and evidence synthesis.

At Virginia Tech, Chang has served as the college's founding dean since 2003, having joined the Department of Physics in 1978. Among other accomplishments, Chang implemented a cluster-hiring process that led to stronger collaborations, inspired faculty to develop new interdisciplinary degree programs, and established the College of Science Roundtable Advisory Board.

"I am grateful for the leadership and service Lay Nam has given the university and the College of Science," said former Provost Mark McNamee when Chang's retirement was announced in 2015. "He has brought an interdisciplinary approach to his leadership, as evidenced in an ongoing cluster hiring approach, key strategic collaborations, and the development of the Academy of Integrated Science. The college is well positioned for continued success as a result of his many efforts."

### Engineering dean to leave Tech

The University of Texas Board of Regents announced in late January that Virginia Tech's Richard C. Benson, the Paul and Dorothea Torgersen Chair of Engineering and dean of the College of Engineering, was selected as president of the University of Texas at Dallas, effective July 15.

During Benson's tenure at Virginia Tech, faculty members adopted a hands-on, minds-on philosophy of learning, an approach that produced highly sought-after engineering graduates.

"Under [Benson's] leadership, our College of Engineering has experienced record growth—doubling the number of student applicants and growing enrollment to close to 8,000 undergraduates and 2,300 graduate students—and the college is at its highest-ever ranking in the National Science Foundation's report on engineering schools' research expenditures, with more than \$200 million," said Virginia Tech President Tim Sands. "The national and international reputation of Virginia Tech engineering has never been stronger because of all that [Benson] has accomplished."

In 2014, Benson presided over the opening of Goodwin Hall, a \$100 million building that includes classrooms, an auditorium, and more than 40 instructional and research laboratories and offices.

CHRISTINA O'CONNOR, RANDOM FOUND OBJECTS



### Robo-roaches and ethics

Two cockroaches scuttle into earthquake rubble looking for survivors. One cockroach is a robot, driven by remote control. The other cockroach—a living insect—bears a backpack wired with electrodes that allow the bug to be steered using a smartphone app.

Which cockroach does the job better? Are both options ethical?

Students enrolled in Michael Collver's robotics class at Blacksburg High School are debating those questions in a course unit developed by Virginia Tech researchers David Schmale and David Lally and local educators Collver and Cindy Bohland.

The project, "Wired for Controversy: i-Cockroaches vs. RoboRoaches," which encourages students to think critically about the ethics of new technologies, such as drones and autonomous vehicles, was highlighted in the December 2015 edition of *The Science Teacher*.

"Autonomous vehicles are poised to become part of our everyday lives, and scientists are now studying ways to integrate similar robotic technology into living organisms," said Schmale, an associate professor of plant pathology, physiology, and weed science in the College of Agriculture and Life Sciences and a Fralin Life Science Institute affiliate.

"Insect cyborgs could one day be used for military intelligence and rescue operations, and we need to develop scientifically literate citizens to make well-reasoned ethical decisions about the potential use of this technology."

### Long story short

Virginia Tech received a record 25,200 undergraduate applications for admission to the Class of 2020. The pool includes an 8 percent increase in Virginia applicants and is the **most diverse student pool ever**.

Swimmer Brandon Fiala represented the Atlantic Coast Conference (ACC) on the **voting delegations** at the 2016 NCAA Convention. Fiala was among 15 students from 65 universities in the ACC, Big 12, Big Ten, Pacific-12, and Southeastern conferences.

Invasive plant expert Jacob Barney, assistant professor in the Department of Plant Pathology, Physiology, and Weed Science, briefed congressional staff members on increasing the use of **plants for biofuels** without sowing an environmental nightmare.

Although plants used for biofuels remain a vital player in creating more forms of alternate energy, careless planting can lead to an unwanted invasion of exotic plants that can push out native species and create ecological havoc.

# Land-grant lager

by RICHARD LOVEGROVE  
photo by JIM STROUP

Long known for research and outreach that has boosted the commonwealth's wine industry, Virginia Tech now has a brewhouse in the Department of Food Science and Technology's Innovation Collaboratory designed to serve Virginia's burgeoning craft brew businesses.

### Ingredients for a Virginia Tech land-grant lager:

**Research**—Carl Griffey, professor of crop and soil environmental sciences, is developing winter malt barley varieties suitable for the eastern U.S., and the brewhouse offers him a quality-control lab. And Holly Scoggins, associate professor of horticulture, has just planted an experimental hops yard to help identify the varieties that grow best during Virginia's shorter summers.

**Learning**—The gleaming, German-built, 2.5-hectoliter Esau & Hueber system teaches students about malting, brewing, and fermentation. Some of the machinery's automation has been removed to force students to learn, for instance, when to throw the valves to control temperature. "If you make a mistake, you've got to learn how to fix it," said plant manager Brian Wiersema.

**Sustainability**—Researchers are investigating methods to turn used barley into plastic and fuel, and the brewhouse itself runs as a true farm-to-glass operation.

**Economic outreach**—Regional breweries can use the facility, which has a capacity of 66 gallons of beer per batch, to develop new varieties of ales and lagers and to test local ingredients without taking their own facilities off-line. Also, the brewhouse could help attract breweries to the area, while the agricultural research may yield new crop varieties for farmers.

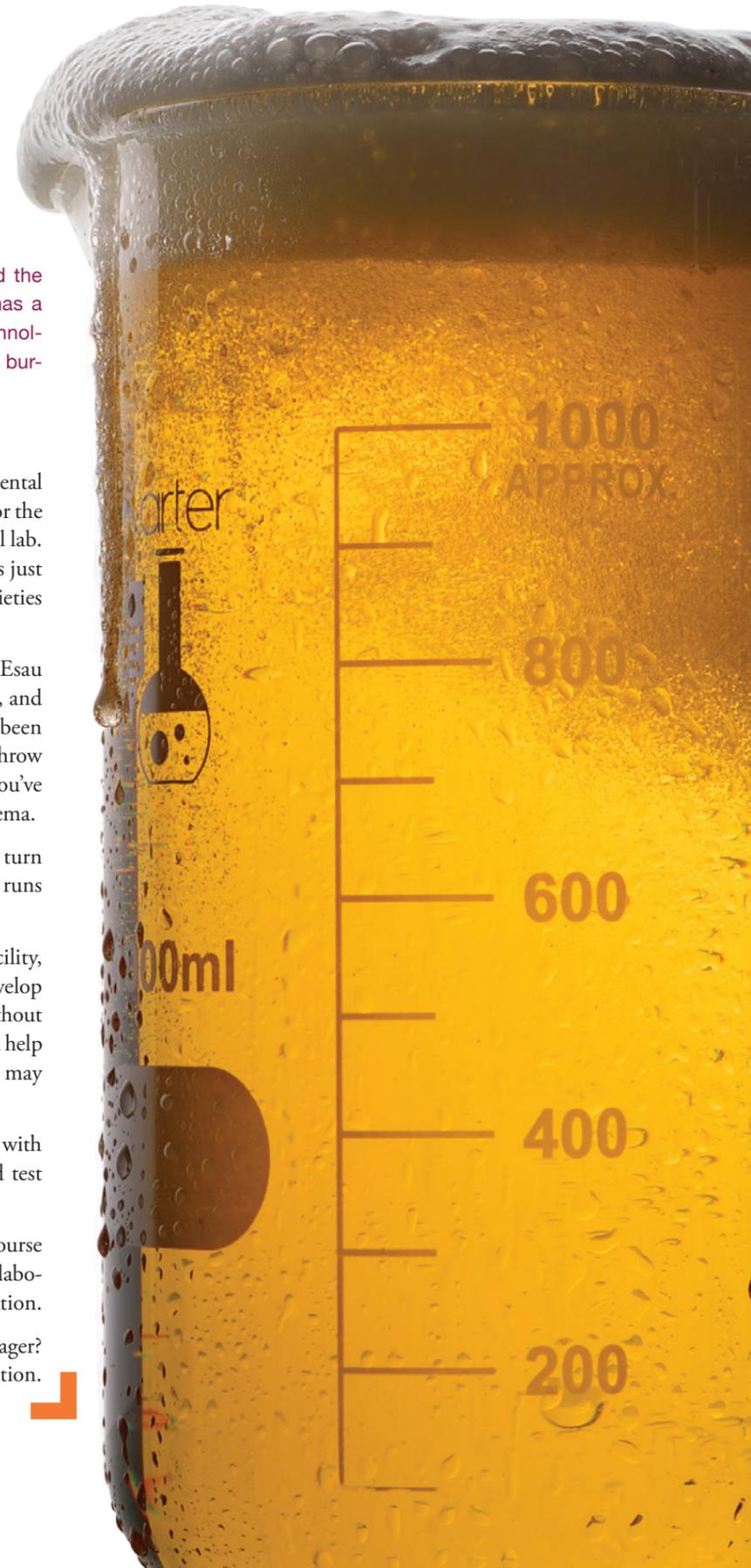
**Global education**—The university is planning a partnership with the Technical University of Munich, where students could test their classroom experience in the heart of Bavaria.

**Good cheer**—What could be better than taking a college course in advanced malting and brewing? Well, the Innovation Collaboratory will soon have a distillery unit for research and education.

The bad news for Hokies longing for a taste of land-grant lager? The student-brewed beer isn't available for public consumption.

### On the house:

For a video of the brewhouse in action, visit [vtmag.vt.edu](http://vtmag.vt.edu).





“ Six years ago, Newman Library saw about 400,000 visitors a year. Today, we welcome more than 1.3 million people into our building.”



**Brian Mathews is associate dean for learning in Virginia Tech's University Libraries.**

**Q:** Do libraries have a future?

**A:** When people ask this question, what they usually want to know is whether print books have a future. The assumption is that as more information becomes available online, we won't need books and therefore won't need libraries.

It's unlikely that the book format will ever completely go away. Librarians, though, are focused on an even larger question: How will the shape of knowledge evolve? We are concerned with how information is collected, organized, described, and utilized. Although there is a lot of content online, that doesn't mean it is free. We work hard to provide people with seamless access to what they need.

We're also concerned about future compatibility. As formats and operating systems change, the files and tools that we use now might be obsolete in 10, 20, or 100 years. Libraries are in it for the long haul. We want to ensure that the information created today is available tomorrow.

Learning is changing, too. Students are writing code, designing graphics, composing videos, and developing Web content. They participate in undergraduate research programs and service-learning projects, and some students are even launching start-up companies. Librarians aim to support the growth and progress of the university, and so we are embedded everywhere from classrooms to research labs. Not only are we

information specialists, we are also experts in such areas as data, design, and digital literacy.

Perhaps the most noticeable change has been to our buildings. From animation labs to 3-D printing studios, cafés, common areas, and an assortment of academic and research services, libraries have become intellectual incubators on campus.

We are designing spaces that propel students and faculty toward being more creative, more collaborative, and more innovative. There is a good balance between areas that offer quiet reflection and spaces that encourage interdisciplinary encounters.

Six years ago, Newman Library saw about 400,000 visitors a year. Today, we welcome more than 1.3 million people into our building. While there are still many books and silent reading nooks, we also offer a wide array of technologies and furniture. Walk through the building sometime, and you will see that it is filled with an industrious scholarly spirit.

Although more information is available online, and social media has become a major part of modern life, libraries have become more valuable than ever. They are social hubs that bring people together productively to explore, share, and build their ideas and to feel a part of the community. □



# Honoring the stars and stripes

by CARRIE COX '99

While spectators often see the Virginia Tech Corps of Cadets Color Guard presenting the colors at university sporting events, corps parades, and other functions, they likely don't know the impact these cadets have on the next generation through their outreach efforts with elementary school children.

“Our outreach to the community is our way of putting service before self and showing our appreciation for the opportunities our country has given us,” said Forrest Doss, the 2015-16 color guard commander.

“Visiting elementary schools allows us to teach children, who are the future of our nation, the importance of the flag, what it represents, and how it impacts their lives,” said Doss, a junior cadet and Air Force ROTC member from Leesburg, Virginia, who is majoring in computer science. “In addition, by performing various flag details for events, we hope to instill in others an appreciation for this country and the people who brought us all here today.”

For three years, color guard members have worked with the fifth-grade safety patrol at Kipps Elementary School in Blacksburg. Among other duties, these young students raise and lower the U.S. flag at their school each day. Kipps teacher Kelly McPherson said she appreciates that cadets are eager to reach out and set an example for elementary students. “The color guard comes in and teaches our children the importance of the flag, how to care for it, and why. This lesson provided by the cadets helps our kids to understand their duty when they raise and lower the flag each day. I am thankful for the partnership that we have built and hope to continue it for years to come.”

In the past year, color guard members also taught at an after-school program for third-, fourth-, and fifth-graders at nearby Dublin Elementary School in Pulaski County; shared their expertise with a Girl Scout troop; visited a preschool; and taught flag etiquette for an elementary school's field trip to Virginia Tech, as well as for a visit by homeschooled students.

A dedicated group of 12 to 17 cadets, the color guard is responsible for raising and lowering the flag over the Upper Quad each day, representing the corps and the university at events on campus and around the country, and maintaining all flags and equipment.

The cadets call themselves a faceless organization because their faces are often hidden by the flags. Anonymity is exactly what they want. Nonetheless, the color guard is one of the university's most recognized symbols and has a significant impact on the campus and community.

“I joined the color guard because I wanted to challenge myself as both a person and a leader. I not only have gained confidence and experience as a leader, but have become a member of a close-knit family that I will remain in contact with for life,” said cadet Adam Moritz, a junior chemical engineering major from Downingtown, Pennsylvania. □

*Maj. Carrie Cox (M.S. civil engineering '99) is the Corps of Cadets' executive officer.*

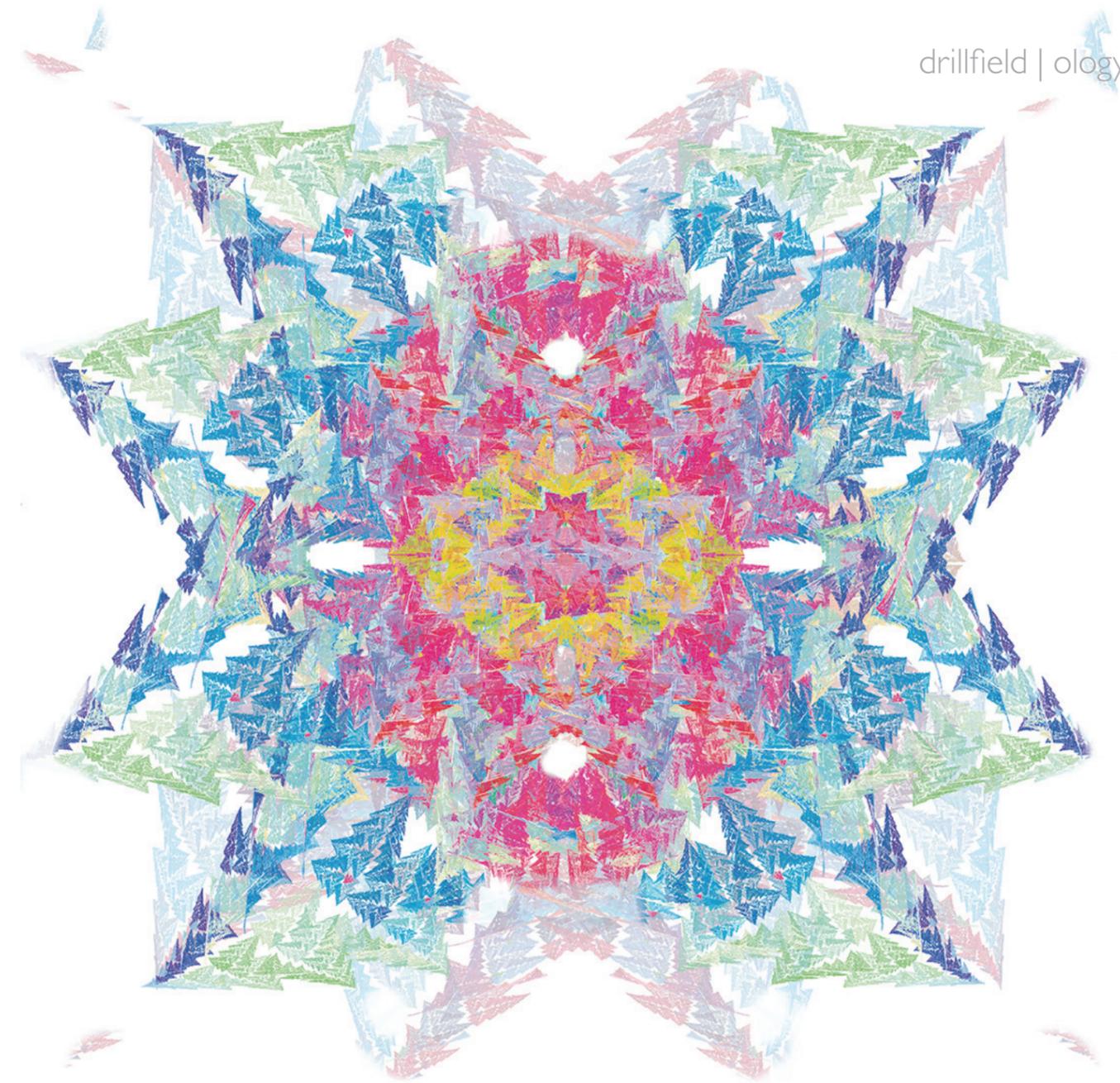


“ Whether she ends up in science or in math or in art, Sarah has the potential to change any one of those fields because of her different perspectives. That’s why Virginia Tech develops these innovative interdisciplinary programs.”

—Michael Fox, associate professor

MAI KHANH NGUYEN

**Art, math, and the brain:** In a piece she described as fractal art (seen at right), Sarah Hammer (above) used repetitive shapes to link her love for math with lessons from art class about color and composition.



## Vantage points

by RICHARD LOVEGROVE

Leonardo da Vinci was a mathematician. Pablo Picasso and Salvador Dali studied fourth-dimensional geometry. So Sarah Hammer, a junior at Virginia Tech, doesn’t see why anybody would find it remarkable that she’s double-majoring in studio art and mathematics or that she called on her artistic talents to enhance her undergraduate neurobiology research, which led to first-author credit on a published paper.

“I think the mindset that people can’t be both left- and right-brained thinkers is a really big misconception,” Hammer said. “Being an artist shouldn’t imply a lack of skill or interest in mathematics and vice versa. I think artists can learn a lot from mathematics.”

Hammer came to Tech as a university studies major, but quickly fell in love with her fundamental art classes. She was accepted into the art program after a portfolio review. “I really wanted to be in studio art because they have a specific focus called creative technologies,” she said. One year later, Hammer added math to the mix.

Even before arriving at Tech, Hammer combined the two. During her senior year at the Roanoke Valley Governor’s School, she had the opportunity to spend one month on a research project of her choice. Michael Fox, an associate professor at the Virginia Tech Carilion Research Institute, told her about a project involving brain imaging and 3-D reconstructions. She went to work, and Fox became her mentor through high school and into college.

Fox and his team used two different techniques to examine and illustrate how retinal ganglion cells—neurons that live in the retina and transmit information to the brain’s visual centers—develop in a mouse model. In one of those techniques, Hammer traced individual retinal terminals, which had been tagged with proteins that fluoresce different colors, through each of hundreds of serial images captured by an electron microscope. The results, which were published in the journal *Cell Reports*, challenged accepted theories about intricacies of the brain’s visual circuitry.

“She had to learn how to read all of those images, which is really difficult; it is a skill that takes years and years to teach graduate students,” Fox said. “Whether she ends up in science or in math or in art, she ... has the potential to change any one of those

fields because of her different perspectives. That’s why Virginia Tech develops these innovative interdisciplinary programs: to help students excel.”

“It was fun to create something that had scientific meaning, but also had to look good in order to convey all the concepts behind it,” said Hammer, who is an ambassador for the School of Visual Arts and eventually wants to earn a doctorate. “That’s what creating art is, finding a balance between meaning and aesthetic. It’s about communicating an idea.” □



MAP  
SHOWING LOCATION OF  
ODOR PRODUCING INDUSTRIES  
IN NEW YORK AND BROOKLYN  
AND THE DISTRICT CLAIMING  
TO BE AFFECTED THEREBY

# A stench in time

Foul smells may cause a wrinkle of the nose, but sometimes they can save lives, too.

Melanie Kiechle, assistant professor of history, studies scents at the intersection of urban and environmental history. She documents how people react to problems they perceive through their sense of smell—such as the 19th-century Industrial Revolution’s pollution in New York City—and what those moments tell us about cultural and societal changes.

One of her studies centered on an 1880s civic dispute over whether the scents of Brooklyn-based industries were carrying to midtown Manhattan. Examining the papers of Charles Frederick Chandler, a 19th-century professor at Columbia University and former president of the Manhattan Board of Health, Kiechle found a map titled “Map showing location of odor producing industries in New York and Brooklyn and the district claiming to be affected thereby.”

**Downwind:** Historian Melanie Kiechle, who studies how our nostrils perceive danger, found a wealth of information in this 1880s map of New York City. Image courtesy of Columbia University Rare Book and Manuscript Library. To read the full story on Kiechle’s research, visit [vtmag.vt.edu](http://vtmag.vt.edu).

“Oil refiners used [sulfuric] acid to filter impurities out of the oil, creating something they called sludge acid. The oil refiners then sold sludge acid to fertilizer manufacturers, who spread it on carcasses to speed the decomposition process. That had to create a powerful stench,” Kiechle said.

“In 2010, Newtown Creek, which is the creek that runs in between Brooklyn and Queens, was named an EPA Superfund site. That’s the creek they were complaining about in the 1880s. People were realizing that the area was already problematic and dangerous in 1880.

“It seems so odd today that a bad smell would make people sick and they’d think it was making them sick. It’s not how we conceive of getting sick—we think about germs and viruses—but in fact, by reacting to odors, 19th-century New Yorkers were identifying what was indeed dangerous in their own time.”

## Cosmopolitan Hokies

Virginia Tech’s Global Education Office helps students explore, learn, and engage with other cultures in order to challenge their assumptions, broaden their perspectives, and understand what it means to be responsible citizens of their nation and the world.

**Spring**  
2016

**9** programs

**22** faculty /staff

**193** students

**Destinations:**  
Dominican Republic, England, India, Ireland, Switzerland, Trinidad, United Arab Emirates

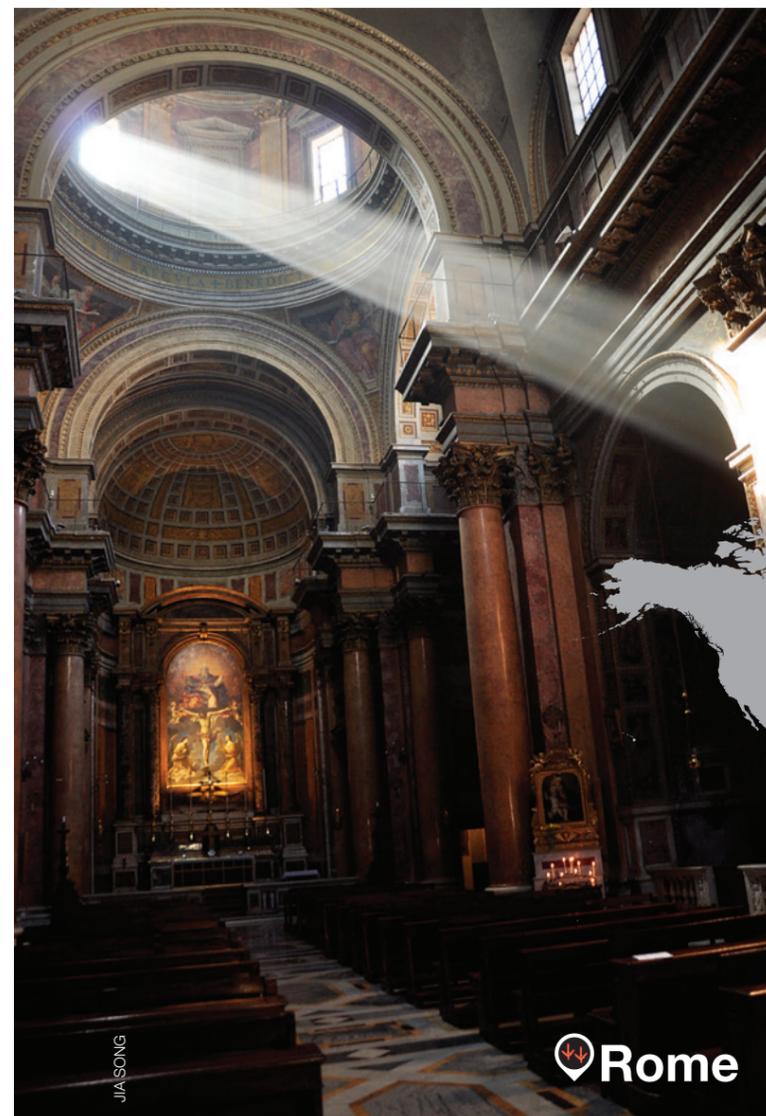
**Winter**  
2015-16

**15** programs

**21** faculty /staff

**214** students

**Destinations:**  
Antarctica, Australia, Costa Rica, Dominican Republic, Ecuador, Italy, Japan, Morocco, New Zealand, Panama, South Africa



Rome



**World travelers:**  
Learn more at [globaleducation.vt.edu](http://globaleducation.vt.edu).

## Long story short

Associate Professor of Urban Forestry Susan Day and colleagues in the College of Natural Resources and Environment have developed a soil rehabilitation method that can help fix the compacted, rock-hard soils left behind after land development

and building construction. The team’s research, which appears in Urban Forestry & Urban Greening, reports that trees planted in rehabilitated soil have as much as **84 percent greater canopy** than those in untreated soil.

In August, Virginia Tech will host the 2016 Hispanic College Institute, a three-day program for Hispanic high school sophomores and juniors in Virginia. The event was initiated in 2012 by the Virginia Latino Higher Education Network (VALHEN) to combat myths

and misconceptions about the college-search process and to **prepare Hispanic students for higher education**. The White House recently recognized VALHEN and the Hispanic College Institute as a “Bright Spot in Hispanic Education.”

In an article in the Proceedings of the National Academy of Sciences, Virginia Tech Transportation Institute researchers reported that drivers **increase their crash risk nearly tenfold** when they get behind the wheel while observably angry, sad, crying,

or emotionally agitated. In addition, drivers more than double their crash risk when they engage in distracting activities that require them to take their eyes off the road, such as using a handheld cell phone, reading or writing, or using touchscreen menus on

a vehicle instrument panel. According to the institute’s research, drivers engage in some type of distracting activity more than 50 percent of the time they’re behind the wheel.

Alumni Distinguished Professor of Spanish Jacqueline E. Bixler and University Distinguished Professor of Geosciences Michael F. Hochella Jr. received the 2016 State Council of Higher Education for Virginia Outstanding Faculty Award.

**Paging faculty**

**E. Scott Geller**, an Alumni Distinguished Professor in the Department of Psychology, along with more than a dozen Virginia Tech graduate students and alumni, authored and edited “Applied Psychology: Actively Caring for People,” published by Cambridge University Press.

**Sonja Schmid**, assistant professor in the Department of Science and Technology, wrote “Producing Power: The Pre-Chernobyl History of the Soviet Nuclear Industry,” published by MIT Press.

**Flushed with success**

Toilet power might be closer than ever to making local wastewater treatment facilities more energy efficient, thanks to research by biological systems engineer Xueyang Feng and environmental engineer Jason He.

An article in Scientific Reports detailed how Feng and He traced wastewater bacteria and discovered that the working relationship between two

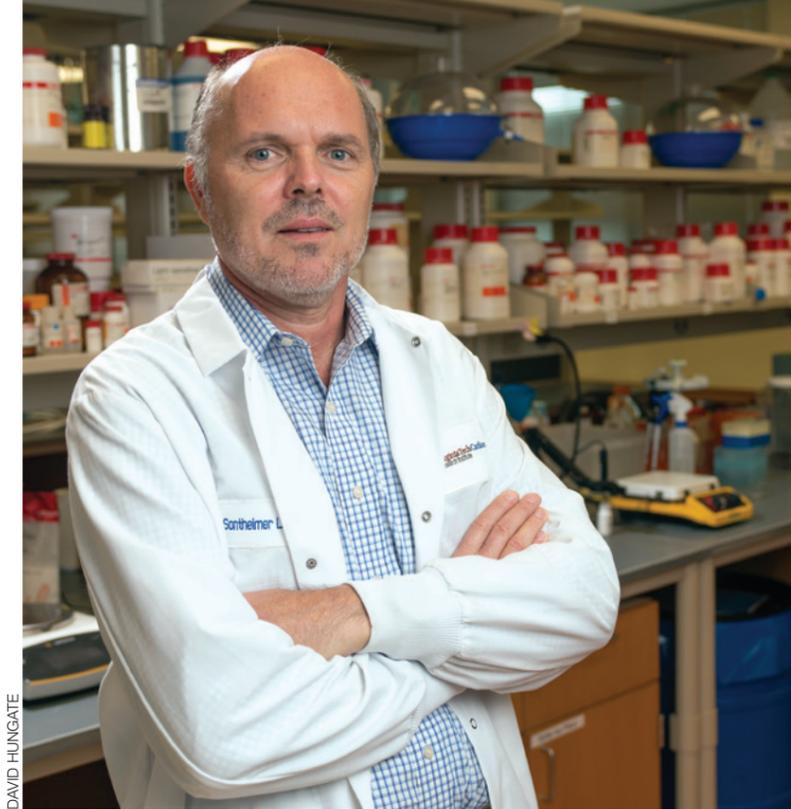
**Waste not:**

For a video on the wastewater research, visit [vtmag.vt.edu](http://vtmag.vt.edu).

specific substrates—lactate and formate—produced more energy than either did separately. This work will help take the mystery out of how electrochemically active bacteria create energy and could assist in further developing a new treatment system called a microbial fuel cell.

“This is a step toward the growing trend to make wastewater treatment centers self-sustaining in the energy they use,” said Feng.

He’s research also includes wastewater ammonia. Mohan Qin, a doctoral student in He’s lab, built a system that recovers ammonia and removes other contaminants while generating electricity. The idea earned an award for best technological advancement from the International Society for Microbial Electrochemistry and Technology.



DAVID HUNGATE

**School of Neuroscience opening in fall**

In early November 2015, the Virginia Tech Board of Visitors voted to create a School of Neuroscience—the first of its kind in the U.S.—to be administratively housed in the College of Science, but with close ties to the Virginia Tech Carilion Research Institute.

The school, which was approved in late March by the State Council of Higher Education for Virginia and will be directed by Professor Harald Sontheimer (above), is expected to increase the quality of undergraduate programs and the number of students completing graduate degrees in neuroscience—a broad and interdisciplinary field that seeks to understand the workings of the human neurological system, including decision-making and creativity.

**Brain power:**

For a podcast interview with Sontheimer and a video about Tech’s current neuroscience program, go to [vtmag.vt.edu](http://vtmag.vt.edu).

**Long story short**

Devi Parikh, assistant professor in the Bradley Department of Electrical and Computer Engineering, is using images to teach a computer to respond to questions, an innovation that could revolutionize the quality of life for low-vision or blind individuals.

With the outbreak of viruses like Zika, chikungunya, and dengue on the rise, researchers Zhijian “Jake” Tu and Zach Adelman are exploring genetically engineering mosquitoes to be male since female mosquitoes are responsible for disease transmission.

During competition for the U.S. Department of Energy’s Wave Energy Prize—which will award more than \$2 million in funding—Virginia Tech engineers tested a wave energy converter inspired by the movement of squids through water.

Walter O’Brien (mechanical engineering ’60), the J. Bernard Jones Professor of Engineering in Mechanical Engineering, was selected as a Fellow of the American Institute of Aeronautics and Astronautics (AIAA).

**Hyperloop into the future**

Virginia Tech’s Hyperloop team, Vhyper—comprising students from mechanical, aerospace, and electrical engineering, among other disciplines—finished in fourth place and earned a Pod Technical Excellence Award in a worldwide competition initiated by SpaceX and Tesla founder Elon Musk.

The Hyperloop is a high-speed transportation system that, as theorized, could use a near-vacuum tube to propel a passenger-carrying pod at speeds potentially approaching 700 miles per hour. Members of Tech’s interdisciplinary team, nearly all of whom are undergraduates participating outside of their regular course work, competed against 60-plus teams from universities worldwide in the design/build category.

One of more than 30 teams that will move on to build a prototype at a California facility this summer, the Virginia Tech team plans to test a pod that can travel at speeds in excess of 300 miles per hour.

**300+** mph

**4<sup>TH</sup>** in the design/build category out of **60+** teams worldwide

**30+** prototype teams

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# SNOW PROBLEM



by RICHARD LOVEGROVE  
photos by LOGAN WALLACE

The warmth of springtime may be upon us, but in the winter we can't wait on temperatures to melt ice and snow on Virginia Tech's 22 miles of sidewalks and 34 lane miles of roads and service drives. When frigid weather whips into Blacksburg, more than 300 people—from tractor drivers to shovel wielders—fight to keep dining centers open and classes in session. Here's how it happens, according to Anthony Watson, associate director of facilities, buildings, and grounds.

1 As the potential for a storm increases, **John Beach**, chief of staff for facilities operations, starts watching forecast models and talking to the National Weather Service.

2 When snow or a freezing mix is coming, crews pretreat the streets and parking lots (as well as sidewalks and stairs, if there's time) with **23 percent salt brine** taken straight from the tanks at the Power Plant. The process is a vast improvement over the past when the brine was mixed by hand.



3 If more than **4 inches** is forecast, administrators post a notice for owners to remove their vehicles from emergency snow routes, which allows plowers to push snow over the curb and into the grass.

4 By **5 a.m.** the morning of a storm, Sherwood Wilson, vice president for administration, is collecting road-condition and readiness reports to decide along with other administrators whether the university opens, starts late, or stays closed. These days, the decision depends heavily on whether **Blacksburg Transit** can operate. "If BT can't run, we don't open," said Watson.



**All hands on deck:** Virginia Tech workers (from left to right) Randy Blankenship, Bobby Owen, Trent Chinault, Henry Price, and John Terry clear a path near Burruss Hall, while Windell Jones operates the motor grader at lower left.



"WE CAN TOUCH JUST ABOUT EVERYTHING ON CAMPUS IN TWO HOURS."

—Anthony Watson

5 Once the snow (or ice) starts, **eight grounds workers** plow roads, loading docks, and service drives in **12-hour shifts**. Operators of more than a dozen tractors, utility task vehicles, and skid steers help clear main sidewalks. More than **200 trade shop workers and housekeepers** break out the shovels, and student resident advisors even pitch in. "We can touch just about everything on campus in two hours," Watson said. "It's really a group effort."

6 Once the storm is over, workers "**hit everything hard**," Watson said, widening paths through the snow on sidewalks and roads. Contract crews clear parking lots (Tech workers try to keep parking lot drive lanes plowed during the storm). Assigned people report early, sometimes for days after a storm, to treat any melt that has refrozen. □

**Brrr:**

Relive Blacksburg winters with videos and more at [vtmag.vt.edu](http://vtmag.vt.edu).



## DEEPEST

24-hour Blacksburg snowfalls (in inches)

(National Weather Service)

20.0  
Jan. 10, 1921

15.4  
Feb. 13, 1960

14.1  
Mar. 13, 1993

14.0  
Jan. 7, 1996

14.0  
Dec. 26, 1969

14.0  
Dec. 17, 1930

13.6  
Jan. 22, 1966

12.4  
Mar. 2, 1960

12.0  
Dec. 18, 2009

12.0  
Jan. 29, 1966



COURTESY PHOTOS

David '83, '87 and Kryssa '88 Cooper (left), Nicholas Des Champs '61, '67 (middle), and Robert Harrison '80



Virginia Tech has introduced a new giving society, the 1872 Society, to recognize donors who make an immediate impact by giving leadership-level annual gifts. Honoring those who make \$5,000 or more in donations during the fiscal year, the society joins three other recognition groups: the Ut Prosim Society, Legacy Society, and Pylon Society.

**Donor recognition:**  
To learn more about Virginia Tech's four donor recognition groups, visit <http://bit.ly/vt-giving-societies>.

While the Coopers are also members of the Ut Prosim Society, David Cooper said they prioritize annual giving because it “helps us be part of moving the mission of the university forward. We believe in what Virginia Tech is about. We understand that it takes a strong faculty, tuition, visionary leaders, and philanthropy to provide the great learning opportunities that help young people become the adults they want to be.”

Named for the founding year of the institution now called Virginia Tech, the 1872 Society reflects the importance of consistent philanthropy in laying a foundation for continued growth and excellence.

For Nicholas Des Champs (mechanical engineering '61, Ph.D. '67), a member of the Grove Circle, the importance of a strong foundation hits home. His father was a bricklayer, and Des Champs spent his first year out of high school mixing mortar and laying bricks alongside him.

Des Champs entered college hoping to learn enough to work on automobiles, but wound up becoming an expert in thermodynamics and heat transfer. He drew on that expertise to start a successful business and has been awarded multiple patents. An annual donor to the College of Engineering, he credits his success to the educational foundation he laid at Virginia Tech.

“I never felt unprepared for any situation,” said Des Champs, who resides in both Fincastle, Virginia, and Nevada and is also a member of the Ut Prosim Society. “I could compete with anyone. Tech did that. When I found success, I wanted to give back.”

Through leadership-level annual gifts, generous people like Harrison, the Coopers, and Des Champs enable Virginia Tech to do more than it otherwise could. □

*Erica Stacy is publications editor, and Albert Raboteau is director of communications, for University Development.*

# Donors energized by immediate impact

New society recognizes annual gifts

by ERICA STACY and ALBERT RABOTEAU

In a rapidly changing world, the tall task of educating tomorrow's leaders requires a university that is flexible—and a form of giving that embodies the same flexibility.

Annual gifts—which can be immediately applied toward university priorities—offer flexibility to the university and to donors who are drawn to Virginia Tech's forward momentum.

Robert Harrison (dairy science '80), a self-employed farmer who lives in Troy, Virginia, said he's most comfortable making annual gifts instead of pledging toward an endowment because his yearly income fluctuates in response to a range of factors.

“There are so many exciting things happening at Virginia Tech,” said Harrison, who splits his giving between athletics and the College of Agriculture and Life Sciences. “I feel that the university is on the verge of rocketing toward an even bigger future. I do what I can each year so that I can be a part of that future.”

In recognition of people, such as Harrison, who make generous annual gifts, Virginia Tech has introduced a new giving society: the 1872 Society, honoring those who give \$5,000 or more during the fiscal year to any area of the university, including athletics.

“There are many ways that individuals give back to Virginia Tech, and all of them are important,” said John Torget, the university's assistant vice president for leadership gifts and annual giving. “The great advantage of annual giving is that it immediately meets the highest priority needs of a particular school, unit, department, or program, providing tremendous financial flexibility. The 1872 Society is a way to express sincere appreciation to our most generous annual donors.”

With the introduction of this new group, the university has four giving societies. The others are the Ut Prosim Society, for

those donors whose lifetime giving totals are \$100,000 or more; the Legacy Society, for those who have earmarked estate gifts or other planned gifts to Virginia Tech; and the Pylon Society, for those who have given in two or more consecutive fiscal years to academic areas.

Virginia Tech's fiscal year runs from July 1 through June 30. Alumni and friends who had already made qualifying gifts in FY16 were recently informed of their membership in the 1872 Society. Members remain in the society for as long as they continue to make gifts totaling \$5,000 or more each fiscal year.

The society has three levels of membership, known as circles of distinction. The Grove Circle comprises those whose qualifying gifts total \$25,000 or more, Burruss Hall Circle is for members who have given between \$10,000 and \$24,999, and Drillfield Circle is for those who have given between \$5,000 and \$9,999.

The leeway that the university has in spending annual gifts amplifies their value. And the flexibility in making such gifts also appeals to many philanthropically minded alumni and friends. Among the inaugural members of the Burruss Hall Circle are Kryssa Cooper (animal science '88) and David Cooper (marketing management '83, M.B.A. '87), of Encinitas, California, who split their annual giving among the Pamplin College of Business, the German Club, and the university's lacrosse program.



# The natural

by DELIA MARESCO  
photo by DAVE KNACHEL

As the sun rises over Blacksburg, the thwack of balls drilling the back of a net fills Virginia Tech's cavernous Indoor Practice Facility.

"Don't let her turn you!" shouts women's soccer coach Charles "Chugger" Adair. Forward Murielle Tiernan maneuvers around defending teammates and scores. There are smirks and smiles all around. Adair's instructions are easier said than done.

A natural on the field, Tiernan has scored with every body part legal in the game, and opponents have no choice but to double-mark her during goal-threatening opportunities. Despite the defensive efforts, the 5-foot-11 junior from Ashburn, Virginia, is the Hokies' all-time leading goal scorer, with 39 goals in just three years.

"I've never been focused on records or scoring," Tiernan said. "Honestly, as long as we're winning the game, as long as we're doing well, I don't care who's scoring, I don't care how we're scoring, [and] I don't care if it's pretty. I just care that we win."

Named to the 2015 National Soccer Coaches Association of America All-American third team and the All-Atlantic Coast Conference (ACC) first team, Tiernan, who's majoring in residential environments and design, is relentless in the classroom, too. She's been named to the ACC All-Academic Team each year of her college career.

While some players agonize over game film and spend hours getting touches on the ball, Tiernan relies on her strength, speed, and innate ability to be in the right place at the right time. "I just try to go out and do the best I can every game without overthinking it," she said.

Among her many successes, Tiernan points to Tech's 2013 trip to the College Cup as an outstanding moment. That year, her penalty kick advanced the Hokies to the NCAA tournament's Elite Eight for the first time in school history. When the ball hit the back of the net, she wasn't even aware that the Hokies had won.

Aside from tangling with the best defenders in the country, Tiernan fights another battle. Diagnosed with cystic fibrosis at age 6, she'll tell you she's neither amazing nor commendable; it's just who she is. She's that good.

*Delia Maresco, a senior majoring in communication, is a midfielder on the women's soccer team.*

## The pitch

To watch a video on Tiernan, visit [vtmag.vt.edu](http://vtmag.vt.edu).

# The future is HERE



## When it comes to water, Maggie Carolan understands that every drop counts.

One of the first students to pursue a new interdisciplinary water degree at Virginia Tech, Maggie is passionate about sustainability and wise water use. That's what inspired her to join a research team led by civil engineering

Professor Marc Edwards that earned international recognition for its role in exposing the water crisis in Flint, Michigan.

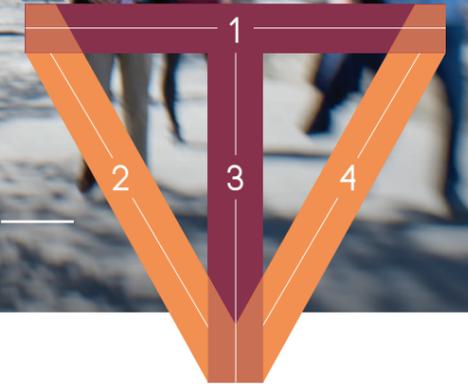
Maggie's work on Edwards' team has given her an extraordinary opportunity to put her passion to work. Her education has also been enhanced thanks to a scholarship and to donated funding that supports student research.

Though still a sophomore, Maggie is already creating ripples that flow toward a safe, sustainable future.

To learn more about how philanthropy makes an impact at Virginia Tech or to make your own gift, visit [givingto.vt.edu](http://givingto.vt.edu).



## CLASS OF 2047 ENVISIONING THE FUTURE



To picture Virginia Tech in the year 2047—and to prepare the institution for that future—university leaders are refining one guiding concept and undertaking two initiatives:

### The VT-shaped Individual Beyond Boundaries Destination Areas

In the following pages, three vice presidents new to Virginia Tech reflect on why they've chosen to make Blacksburg home.

**The VT-shaped Individual:** In higher education circles, leaders have made much of the so-called T-shaped learner: one whose disciplinary depth is complemented by interdisciplinary know-how. At Virginia Tech, for obvious reasons, we see a VT-shaped individual: one whose “T” is enriched by technological literacy, informal communal learning, and guided experiential learning.

As Provost Thanassis Rikakis has said, gone are the days when a mechanical engineering major graduates and spends an entire career working with 35 other mechanical engineers. Instead, the mechanical engineer will collaborate with others on diverse, interdisciplinary teams, solving complex problems that evolve over time.

**Beyond Boundaries:** Peering into the future, university leaders have embarked on the Beyond Boundaries visioning process to identify how to best advance as a global land-grant institution, prepare students for the world in which they will live and work, discover new funding models, and envision what Virginia Tech might look like in 2047, the university's 175th anniversary.

**Destination Areas:** In the near term, before the university's sesquicentennial in 2022, Virginia Tech will be deeply involved with proposed Destination Areas—sites of interdisciplinary collaboration where experts are positioned to address the full complexities of broad problems—all while the university maintains comprehensive excellence across Tech's colleges and research institutes.

- 1 TRANSDISCIPLINARY KNOWLEDGE AND TECHNOLOGICAL LITERACY
- 2 INFORMAL COMMUNAL LEARNING
- 3 DISCIPLINARY DEPTH
- 4 GUIDED EXPERIENTIAL LEARNING

### The first five Destination Areas, now under development, are:

- Data and Decision Sciences
- Integrated Security
- Intelligent Infrastructure and Human-Centered Communities
- Resilient Earth Systems
- Adaptive Brain and Behavior Across the Life Span

### Beyond:

To learn more about the visioning process and Destination Areas, visit [beyondboundaries.vt.edu](http://beyondboundaries.vt.edu) and [beyondboundaries.vt.edu/destination-areas](http://beyondboundaries.vt.edu/destination-areas).

by THANASSIS RIKAKIS

*Executive Vice President and Provost Thanassis Rikakis is a tenured professor in the Department of Biomedical Engineering and Mechanics in the College of Engineering and holds a joint appointment as a music professor in the School of Performing Arts in the College of Liberal Arts and Human Sciences. Formerly the vice provost for design, arts, and technology at Carnegie Mellon University, Rikakis earned doctoral and master's degrees from Columbia University and a bachelor's degree from Ithaca College, all in music composition.*

## WHY HERE? WHY NOW?

In a time of unprecedented disruption, the field of higher education faces a number of challenges—challenges that are also opportunities to rethink how we do business.

First, personalized learning will become the norm. For too long, higher education has held up a narrow definition of excellence. We must move toward an inclusive system of education that allows for different ways of learning. Why? Multidimensional knowledge and achievement feed diverse approaches that are better suited to deal with the diverse complexities of societal problems.

Second, universities are beginning to understand that graduates with disciplinary specialization also must be connected, in an interdisciplinary fashion, to a problem's full range of complexity. Security, for example, isn't just code, but is also interpersonal relationships—and about understanding differences in circumstances and motivations. If we are to produce graduates who can embrace complexity,

we must be more inclusive in whom we admit, what knowledge we offer, and how we bring people together.

Third, higher education will become customized. We are moving from a single-peak landscape to a multi-peak landscape in which institutions specialize in different educational experiences instead of chasing the same top spots in the rankings.

Another philosophical change is a greater emphasis on lifelong learning. We can't focus only on a student's years on campus. We must enrich the K-16 education pipeline, partnering with local school districts to create customized pathways toward excellence that assist all Virginia residents. At the same time, we want alumni to partner with us in our teaching and research endeavors, all the while learning from our faculty and students.

Most universities promise to tackle some of the transformative challenges in education at the periphery of their mission, but Virginia Tech has placed them at the core

of the contemporary land-grant university—and that's what brought me here. President Sands has a nice way of explaining why Virginia Tech is well positioned: When you look at how this community teaches, investigates, and communicates, the emphasis is on societal impact and service rather than on enriching a specific discipline alone. We understand the importance of disciplines and support them, but we also connect the knowledge arising from disciplines to real-world problems. Virginia Tech has a responsiveness to the world's needs that is unique. Some institutions uphold an artificial, outdated binary that creating knowledge is a higher calling than preparing people to get jobs, when, of course, both can be done.

In addition to societal impact and service, Virginia Tech acknowledges the whole person. When I'm late to a 9 a.m. meeting, Tim [President Sands] makes a point to tell people I had to drop off my daughter, and everybody says, "Awww." That's the experience here—and I love it.

“WHEN YOU LOOK AT HOW THIS COMMUNITY TEACHES, INVESTIGATES, AND COMMUNICATES, THE EMPHASIS IS ON SOCIETAL IMPACT & SERVICE.”

by MENAH PRATT-CLARKE

*Menah Pratt-Clarke is the vice provost for inclusion and diversity and vice president for strategic affairs. Formerly the associate chancellor for strategic affairs and the associate provost for diversity at the University of Illinois at Urbana-Champaign, Pratt-Clarke earned undergraduate and master's degrees from the University of Iowa and master's, doctoral, and law degrees from Vanderbilt University.*

## WHY HERE? WHY NOW?

Two things struck me when I first visited the Blacksburg campus for search committee interviews: the university's motto and the kindness of the community.

As an African-American woman, and someone who is not typically fond of small towns or cold weather, I needed to feel that I could live here. I needed to be able to see myself here. During that visit, I encountered a level of genuine kindness that I had never encountered before, even after living in the South for 20 years.

The *Ut Prosim* (That I May Serve) motto left an equally powerful impression on me. The power of the motto is a phenomenal foundation for our diversity and inclusion work, as are the university's Principles of Community and the existing efforts to

improve inclusion and diversity. These were the factors that drew me to Virginia Tech.

At Virginia Tech, the InclusiveVT framework—in which the responsibility for advancing diversity and inclusion is shared across the university community—is tremendously valuable. And the leadership of President Tim Sands and Provost Thanassis Rikakis gave me the sense that we are well positioned to move forward.

Achieving a sustainable transformation toward a more diverse and inclusive environment, however, will require a collective determination of the entire community. When we consider the history of civil rights movements and historical change in the U.S., we realize that many people with different identities and from different

backgrounds came together with a fierce determination to advance a common cause. They were willing to work hard and invest time, energy, and resources to achieve change.

Such work is part of Virginia Tech's responsibility as a land-grant institution. We must ensure that students understand the history of the U.S. and its different populations and are prepared to interact with, engage, and serve those around them. The goal should be to improve society based on a true appreciation of the issues of identity and difference.

If our motto is truly "That I May Serve," I believe that we must do so in the spirit of inclusion and diversity.

“THE POWER OF THE MOTTO IS A PHENOMENAL FOUNDATION FOR OUR **DIVERSITY & INCLUSION WORK.**”

LOGAN WALLACE

by THERESA MAYER '88

*Theresa Mayer, the vice president for research and innovation, was most recently at Penn State University as a distinguished professor of electrical engineering and materials science and engineering and the College of Engineering's associate dean for research and innovation. Mayer earned a bachelor's degree from Virginia Tech and master's and doctoral degrees from Purdue University, all in electrical engineering.*

## WHY HERE? WHY NOW?

I was an undergraduate in electrical engineering and mathematics when Virginia Tech first required students to use laptop computers. I remember lugging my computer all over campus—this was the late 1980s, years before most universities embraced this technology—and laptops then were not nearly as light and portable as they are today.

The memory comes to mind now that I have returned to Virginia Tech as the vice president for research and innovation.

In those early days of personal computing, thought leaders at Virginia Tech recognized how human-computer interactions enriched the arts and sciences, and they made sure that students had those tools and knew how to use them.

That experience is a reminder of how natural it is for Virginia Tech to be on the leading edge of education and research. It's expected. We have always been a

university of action; we create and share useful knowledge; and we tackle society's greatest challenges with the conviction of our motto, *Ut Prosim* (That I May Serve).

Today, as we compete in a world that has never before been so highly connected and complex, Virginia Tech is rebooting the land-grant model to serve a world in fast motion. It is thrilling to be part of that effort.

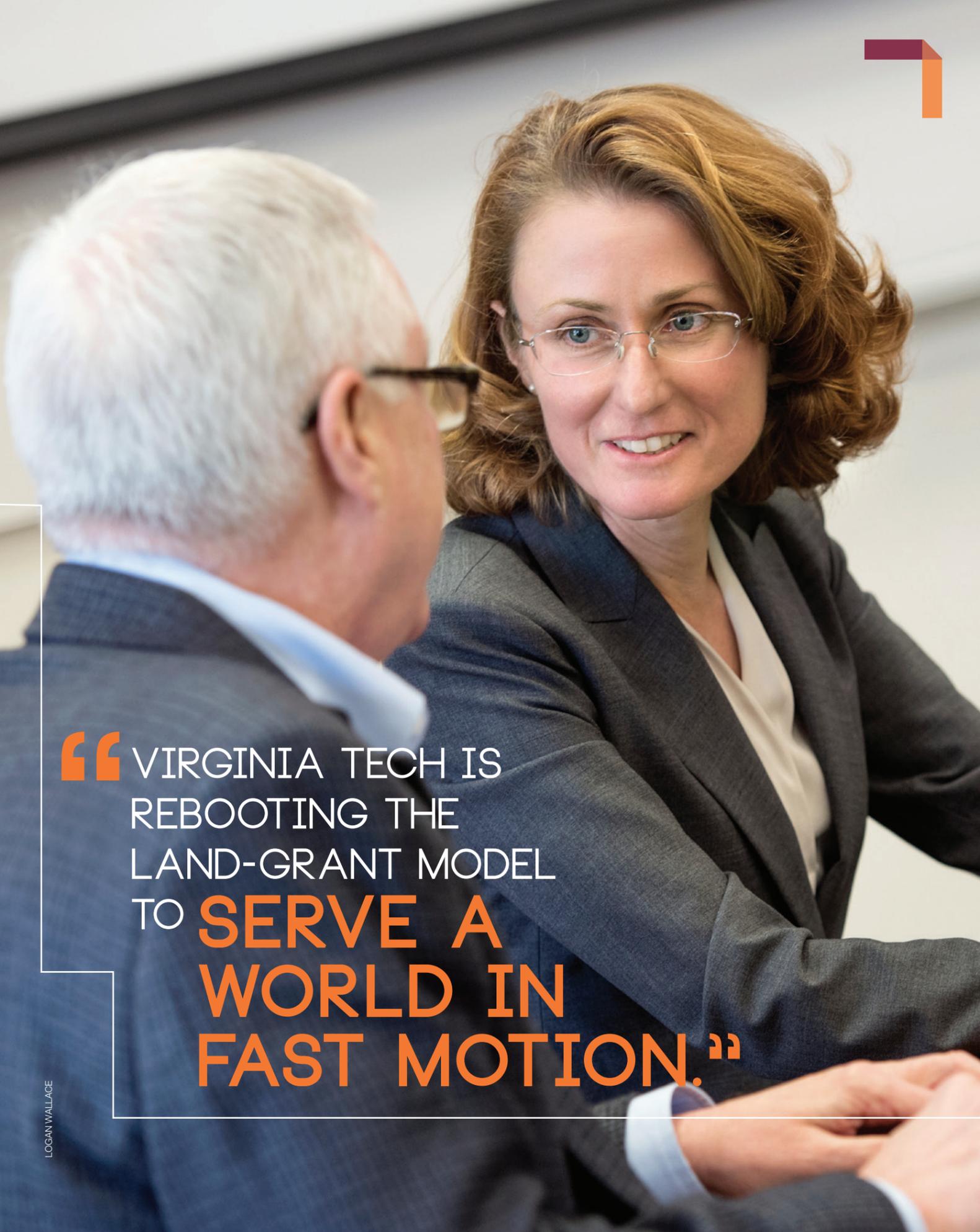
Having spent my career at land-grant institutions, I saw opportunity at Virginia Tech. First, I thought of how land-grant missions must focus on urban challenges, as well as challenges typically addressed through agricultural and mechanical arts.

Unlike many of our peers, we are well positioned to make national and global impact because of our presence in the National Capital Region. We increasingly provide opportunities for students to learn and equip them to meet the information

and technology needs of employers, and we offer living labs in an urban region with global reach. Considering our dual centers of influence—in Northern Virginia in addition to the innovation and economic efforts in the New River Valley—Tech truly has a dynamic reach.

The timing could not be better. Virginia Tech is on a unique upward trajectory. Because of the compelling Beyond Boundaries vision of the university's leadership and because of the legacy of strategic research investments over the past 15 years, we are poised to make tremendous strides. In addition, student enrollment and faculty hires are on the rise.

Beyond that, Virginia Tech is a lot like I remembered it. Hokie Stone is everywhere, and Skipper still fires during special occasions. And if you see me on my way to a brainstorming session, chances are I will have a laptop with me. Some things don't change. □



“VIRGINIA TECH IS REBOOTING THE LAND-GRANT MODEL TO SERVE A WORLD IN FAST MOTION.”

LOGAN WALLACE



Steve

Chris

Kate

Greg

# Fantastic Four

by ALISON MATTHIESSEN and JULIET CRICHTON  
photos by LOGAN WALLACE

It's a ritual as time-honored as commencement exercises themselves: Scanning a lively sea of gowns and decorated mortarboard hats in Lane Stadium this May, family members will seek out their favorite Hokie among the colorful regalia.

For parents Steve and Tina Lomaka, however, the effort will be fourfold. Their children—Greg, Steve, Chris, and Kate—will make Virginia Tech history as the first set of quadruplets to enroll and graduate from the university.

Of more than 4 million live births in 1993 in the U.S., the Lomaka quadruplets were among just 277 sets of quads born that year. While it's nearly impossible to determine how often quadruplets attend the same university and graduate together, we do know that each of the Lomakas discovered a distinct academic path at Virginia Tech, and their paths have prepared them to take flight upon graduation.

## Family roots

Having met as students at Villanova University and married a year after graduation, Steve and Tina Lomaka tried for years to have a child. When told by three different sets of doctors that biological children would not be possible, the couple adopted a newborn girl they named Lauren.

After Lauren had turned 3 years old, Steve and Tina decided to meet with one more doctor and then try infertility treatments, which can lead to multiple births. On April Fools' Day in 1993, they discovered that Tina was pregnant with three babies. A few weeks later, a fourth baby popped up on the ultrasound.

At approximately 31 weeks into Tina's pregnancy, the quadruplets were born.

"There were probably 25 people in the operating room—doctors and nurses who worked with Tina [a labor and delivery nurse at the Philadelphia-area hospital]," Steve said. "The first one came out around 11:55 p.m., and I thought, 'They are going to have different birthdays. There's no way!' But [the babies were delivered at] 11:55, 11:56, 11:57, and 11:58."

Needless to say, "normal" was hard to pull off with quadruplets and a toddler at home. Steve worked Monday to Friday, while Tina took 12-hour weekend shifts at the hospital. Each night, they prepared 24 bottles to accommodate feedings every four hours, which required some two hours to complete.

When the quadruplets were still toddlers, Tina became pregnant, even though she had been told it was improbable without fertility treatments. Their family was complete when a son, Matt, was born. "He was a miracle baby," Steve said. He and Tina continued their opposite work shifts so they could care for Matt, who has Down syndrome, and his growing siblings.

Before the quadruplets began school, the family of eight moved to Richmond, Virginia, for Steve's job. Enrolled in a small Catholic school where they were known as "the quads," Greg, Steve, Chris, and Kate became part of a tight-knit community and developed their own identities and interests.



The Lomaka family, named Virginia Tech's 2016 Family of the Year by the Division of Student Affairs: (back row, left to right) Steve (dad), Lauren (older sister), Tina (mom), Steve, Chris, and Kate; and (first row) Greg and Matt (younger brother).



COURTESY PHOTOS



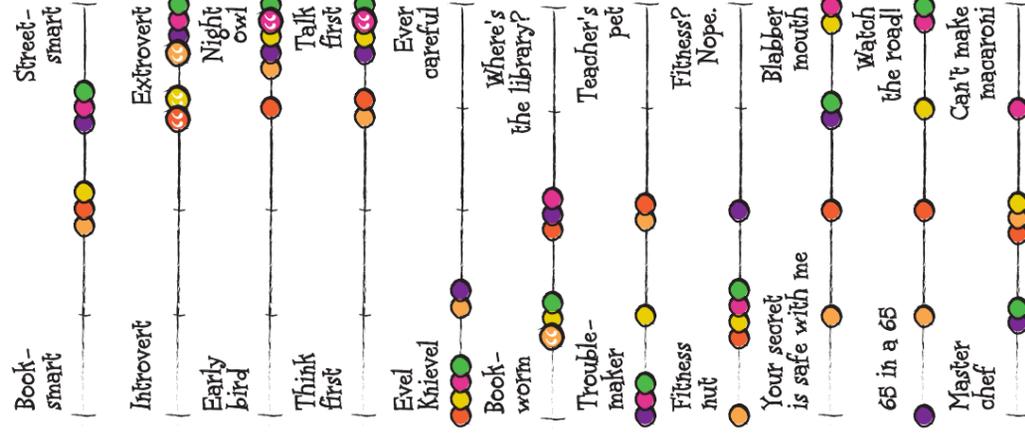
# Quad Quiz

Let the good-natured jabs and compliments commence! Independent of each other, each quad rated the other three while parents Steve and Tina and older sister Lauren rated all four. Check out the full quiz results and comments at [vrmag.vt.edu](http://vrmag.vt.edu).

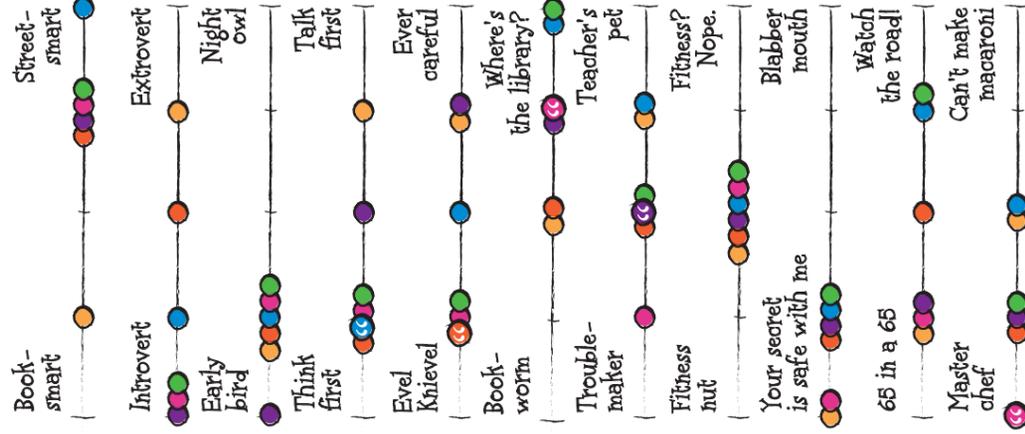
## Respondents

- Tina (mom)
- Steve
- Steve (father)
- Chris
- Laureh (older sister)
- Kate
- Greg

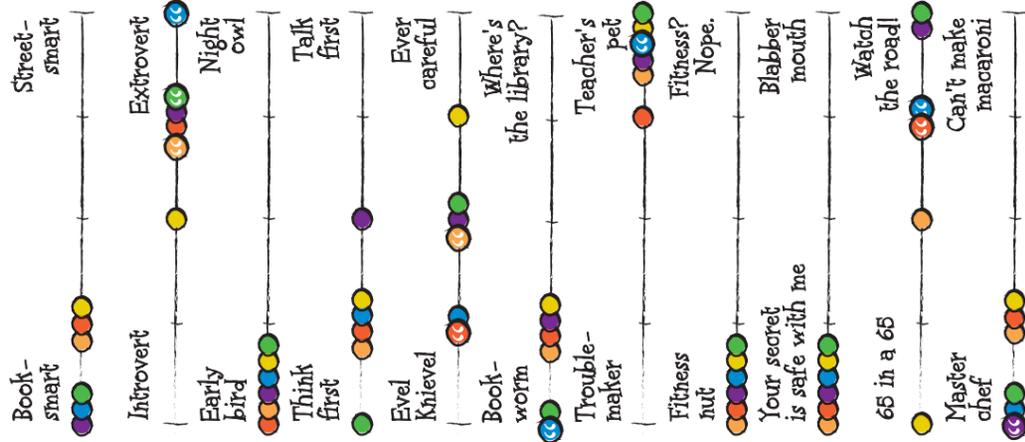
## Steve



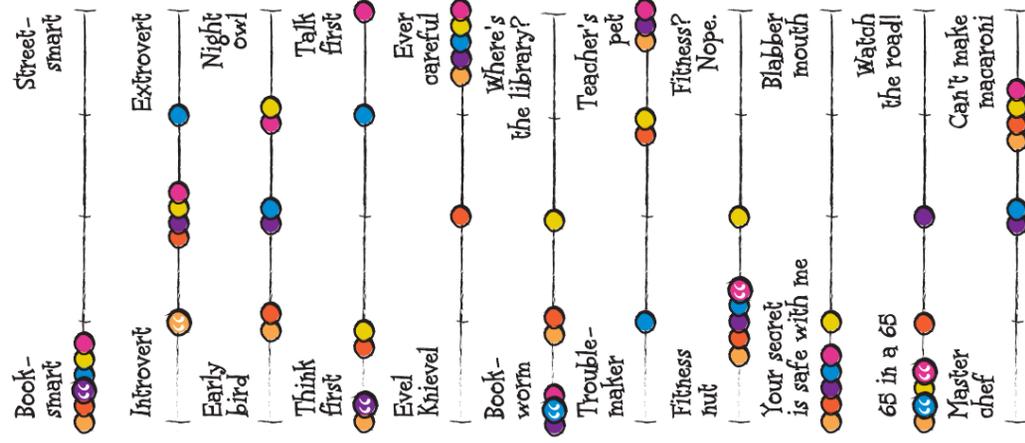
## Chris



## Kate



## Greg



## Analyzing Steve

- 👉 He's definitely the loud, outgoing one."
- 👉 He isn't afraid to speak his mind and appears very comfortable with groups of people. Maybe a byproduct of a large family."
- 👉 Steve is a talker and class clown, headstrong and lovable."
- 👉 Steve thinks my 11 p.m. bedtime is early. He is consistently up until 2 a.m., usually getting wrapped up in Reddit/YouTube/facebook."
- 👉 The fingers were always pointed at Steve for starting arguments. He has quick wit and a quick mouth. Luckily, he also is quick to apologize."
- 👉 He is perceived as being the partier, but is very diligent in his studies and responsibilities."

## Graduation Schedule:

Friday, May 13

8:30 a.m. University ceremony (everyone in Lane Stadium)

12:30 p.m. CALS in Cassell

5:30 p.m. Pamplin in Cassell

Saturday, May 14

8:30 a.m. CAUS in Burruss

11 a.m. COS in Hillcrest

## Rahking Kate

- 👉 She is extremely personable and outgoing and is probably the best listener I know."
- 👉 Kate will say she's introverted, but I don't see that whatsoever. She likes her nights in, but she is very outgoing."
- 👉 Everyone goes to Kate with their problems. She is the glue that holds the quads as one."
- 👉 She is so conservative, in some ways, but then will do a Tough Mudder race and hang off a mountain."
- 👉 She makes me cringe with pictures of her feet hanging off the rocks at McAfee's Knob."
- 👉 Kate works tremendously hard. She is always studying and is always very prepared and organized."
- 👉 She always gets on people's good side, even though she's secretly incredibly sassy. (You can quote me on that.)"
- 👉 A little challenged on driving and braking."
- 👉 Kate is the worst driver."
- 👉 Kate is the master baker, always making Oreo balls or cookies for friends."

## Birth Weights:

2 lbs. 2 lbs. 2 lbs. 3 lbs.  
9 oz. 11 oz. 13 oz. 1 oz.



## Evaluating Chris

- 👉 Chris is the most stubborn and opinionated out of the four of us."
- 👉 When he was a kid, I took him to a baseball tryout. During one run around the bases, he tripped and fell. Quite embarrassed, he finished with some tears in his eyes and went to the fielding and throwing station, where he threw three balls into the gym ceiling, nowhere near the coaches. As we left, he was crying. He showed us the arm that braced his fall—and it was broken. I commend him to this day for following through and not quitting."
- 👉 Chris used to be the least scholarly. But he has taken more credits per semester than any of us. I'm super impressed with how Virginia Tech has pushed him to be one of the hardest workers out of the four of us."
- 👉 Whether he was eating a bug off the floor at age 2 or crawling into a swimming pool, he gave my parents some extra gray hairs."
- 👉 Chris only needs one ingredient for any dish he makes: pesto."

## Birth Order:

Oct. 8, 1993

11:55 p.m. 11:57 p.m. 11:56 p.m. 11:58 p.m.



## Assessing Greg

- 👉 He's our token nerd."
- 👉 Greg is my most conservative. He is a thinker. He has the biggest heart in the world and would do anything for you without you even asking."
- 👉 Much more cautious and methodical than anyone else in the family."
- 👉 Greg is the most naturally smart. His AOL screen name back in the day was mathwhiz1008. I think that says it all."
- 👉 Greg is such a natural-born runner. Growing up, we would run together, and he would hold the conversation together while I was huffing and puffing. I ran my first half-marathon with 12 weeks of preparation. Greg ran his first with about two weeks of preparation—and beat my time by several minutes."
- 👉 In high school, Chris and Steve didn't even ask Greg if he wanted to drive to school. They wouldn't let him, because he went too slow (the speed limit and not a hair over)."
- 👉 Greg drives so slow. He's so careful behind the wheel that it's hard to watch."

## GPA Order:

smart smarter smartest "token nerd"



# Joining the Hokie Nation

The quads, Tina and Steve assumed, would spread out when it came time to attend college—but that didn't come to pass.

"I always knew I wanted to go to Virginia Tech," son Steve said. He applied early decision and received his acceptance letter in December of his senior year in high school. The following February, Greg found out he'd been accepted to Tech, though he was considering two other schools.

Then, on the same day in April, Chris and Kate learned they'd also been accepted. Chris almost hadn't applied, thinking he wouldn't make the cut. "I purposefully didn't [visit] Virginia Tech because I didn't want to get my hopes up," Chris said.

As the deadline to pick a school approached, each sibling was drawn to Virginia Tech. "They made the decision themselves," Tina said. "I was sleeping [after] working night shift, and when I got up, they told me they were all going to Virginia Tech."

In addition, older sister Lauren had already committed to the Edward Via College of Osteopathic Medicine in Blacksburg. "It was awesome to know that five of them would be in the same place," Tina said.

## Chris

Double major in building construction and real estate, College of Architecture and Urban Studies

**Hobby:** Watching sports ... however, I do love a good nap.

**Job lined up:** Field engineer, Hensel Phelps, Honolulu, Hawaii

**5-year goal:** Project manager for a general contractor

**Career goal:** CEO of a large commercial general contractor or owning a construction company



## Steve

Business information technology, Pamplin College of Business

**Hobby:** Eating Wicked Taco and playing recreational sports

**Job lined up:** Business technology analyst, Deloitte, Arlington, Virginia

**5-year goal:** Consultant with Deloitte Digital

**Career goal:** Becoming a partner—ideally, finding a peaceful work/life balance that allows me to spend time with my future family



# So close, so far

On campus, the quadruplets have had unique experiences. Each pursued divergent majors in separate colleges. "We were able to maintain our own identities. Nobody ever came up to me and asked if I was part of the quadruplets at Virginia Tech," Kate said.

Beyond academics, they also enjoyed their own activities, jobs, clubs, and friends. Chris admitted that he may have tried to do too much, but he's glad he did. "I never wanted to look back and say, 'I wish I had done that,'" he said.

Greg, Steve, and Kate each served as a residential advisor. "I had such a good experience with the community aspect of it all [my first year]. I really wanted to pass that on to other freshmen," Kate said. "There is no place like this school."

Despite their diverse endeavors, the siblings took advantage of being able to meet for dinner, grab coffee, or attend one of the fitness classes Kate taught. Catching up on a whim won't be possible after graduation, however. By mid-summer, they will be as many as 5,000 miles apart.

In their lives, the quads' farthest separation was about 1,200 miles—for only a week.



## Kate

Human nutrition, foods, and exercise, College of Agriculture and Life Sciences

**Hobby:** Anything that gets me moving (hiking, swimming, spinning)

**Job lined up:** Doctor of physical therapy student, Virginia Commonwealth University, Richmond

**5-year goal:** A doctor, doing physical therapy with a special-needs population, and married (already engaged)

**Career goal:** Own a physical therapy practice



## Greg

Statistics, College of Science

**Hobby:** Running and watching Netflix

**Job lined up:** International pricing analyst, Elephant Auto Insurance. Training in the United Kingdom for a year with Admiral Insurance, then located in Richmond.

**5-year goal:** Completing my actuarial exams and moving through Elephant as they expand in the U.S.

**Career goal:** An actuary Fellow at Elephant—and enjoying my job!



fantastic four

# Give them wings

After Chris had been offered a field engineering job with Hansel Phelps in Honolulu, he gathered his siblings to discuss the opportunity. "To have that special moment—he wants us in on this big life decision because he wants us to know this is hard for him, too," Kate said.

A few months later, Greg received a job offer from Elephant Insurance Co. He will move overseas to Wales for a year of training and then will work in Richmond.

Closer to home, Steve accepted a position with Deloitte Consulting in Arlington, Virginia, and Kate will pursue a doctorate in physical therapy at Virginia Commonwealth University.

While the quads are ironing out the logistics of their upcoming moves and are excited by what's ahead, they also realize that the separation will be an adjustment.

"For some reason, if you are part of twins or triplets or, in our case, quadruplets,

## On the quads:

Don't miss out on the longer version of the story and the full quiz results, along with videos of the quads now and as freshmen. Visit [vtmag.vt.edu](http://vtmag.vt.edu).

everyone thinks that you are with each other all of the time. But for us, it's not that way. We are definitely close, but have our own lives," Chris said. "It's exciting to see everyone branch out and find their own interests."

"I wanted the kids to spread their wings," Tina said. "They certainly took me up on that!" □

*Alison Matthiessen is the communications coordinator in the Office of the Executive Vice President and Provost.*



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“THEY DID  
NOTHING  
TO DESERVE  
THIS.”



water, clouded by the rusting of iron main pipes, taken from Lee-Anne Walters' home

# FIGHTING FOR FLINT

A Virginia Tech team exposes lead poisoning

by MASON ADAMS and JESSE TUEL  
photos by LOGAN WALLACE  
photo at left by JIM STROUP

In January, Lee-Anne Walters picked up two bottles of filthy, yellow water and turned to her twins, Gavin and Garrett, in a Durham Hall laboratory on Virginia Tech's campus.

"Let's see if you guys remember this," she said, holding up the bottles. "Do you remember what this is? What is that?"

# "THAT'S THE YUCKY WATER,"

Gavin replied.

The boys understood. And their mother understood all too well.

In late 2014 at her home in Flint, Michigan, Walters was at a breaking point. The tap water was giving the twins persistent rashes. Her eyelashes had begun to fall out, as had her older daughter's hair, and her older son suffered from abdominal pain. City testing found high levels of lead in her home's water, but she couldn't get further help from city and Michigan Department of Environmental Quality (MDEQ) officials.

An Environmental Protection Agency (EPA) official referred Walters to a scientist whose reputation for protecting the public preceded him: Marc Edwards, the Charles Lunsford Professor of Civil and Environmental Engineering at Virginia Tech.

By then, Walters, out of necessity, was fast becoming a citizen-scientist and advocate

for Flint residents. In an April 2015 phone call, Edwards taught Walters how to properly collect water samples from her faucets.

Of the 30 samples Edwards tested in his lab at Virginia Tech, the lowest lead level was 300 parts per billion (ppb). The average was 2,000 ppb, and the highest was more than 13,000 ppb.

The level regarded as actionable by the EPA? 15 ppb.

The level regarded as safe? Zero ppb.

"That was a sleepless night," Edwards said. "We got [the testing] done within 24 hours. We didn't believe it. We ran the samples again the next day. Unfortunately, the results were correct. It was the worst lead in water I'd seen in 25-plus years, and I'd seen a lot."

The world now knows what happened next: Edwards and a team of student researchers determined that Flint faced widespread elevated levels of lead and dangerous Legionella bacteria; united a coalition of Flint residents and others; and helped to expose a citywide health crisis that should serve as a warning for all communities facing crumbling infrastructure.

### "THE MOST POWERFUL FORCE IN THE UNIVERSE"

In late January, Walters and her family traveled to Blacksburg, where she received a heroism award during a presentation by Tech's Flint Water Study research team. In opening remarks, Provost Thanassis Rikakis called the work a stellar example

of a contemporary land-grant university solving problems in a real-world context, with Flint as the classroom.

More than 500 people filled the Quillen Family Auditorium and two overflow rooms at Goodwin Hall, and 1,900 others watched a livestream broadcast to hear from the Hokies who had merged their academic skills with the spirit of *Ut Prosim* (That I May Serve) to champion and safeguard the health of Flint residents—affectionately known as "Flintstones"—and expose governmental malpractice.

That evening, student researchers described how they had detected high lead levels, the presence of dangerous microbes, and the lack of proper corrosion control in Flint water. Some fought back tears as they described their interactions with both frightened residents and skeptical bureaucrats who had openly questioned

the Tech team's methods and reputation and denied the existence of a problem even after the team had announced its results.

"For 18 months, 100,000 residents were exposed to toxic water," said Siddhartha Roy, a civil engineering Ph.D. student. "They did nothing to deserve this. Nine thousand kids were potentially exposed."

Lead poisoning causes irreversible damage: learning disabilities and mental impairment, along with a variety of physical symptoms, including abdominal pains, fatigue, headaches, loss of developmental skills, and more. In Flint, the poisoning was widespread: In some zip codes in summer 2015, 1 in 10 children had elevated blood lead levels.

Speaking in the Quillen auditorium, Roy described a call he had received from a woman who was in tears because she had

given her children and grandchildren tap water. "She told me she poisoned her kids," Roy said. "It wasn't her fault. But a mother's heart could never accept that. She thanked all of us for what we did. This is why we spent the last six months of our life pulling all-nighters, pulling weekends together, because we cared. And it changed who we are as human beings."

Edwards, the driving force behind the Virginia Tech effort, turned the credit back toward Flint residents—specifically Lee-Anne Walters.

"I tell my students if they learn one thing from their class, it's that the most powerful force in the universe is a mother worried about the health of her child," Edwards told the crowd. "If you threaten that, Mama will come and mess you up, even if you're a powerful government agency."



**For Flint:** (Clockwise from left) Lee-Anne Walters with twins Garrett and Gavin in a Virginia Tech lab; a presentation on the Flint crisis hits home for Ph.D. student William Rhoads; and Professor Marc Edwards and Ph.D student Siddhartha Roy speak on campus. The Flint project, said Roy, "changed who we are as human beings."

\* = 15 PARTS PER BILLION (PPB)



APRIL 2015 SAMPLING AT WALTERS' FLINT HOME

EPA

# TIMELINE



## APRIL 2014

When the city begins using Flint River water instead of Detroit water, complaints surface immediately. Later, the city issues advisories to **boil water because of high levels of bacteria.**



## JANUARY 2015

Flint notifies residents that the city is in violation of the Safe Drinking Water Act due to the presence of **trihalo-methanes, which cause liver, kidney, and central nervous system problems**, as well as an increased risk of cancer.



## OCTOBER 2014

General Motors' Flint plant says that **chloride levels are causing corrosion** in engine blocks.



## FEBRUARY 2015

A city test at **Lee-Anne Walters' home reveals lead levels of 104 parts per billion** (ppb). Another city test reveals 397 ppb.



## APRIL 2015

Tech's Marc Edwards **tests 30 samples from Walters' home**. The highest, above 13,000 ppb, well surpasses the 5,000 ppb the EPA considers toxic waste.

## JUNE 2015

The EPA's Miguel Del Toral **releases a memo outlining the lead levels, the timeline, and the laws** (i.e., corrosion control) the city wasn't following.



## JULY 2015

The team hypothesizes that the river water (above) might allow for the spread of the bacteria causing **Legionnaires' disease**. In fact, **nine residents died from the disease after the water switch.**



## AUGUST 2015

Tech distributes 300 lead-testing kits to residents. Samples average 158 ppb. In two zip codes, one in five homes shows elevated levels.

**The team launches flintwaterstudy.org to provide information to residents and track the team's efforts.** On Aug. 17-19, several team members make their **first trip to Flint to collect samples**. Later, they announce their findings: The especially corrosive river water, combined with water utility officials' failure to incorporate federal corrosion controls, had caused lead to leach from old pipes and to poison city residents. **Flint and Michigan Department of Environmental Quality officials dismiss the findings.**



## SEPTEMBER 2015

The team notifies residents of testing results and provides guidance; organizes a crowdfunding campaign to buy water filters; and files Freedom of Information Act requests to reconstruct how various government agencies had mismanaged the crisis. **The National Science Foundation awards Tech a Rapid Response Research (RAPID) grant.** On Sept. 14-16, on a **second trip to Flint**, Edwards and Siddhartha Roy **issue a public health advisory and implore residents not to drink unfiltered water**. Meanwhile, pediatrician Mona Hanna-Attisha, of Flint's Hurley Medical Center, holds a press conference on her study that found elevated lead levels in infants and children.



TIM GALLOWAY

## OCTOBER 2015

County and city officials **declare public health emergencies**. Michigan Gov. Rick Snyder announces \$1 million for water filters, along with testing at schools, expansion of testing for individuals, and expediting treatment of Flint water to control pipe corrosion. In a **third trip to Flint** on Oct. 14-16, in response to Flint's decision to switch back to Detroit water, several team members speed north to **sample hospitals** and other **large buildings before the change.**

## DECEMBER 2015

On the **fourth trip to Flint**, on Dec. 2-5, Edwards and Anurag Mantha speak at events, grant interviews, and meet with elementary school children. The Flint mayor declares a state of emergency, leading to county and state declarations and, in January, a federal declaration that opens the door for federal aid.



## JANUARY 2016

Snyder names Edwards to the Flint Water Interagency Coordinating Committee, formed to find a long-term strategy to address the crisis.

## FEBRUARY 2016

Edwards and Walters testify before the U.S. House Oversight and Government Reform Committee. The **team wins an \$80,000 EPA grant** for new testing.

## MARCH 2016

On the **fifth trip to Flint**, a number of students spend spring break volunteering in the city. **Edwards testifies at a second hearing on Capitol Hill.**

## CORROSIVE LESSONS

Like many of the industrial cities in the Rust Belt, Flint has struggled, its population falling from about 200,000 in 1960 to 100,000 today, with about 40 percent of its residents living below the poverty line. These economic pressures point to a unique trait in Michigan governance—emergency managers—that played a role in the water crisis.

When a school district, city, town, or county is in severe financial stress, the state can appoint an emergency manager with power to overrule local elected officials, said Curt Guyette, a reporter for the Michigan American Civil Liberties Union, who has written extensively about the situation in Flint. During the Flint crisis, the emergency manager position changed

hands, introducing even more volatility to an already difficult dynamic.

In March 2013, the Flint City Council opted to stop buying water from Detroit and to join a regional water authority that would draw water from Lake Huron and send it to Flint by pipeline. While the pipeline was under construction, a process that continues today, the emergency manager decided that Flint should use the Flint River as its water source. As soon as the switch was made in April 2014, residents began complaining about the smell, taste, and color of their new water. Protesters soon packed city hall with bottles of discolored, cloudy water.

In a June 2015 memo, Miguel Del Toral, the regulations manager in the EPA's groundwater and drinking water branch,

who referred Walters to Edwards, released a memo based on Edwards' testing of Walters' 30 samples, outlining the astronomical levels of lead, the timeline of events, and the laws (i.e., corrosion control) the city wasn't following. An EPA official above Del Toral tried to bury the memo, and state officials downplayed the results.

Edwards, unfortunately, recognized what could be happening. More than a decade ago, the Washington, D.C., water utility had invalidated samples that pointed to rising lead levels and had issued a report claiming the water met federal standards, while the Centers for Disease Control claimed the water was safe and that no D.C. residents had been harmed. Edwards, dubbed "The Plumbing Professor" by Time magazine in 2004, spent years fighting the agencies—with his own money and

reputation on the line—in order to protect D.C. residents.

In other cities, too—Durham and Greenville, North Carolina; New Orleans; and more—Edwards has uncovered lead in the water and fought for the public. "It's the same movie," Edwards said. "It's the same ending. It's the fifth time I've seen it, so it's a little sad."

## LEARNING FROM EXPERIENCE

The lessons of D.C. formed the core of a graduate-level course, Engineering Ethics and the Public, taught each fall in Blacksburg by Edwards and Yanna Lambrinidou, an adjunct assistant professor in the Department of Science and Technology Studies in Tech's National Capital Region, who collaborated with Edwards on the D.C. crisis.

Taught since 2010, the course has had a powerful influence on the Flint team's students, and Flint has influenced the course: The crisis served as a case study in the fall 2015 semester. Of primary importance in the curriculum is the first, fundamental canon in the National Society of Professional Engineers' code of ethics: to hold paramount the safety, health, and welfare of the public. In recent years, however, and perhaps with increasing frequency, Edwards said, scientists and engineers avoid engagement by claiming that they only play an objective, numbers-based role.

"There's a role that scientists and engineers need to play and that society expects them to play, which is to act and react when they see wrongdoing," Lambrinidou said. "Through inaction, you're enabling the biggest or most powerful and oftentimes

the most dangerous and harmful fish in the pool to win. You're taking an active part in reinforcing existing infrastructures and existing imbalances and injustice by staying silent."

Lambrinidou said that in both Washington, D.C., and Flint, residents and citizen-activists were the first to sound alarms about problems with the water. "It was ordinary people, non-experts, parents who discovered their children had elevated blood lead levels and called begging to have their service lines replaced," Lambrinidou said. "We end up as a society and culture [creating] these narratives where we almost invariably place expert knowledge above the knowledge of ordinary people. Ignoring those [ordinary] voices is very, very risky."



# THE FLINT WATER STUDY TEAM

**All in for Flint:** In late January, the Walters family gathered with some of Tech's Flint Water Study team for a potluck dinner at Professor Edwards' home. When the team mobilized—going “all in for Flint,” as Edwards said—the students found themselves fighting alongside citizen-activists for the safety of the city's residents.

## NAMES

- A Owen Strom: 25, 32, 34, 36
- B Maggie Carolan: 10, 24, 33, 36, 46
- C William Rhoads: 5, 8, 32, 34, 36, 38, 39
- D Robert Bielitz: 14
- E Siddhartha Roy: 7, 8, 20, 29, 31, 32, 34, 35, 38, 43
- F Ni “Joyce” Zhu: 8, 31, 32, 36, 38, 44
- G Taylor Bradley: 26
- H Fei Wang: 6, 32, 34
- I Victoria Nystrom: 9, 22, 32, 34, 38
- J Laurel Strom: 9, 32, 34, 36, 38
- K Emily Garner: 8, 32, 36, 38, 39
- L Pan Ji: 8, 32, 36, 38
- M Gavin Walters: 50
- N Christina Devine: 8, 15, 32, 37
- O Anurag Mantha: 8, 32, 35, 38, 40, 45, 46

- P David “Otto” Schwake: 6, 36, 42, 44, 46
- Q Donnie Martin: 49
- R Ailene Edwards: 48
- S Jui-ling Edwards: 47
- T Kaylie Walters: 50
- U Dongjuan Dai: 6, 28
- V Min Tang: 8, 21, 31, 32, 36, 38, 41, 42, 44
- W Kristine Mapili: 11, 34
- X Marc Edwards: 1, 42, 43, 45
- Y Dennis Walters: 50
- Z Garrett Walters: 50
- AA Lee-Anne Walters: 51
- BB Rebekah Martin: 8, 31, 32, 36, 38, 41, 42

## NOT PICTURED

- Amy Pruden: 2, 4
- Joseph Falkinham III: 3, 4
- Brandi Clark: 5, 6, 16
- Sheldon Masters: 6, 17, 28
- Jeffrey Parks: 6, 18, 29, 30, 32, 35
- Kelsey Pieper: 6, 19, 32
- Jake Metch: 8, 32, 36
- Colin Richards: 9, 32, 34, 42
- Catherine Grey: 9, 23, 33, 35, 46
- Kim Hughes: 13, 32, 34, 36
- Rebecca Jones: 12, 32, 34
- Alison Vick: 11, 32, 34
- Maddie Brouse: 11, 33, 35, 36, 46
- Matthew Dowdle: 11, 33, 35, 46
- Sara Chergaoui: 11, 27, 33, 35, 46

## A FIRST FOR WATER

Margaret “Maggie” Carolan (right) is one of the first students to pursue Tech's new bachelor's degree in water—water: resources, policy, and management—a cross-disciplinary major that incorporates water science, policy, law, economics, management, and social science. Twenty-one students already have enrolled in the major, first offered in fall 2015.

Carolan, a sophomore who is also majoring in geography, has received the Alumni Presidential Scholarship, along with two scholarships established by Jeff Rudd (philosophy, biology '83): the Virginia

Tech Sustainable Water Undergraduate Research Fund and the Virginia Tech Sustainable Water Scholarship.

“Water is one of the most important fields of the 21st century,” said Rudd. “The field offers a vast range of opportunities for work and study, such as establishing policies and engineering processes to conserve and recycle water, researching supply and consumption to assess the cost of water, and crafting strategies to help resolve stakeholder conflicts about ownership and use of water. The degree bridges the gaps between science and policy and theory and practice—and Virginia Tech is leading the way.”



## ROLES

- |   |   |   |
|---|---|---|
| <ul style="list-style-type: none"> <li>1 Team's faculty leader; Charles P. Lunsford Professor of Civil and Environmental Engineering, College of Engineering; and principal investigator, National Science Foundation (NSF) Rapid Response Research (RAPID) grant</li> <li>2 College of Engineering professor and Graduate School associate dean and director of interdisciplinary graduate education</li> <li>3 Professor of biological sciences, College of Science</li> <li>4 Co-principal investigator, NSF RAPID grant</li> <li>5 Helped with NSF grant proposal</li> <li>6 Research scientist</li> <li>7 Team's student leader. Launched flint-waterstudy.org; raised about \$100,000 to support the team in Flint and for future work; and prepared a mini-documentary on the team's response, designed to attract young students to environmental engineering</li> <li>8 Ph.D. student, civil engineering</li> <li>9 Master's degree student, civil engineering</li> <li>10 Undergraduate double major in geography and water: resources, policy, and management</li> <li>11 Undergraduate, civil engineering</li> <li>12 Undergraduate, environmental science</li> <li>13 Biochemistry, biology '15</li> </ul> | <ul style="list-style-type: none"> <li>14 Undergraduate, general engineering</li> <li>15 Engineering science and mechanics '14</li> <li>16 M.S. environmental engineering '12, Ph.D. civil engineering '15</li> <li>17 M.S. civil engineering '11, Ph.D. '15</li> <li>18 M.S. environmental engineering '01, Ph.D. civil engineering '05</li> <li>19 M.S. civil engineering '11, Ph.D. biological systems engineering '15</li> <li>20 M.S. environmental engineering '15</li> <li>21 M.S. environmental engineering '13</li> <li>22 Biological systems engineering '15</li> <li>23 Civil engineering '15</li> <li>24 Research assistant</li> <li>25 Master's degree student, public health, Virginia-Maryland College of Veterinary Medicine</li> <li>26 Civil engineering graduate student at Howard University, joining Edwards' team in fall 2016 and pursuing a master's in environmental engineering</li> <li>27 Exchange student</li> <li>28 Helped plan response to crisis</li> <li>29 Prepared sampling video for residents</li> <li>30 Oversaw assembly, distribution, return, and pre-analysis prep of lead test kits and coordinated various sampling efforts</li> <li>31 Conducted sampling in Flint</li> <li>32 Assembled, processed, and analyzed lead testing kits</li> <li>33 Distributed and collected lead test kits</li> </ul> | <ul style="list-style-type: none"> <li>34 Prepped test kits for analysis</li> <li>35 Communicated with residents about testing</li> <li>36 Assembled, processed, and analyzed microbial testing kits</li> <li>37 Compared the corrosiveness of Flint water to Detroit's and, via webcam, demonstrated the tests for Flint elementary school students who replicated the experiments</li> <li>38 Freedom of Information Act requests and analyses</li> <li>39 Tuition remission in support of studies</li> <li>40 Handled logistics, managed data, raised money to distribute filters, oversaw social media outreach and correspondence</li> <li>41 Compared Virginia Tech data to Michigan Department of Environmental Quality data</li> <li>42 First trip to Flint</li> <li>43 Second trip to Flint</li> <li>44 Third trip to Flint</li> <li>45 Fourth trip to Flint</li> <li>46 Fifth trip to Flint (spring break)</li> <li>47 Marc Edwards' wife</li> <li>48 Marc Edwards' daughter</li> <li>49 Rebekah Martin's husband</li> <li>50 Lee-Anne Walters' family</li> <li>51 Citizen-scientist</li> </ul> |
|---|---|---|



TIM GALLOWAY

**Game-changers:** (Opposite page, lower right) If not for these four—Flint’s Lee-Anne Walters, the EPA’s Miguel Del Toral, pediatrician Mona Hanna-Attisha, and Virginia Tech’s Marc Edwards—the massive amounts of lead in Flint water might still be undisclosed. (Top right) Edwards presented Walters with a necklace holding a ring he cut from a lead pipe that came from the home of a child needlessly exposed to high lead in water by agencies in Washington, D.C.

By listening to and collaborating with local experts and mobilizing to address the complex problem on-site, the Tech research team perfectly embodies the powerful model for problem-solving that few institutions, apart from the contemporary land-grant university, have offered. In fact, water as an area of excellence is an emerging priority for Virginia Tech.

In a May 2015 speech on academic freedom that Edwards delivered just before analyzing Walters’ water samples, the professor quoted Abraham Lincoln, who established the land-grant university system by signing the Morrill Act: The “system is being built on behalf of the people, who have invested in these public universities their hopes, their support, and their confidence.” Added Edwards, “The

21st century will surely provide us with many opportunities to prove ourselves worthy of the people, their hope, and confidence... but only if we can find the courage and strength to act on our convictions.”

**BORN HEROES**

In September and October 2015, Virginia Tech team members poured themselves into the Flint effort, pushing forward on multiple fronts. One game-changer, they said, was when Mona Hanna-Attisha, a pediatrician at Flint’s Hurley Medical Center, announced her findings. With access to citywide blood testing data and the Virginia Tech testing results posted online, Hanna-Attisha identified an increased incidence of

elevated lead levels in infants and children. And the children whose blood displayed the worst increases in lead lived in neighborhoods that matched the areas where the highest levels of lead had been detected by Tech’s August sampling of 300 sites.

Hanna-Attisha’s findings underscored the direct impact on the health of children, whose developing bodies are especially susceptible to the dangers of lead, and accelerated the public health response: Genesee County and Flint officials declared public health emergencies, while Michigan Gov. Snyder announced \$1 million in state funding for water filters in Flint (24,000 were handed out), along with immediate testing at city schools, expansion of lead testing for individuals, and expediting treatment of Flint water

to control pipe corrosion. Snyder soon announced a multimillion-dollar plan for reconnecting Flint to Detroit water.

Guyette called the Flint situation the most meaningful project of his journalism career. “It’s kind of a double-edged sword in some ways. At the root of this is a tragedy: kids needlessly lead-poisoned. That is the dark shadow hanging over all of this. But on the other hand, Marc, the students at Virginia Tech, the grassroots activists in Flint, me with my reporting—what we did do was stop [the tragedy] from going forward.”

The Tech team found themselves positioned to tackle a tremendously complex

situation that stretched across traditional academic boundaries. Schwake said the team’s involvement went far beyond the basics. “It’s not just engineering. It’s not just the water industry. It’s not just public help. It’s also very much socioeconomic and political. The whole situation came about because of a lack of funds and decisions by government agencies. There’s also the social justice factor: that Flint is a very poor city with a lot of minorities and [did not have] the best water quality to begin with.”

Underlying all of those factors is the human element. At a supper in Flint,

civil engineering Ph.D. student Rebekah Martin asked a pair of activists about their motivation. “They said, ‘This is our home,’” Martin recalled. “We’re not going to let our families be walked over and not heard when they’re being poisoned.” The sentiment points back to the first canon of civil engineering—to protect the public. “As engineers,” Martin said, “a lot of times we sit in offices and design things. Or you may have some formula that goes into treating water or designing a system to treat water, but you don’t talk to the people who drink that water or who will be affected by what you’re designing. It’s important to get out there and listen to people.”



**"Our beacon":** (Above) Named to Fortune magazine's World's Greatest Leaders List, Professor Marc Edwards stands above the Flint River. When the highly corrosive water, combined with a lack of corrosion control, started to poison Flint residents with lead, Edwards and a Virginia Tech team came to the residents' aid. Other communities may face similar crises. Said Edwards, "As long as lead pipes are there, it's a time bomb waiting to go off." (At right) Tech students gave Edwards a lighthouse award, as Ni "Joyce" Zhu said, his "brilliance, joy, compassion, and humanity." He was "our lighthouse and our beacon into our future."



Edwards said Flint was a perfect example of how science failed at first, and science-based advocacy worked—and worked quickly. But because he has seen history repeat itself, he is realistic and cautious. "We are capable of learning something, but I'll believe it when I see it. ... As long as lead pipes are there [in cities across the country], it's a time bomb waiting to go off."

In the Engineering Ethics and the Public course, Edwards and Lambrinidou help students understand who they want to be when—not if—they face an ethical di-

lemma. And as Edwards told the Goodwin Hall crowd, society must set its priorities to repair crumbling infrastructure, and individuals must display the courage to stand up and take action.

Said Edwards, "I maintain that people are born heroic."

Heroism can surface anywhere—in Flint residents or in a Blacksburg classroom.

"You don't have to run for president. You don't have to be a Nobel laureate," Ph.D. student Pan Ji said during the Goodwin

Hall presentation. "You can just be a normal person fighting for a just cause." □

**In depth:**

For more on the Flint story and Marc Edwards—including the professor's 2013 TEDxVirginiaTech talk, "Heroic by nature, cowardly by convenience"—visit [vtmag.vt.edu](http://vtmag.vt.edu) and [vt.edu/flintwater](http://vt.edu/flintwater) and use the hashtag #VTFlintWater. For more on how the university approaches complex societal problems within its areas of excellence, such as water, visit [beyondboundaries.vt.edu](http://beyondboundaries.vt.edu).

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# Spring is in the air

by MATTHEW M. WINSTON JR. '90  
photo by LOGAN WALLACE

I love campus in the spring. Like a sleeping giant awakening, the campus comes alive. Runners, walkers, bicyclists, dogs, children, and sports enthusiasts magically appear on the Drillfield, around the Duck Pond, on tennis and basketball courts, on intramural fields, and at other campus outdoor spaces.

The Blacksburg campus, named the prettiest college campus in America in a February social media contest, is beautiful year-round. However, in the spring when the flowers and trees bloom, it is just spectacular.

Spring is also the most exciting time of the year in the Virginia Tech community. Juniors look forward to Ring Dance, a tradition dating from 1934, that ends with a ring exchange and students sporting their shiny, new jewelry and enjoying an elaborate fireworks display over the Drillfield. We also celebrate the accomplishments of our soon-to-be graduates as they conclude their senior years. Hokie bucket lists are completed, awards and scholarships are presented, career fairs are attended, and interviews are scheduled.

In May, Virginia Tech will send about 5,500 new Hokies into the world. These new graduates will make their impact through new jobs and serving to their communities, honoring our motto, *Ut Prosim* (That I May Serve). As students at Virginia Tech, they have received a world-class education and training through experiences that are unique to the Hokie Nation and shared by about 250,000 alumni.

We want our new alumni to connect with Hokies living around the world and remain attached to their alma mater, giving back through mentorships and scholarship support, providing jobs and internships to fellow Hokies, and contributing to the success of new Destination Areas being identified by President Tim Sands. Giving back to Virginia Tech is how we give back to the world.

Lyrics taken from our alma mater seem especially appropriate today:

“All loyal sons and daughters, one,  
We raise our banner to the sun;  
Our motto brings a spirit true,  
That we may ever serve you.”

Happy spring to all!

*Matthew M. Winston Jr. (marketing management '90) is senior associate vice president for alumni relations.*

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Natalie Titus '88, '91 (top right), Rhakim Smith '15 (middle right), and Stanley Barner Jr. '09, whose work appears here, are featured in an exhibit on campus.



COURTESY OF ALUMNI RELATIONS

## Exhibit honors black alumni artists

An exhibition featuring the works of three Virginia Tech alumni artists is on display at the Holtzman Alumni Center through mid-May.

Natalie Titus (biology '88, D.V.M. '91), Stanley Barner Jr. (sociology, fine arts '09), and Rhakim Smith (fine arts '15) were recognized at a reception kicking off Black History Month and the exhibition.

Titus, who practices veterinary medicine at Haven Lake Animal Hospital in Milford, Delaware, said she "loves photography almost as much as she loves animals." In her eight photographs in the exhibit, she said she attempted to "show the beauty that exists all around us, not just in the magnificent, breathtaking scenes, but also in the small, silent moments that tend to slip by unnoticed and not remembered."

Barner Jr., of Chesapeake, Virginia, considers himself to be a conceptual artist whose work is based on socio-economic

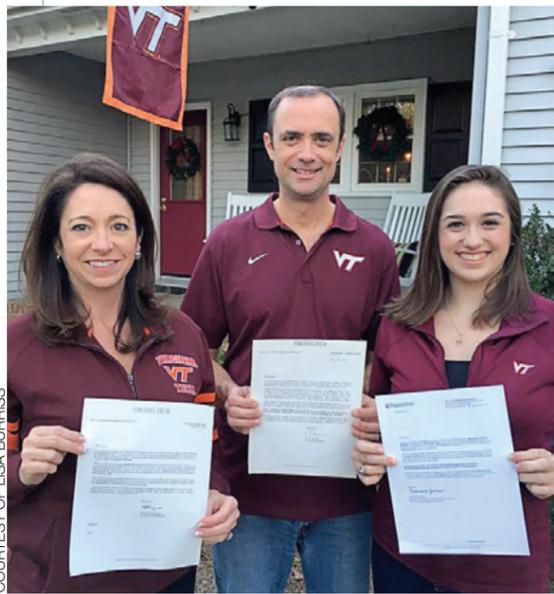
happenings; he said he aims "to present these prevailing themes in a way that invokes thought and emotion in order to empower or incite change in views or behavior." His works on display, crafted in oil, watercolor, acrylic, paper, and wood, focus on the black male experience.

Smith, a native of Hampton, Virginia, uses primarily pencil and ink to create drawings of some of his closest friends and most sentimental moments. "Pencil was the first drawing utensil I ever used, and I feel as if it's the most basic tool you can use to convey any idea," said Smith, who is pursuing a master's degree at the Savannah College of Art and Design in Atlanta. His seven submissions feature graphite, ink, and watercolor.

The alumni center's second-floor gallery is free and open to the public from 8 a.m. to 5 p.m. Monday through Friday.

## Legacy in letters

Do you still have your Virginia Tech acceptance letter? The Burriss family of Virginia Beach does. Proud parents Lisa (communication '91) and Dean (liberal arts and sciences '89) posed with their daughter, Ashley, a member of the Class of 2020 holding her 2016 letter. Said Lisa, "We're so glad we kept [the letters] all these years." Unfortunately, her father, Wayne Hanks (business '63), tossed his letter many years ago.



COURTESY OF LISA BURRIS

## Alumni mentors living *Ut Prosim*

### New face of civil engineering

Environmental and water resources engineer Rajan Jha (M.S. civil engineering '13) has been named one of 2016's New Faces of Civil Engineering Professionals by the American Society of Civil Engineers, the oldest engineering society.

He will represent civil engineering, along with honorees from other engineering societies, in the New Faces of Engineering program, which recognizes the talents of the next generation of engineering leaders.

A native of India, Jha now lives in Richmond, where he has worked for ARCADIS US since receiving his master's degree at Tech. "Virginia Tech changed my life," Jha said. "People I met there made me believe that I am special and that I can make a difference." And he is making a difference, solving water resources problems around the world, from India to the U.S. to Zambia.

Jha has a passion for real-world water and sanitation challenges and works to bring sustainable solutions to these environmental concerns. His technical skills lie mainly in exploring the physics and phi-

losophies behind river-flow behavior and how the flow can be returned to its natural state of equilibrium.

Actively involved with the Water for People and Engineers Without Borders organizations, Jha planned, monitored, and evaluated lead levels in a Zambian school water supply system. Jha has also mentored student engineering chapters from Virginia Tech, Virginia Commonwealth University, and James Madison University on community-based projects, such as the design of a bio-sand filter in Honduras and wastewater management for a Guatemalan school.

### A veterinarian and mentor

Claudia True fell in love with horses as a 9-year-old when she visited Chincoteague Island and rode a pony there. At age 11, she started riding regularly, and she received her first horse at age 16.

Fast forward to today: The Fairfax County native was recently named the Virginia Veterinary Medical Association's (VVMA) Veterinarian of the Year.

A double Hokie, True (biology '81, D.V.M. '86) completed an internship at Texas A&M University and then began practicing at Woodside Equine Clinic in Ashland, Virginia, where she still works today.

True's career has been highlighted by her willingness to serve. In addition to sitting on the Virginia Tech Alumni Association board, she has been president and a director of the VVMA board and president of the Virginia Association of Equine Practitioners. She is a founding veterinarian of the Potomac Regional Veterinary Conference and has served as Virginia's equine program committee member since 2011.

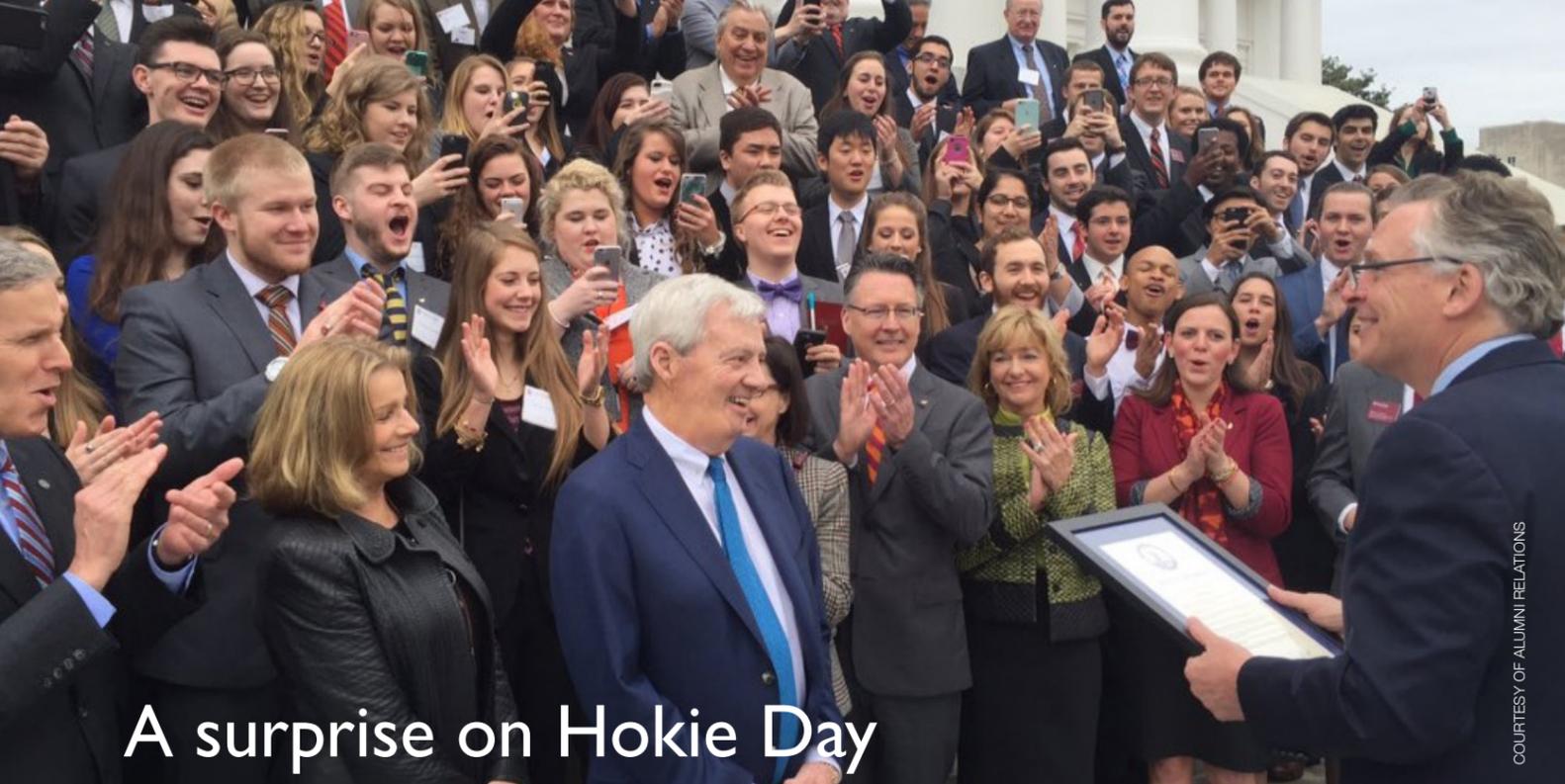
Additionally, for several years she has volunteered as an alumni interviewer for prospective veterinary students at Virginia Tech. A role model to numerous veterinary students, she was named VVMA Mentor of the Year in 2015.



COURTESY OF RAJAN JHA



COURTESY OF WOODSIDE EQUINE CLINIC



## A surprise on Hokie Day

More than 100 Virginia Tech alumni, students, and university staff convened in Richmond in early February for the 18th annual Hokie Day at the Virginia Capitol. Hosted by the Richmond Alumni Chapter, the group first gathered at the Richmond Crowne Plaza, where President Tim Sands and others spoke about state funding initiatives that support the university.

Students also heard directly from two alumni legislators: Sen. Mark D. Obenshain (economics, history '84) and Sen. Amanda F. Chase (business '92). The ex-

perience was an “amazing opportunity for Hokies to meet with Virginia Tech alumni involved with state politics,” said biological systems engineering Ph.D. student Chelsea Corkins.

The group then ascended to The Hill, where they met with General Assembly senators and delegates and advocated for Virginia Tech priorities. After gathering on the Capitol steps for an official photo, the group was surprised by Gov. Terry McAuliffe, who announced that Feb. 4 was “Frank Beamer Day” and presented

the newly retired coach and 1969 alumnus with a state proclamation.

And that was just the beginning. Coach Beamer was then escorted into the Senate chamber, where Del. Joseph Yost presented a joint resolution commending Beamer for his coaching career and for guiding the Hokies to 22 straight winning seasons and 22 consecutive bowl appearances. The beloved coach received a standing ovation from the lawmaking body—and Hokie Day participants experienced a day they'll not soon forget.

COURTESY OF ALUMNI RELATIONS



COURTESY PHOTO

**Old Guard Alumni Reunion**, May 18-20: Hokie alumni who graduated in 1965 and earlier are invited to return to campus for special anniversary dinners, college breakfasts, and more. For a tentative schedule of events and to register, visit [alumni.vt.edu/oldguard](http://alumni.vt.edu/oldguard).

### Upcoming Alumni Association events

**Drillfield Series, Human and Animal Health: We're All in This Together**, June 10-11: Learn how human and animal medicine are tied together in an interactive program with experts from the Virginia Tech Carilion School of Medicine, Virginia-Maryland College of Veterinary Medicine, and Edward Via College of Osteopathic Medicine. *\$99 per adult, \$49 high school ages and below*

**Drillfield Series, A Day in the Life of College Admissions**, July 8-9: Parents and their 2017 and 2018 high school graduates will get a behind-the-scenes look at the admissions process. *\$130 per adult, \$100 per student*

Visit [alumni.vt.edu/drillfieldseries](http://alumni.vt.edu/drillfieldseries) to register and learn more. Secure the special alumni lodging rate of \$117 per night at The Inn at Virginia Tech (based on availability; taxes not included).

**4th Annual Hokie Classic Golf Tournament**, June 13: *\$135 per person; \$500 per foursome; sponsorship opportunities available*

**3rd Annual Summer Beer Festival at Virginia Tech**, June 25: *\$25 per person in advance; \$35 per person day of event; \$60 per person for VIP (limited)*

## Hokie treks

### Travel with the Hokie Nation

Why travel with the Virginia Tech Alumni Association? We'll introduce you to fascinating cultures and breathtaking sights in the company of fellow Hokies and friends. We offer secure travel with top tour operators in the industry—and we guarantee lifelong memories. View our complete list of alumni travel tours at [alumni.vt.edu/travel](http://alumni.vt.edu/travel).

### June

4-13 | Southern Culture and Civil War  
5-14 | Southwest National Parks  
13-24 | Regal Routes of Northern Europe  
25-July 3 | Mediterranean Crossroads

### July

12-23 | Baltic and Scandinavian Treasures  
22-30 | Town and Country Life: Oxford, English Countryside, Cotswolds  
25-Aug. 4 | Alaska Passages

### August

11-17 | Canadian Rockies Parks and Lodges  
22-31 | The Magnificent Great Lakes  
26-Sept. 17 | The Art of Living: Provence

### September

17-25 | Great Pacific Northwest

### October

1-9 | Grecian Delights  
2-11 | Symphony on the Blue Danube  
6-14 | Cuban Discovery  
8-16 | Captivating Mediterranean  
14-22 | European Empires and Artistry  
23-31 | Country and Blues

### November

1-9 | Adriatic Gems

### December

6-17 | Holiday Markets



COURTESY OF ALUMNI RELATIONS

Dedicated Hokies gather with like-minded friends on the 2015 Coastal Alaska cruise.

### Blenheim Palace, Oxford



# Connect with local Hokies

Hokies participate in alumni events around the world every day. Join your local chapter for community service projects, career networking opportunities, young alumni events, raising money for student scholarships, cheering on Virginia Tech athletic teams, and more! Find your local Hokies at [alumni.vt.edu](http://alumni.vt.edu).



Dallas/Fort Worth



Denver



Charleston, S.C.



Germany



Charlotte



Delaware

Forty members of the **Dallas/Fort Worth Chapter** served the Fort Worth Community Food Bank by stuffing grocery bags and sorting food items.

**First State (Delaware) Hokies** gathered for the annual Polar Bear Plunge to benefit Delaware Special Olympics.

Alumni in **Kaiserslautern** gathered for their first Hokie Meet-Up in **Germany**.

The **Denver Chapter** hosted its fourth annual A-Basin Beach Party, with more than 100 Hokies hitting the slopes.

Alumni in **Charleston, South Carolina**, cheered on the Hokies when the baseball team took on the Citadel.

**Charlotte Hokies** volunteered at the Crisis Assistance Ministry's Free Store to sort, inspect, and hang donated clothing.

Go to [vtmag.vt.edu](http://vtmag.vt.edu) to see additional photos from the **Tidewater Chapter**, which turned out in full force to cheer on Coach Frank Beamer and the Hokies during the 2015 Independence Bowl; and the **National Capital Region Chapter**, which hosted a First Friday Black Alumni Happy Hour and Mixer to recognize Black History Month and mark the 50th anniversary of the university's first black women graduates.



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“Take  
**big  
 swings”**

Entrepreneur  
 empowers online  
 publishers

JAMES GLOVER II



by ZEKE BARLOW

**T**here are some people who enjoy the comfort of employment at a big company with a boss, minimum risk, and a guaranteed 401(k).

And then there are entrepreneurs like Ben Barokas.

Ever since he was a boy cleaning out gutters and painting houses to make a few bucks, he’s wanted to own his own company, be his own boss, and control his own future.

After recently selling one of the latest companies he helped start (Have there been five or six? Sometimes he loses count.) for a

reported \$400 million, it’s clear not only that Barokas (agricultural and applied economics ’96) has learned a thing or two about entrepreneurship, but that he relishes the challenges.

“We all work way too much not to love what we do,” said Barokas. “You have to find something you are passionate about and dive into it head-first and roll around in it. You have to learn new things every day.”

Barokas’ journey to self-made international businessman is a circuitous one that started in Colombia, made a stop at Tech’s

College of Agriculture and Life Sciences, and now continues around the globe.

His father was an agricultural economist with the U.S. Agency for International Development, so his family lived around the world before settling in Reston, Virginia. Barokas’ mother, Judy Barokas, had earned her master’s and doctoral degrees at Virginia Tech and loved the community, so she encouraged her son to apply. Barokas had been to an all-sports camp at Tech and fondly remembered the outdoor activities, especially the rolling Blue Ridge Mountains, so he listened to Mom.

Before long, he was in Blacksburg studying global agricultural economics while riding horses and hiking with his Great Danes on the weekends. Agricultural and applied economics Professor Jeff Alwang said he could tell that Barokas had big plans early on. “He had his wheels spinning all the time,” Alwang remembers. “He was friendly and outgoing and seemed to have a plan without knowing it himself.”

Barokas spent a semester studying economics in Budapest and summers working at the U.S. Department of Agriculture’s Foreign Agricultural Service. But the entrepreneurial bug was biting at him, so he took a semester off and tried to launch a record label that focused on the music he’d come to know as a globetrotting kid. Even though the venture didn’t succeed, he was undeterred.

After graduation from Tech, he worked at the University of Hawaii cataloging the capability of Hawaiian agribusinesses. He then moved back to the mainland to work for two large food companies creating inventory systems. For Barokas, those jobs marked the beginning of a long relationship with internet advertising and commerce.

He then spent some time working at a kibbutz in Israel, where he also opened an internet café. But when the coffee shop down the block was blown up in a terrorist attack, it was a hard sell to get anyone to come to his. He closed the café, but kept plugging away on other ideas.

Barokas returned to the states and began working at AOL, where he started to learn—and excel in—the world of online advertising. He was a founding employee of a start-up called Fifth Network that went bankrupt and another called JumpTV that went public. “You learn from all your experiences,” Barokas said.

Seth Levine, the managing director of Foundry Group, a venture capital firm, met Barokas when Barokas was working without

pay, hammering away at developing AdMeld, a new company that would eventually be his most successful. Levine said Barokas has that certain entrepreneurial gene that sets him apart from others.

“Ben is clearly a visionary,” said Levine. “It is absolutely true that there’s something different—I’d say special—about entrepreneurs. They look at the world through a different lens, asking what’s possible, not what is.”

Barokas found what was possible with AdMeld. The business was a pioneer in exchange-based trading, a system in which a company’s inventory of advertisements is sold in an exchange market that maximizes revenue for web publishers and allows companies to reach new audiences. “We built the company with two guys, a [PowerPoint slide] deck, and a dream,” he remembered.

Four-and-half years later, AdMeld had 163 employees and was sold to Google for a reported \$400 million.

At this point, some people would be inclined to enjoy an early retirement. But the drive that had pushed Barokas so far didn’t let up. He was a general manager at Google for three years before leaving last year to start his newest company, Sourcepoint, which seeks to empower internet publishers. The company emphasizes that paid advertising is needed to provide free content and provides publishers with both advertising- and nonadvertising-based compensation.

His current job is a long way from the days when he thought he’d be traveling the world as an agricultural economist. Instead, he’s visiting company offices in Berlin, London, and Seattle.

Though his LinkedIn profile details the career map of a serial and successful entrepreneur, it doesn’t demonstrate the wisdom he likes to share with others looking to get into the start-up world.

“Owning your own business allows you to curate your own community and chose the people whom you work with who are ambitious and driven and want to change the world,” he said from his home in New York City. “It allows you to create an environment in which people want to excel and are proud to be passionate.”

And if he could offer any advice to a young Ben Barokas sitting in a Virginia Tech classroom and dreaming of what his future may hold?

“Take big swings at the ball.”

*Zeke Barlow is the College of Agriculture and Life Sciences’ assistant director of communications.* □

Alumni, we want to hear what you've been doing. Mail career, wedding, birth, and death news to Class Notes, Virginia Tech Alumni Association, Holtzman Alumni Center (0102), 901 Prices Fork Rd., Blacksburg, VA 24061; email the news to [fleets@vt.edu](mailto:fleets@vt.edu); or submit the news online at [vtmag.vt.edu/submit-classnote.php](http://vtmag.vt.edu/submit-classnote.php), where photos may also be uploaded for consideration.

Alumni mailing addresses may be viewed online at [alumni.vt.edu/directory](http://alumni.vt.edu/directory) by logging in with your Virginia Tech PID and password. For assistance, call 540-231-6285.

-  career accomplishments
-  weddings
-  births and adoptions
-  deceased

**'36**  J.E. "John" Peterson Jr. (ACCT), Greensboro, N.C., 10/21/15.

**'38**  Dale C. Carter (ARE), Melbourne, Fla., 12/21/15.

**'41**  August "Gus" F. Davis (IE), Richmond, Va., 12/19/15.  
 Hugh L. Garnett (AGRN), Mocksville, N.C., 12/15/15.  
 John L. Lucas Jr. (ME), Baton Rouge, La., 10/18/15.

**'42**  Ashby B. Allen (BIOL), Richmond, Va., 10/23/15.

**'44**  James A. Beasley Jr. (IE '47), Virginia Beach, Va., 11/6/15.  
 Richard H. Brownley (CE '47), Washington, D.C., 10/28/15.

**'45**  James H. Horner (ME '47), North Chesterfield, Va., 9/12/15.  
 Edna Davis McKay (HNF), Huntington, Ind., 8/9/15.  
 Patrick H. Scott Jr. (BAD '48), Roanoke, Va., 12/16/15.  
 Morton Sollod (ME), Burbank, Calif., 11/3/15.  
 William D. Toney Jr. (ME '49), Alexandria, Va., 2/9/15.

**'46**  Rebecca Newman Diggs (GHEC), Richmond, Va., 9/19/15.  
 Elgin B. Kirby (IE), Weems, Va., 11/30/15.

**'47**  Robert L. Keefe Jr. (ME), Benicia, Calif., 10/13/15.  
 Grace Holmes Ordell (HEED '48), Keswick, Va., 12/2/15.

**'48**  Charles L. Harowitz (CHEM), Richmond, Va., 12/7/15.  
 John "Jack" M. Wright Jr. (IE), Glen Mills, Pa., 10/9/15.

**'49**  John "Jack" A. Armstrong (IE '48), Falls Church, Va., 10/3/15.

Charles R. Butler Jr. (ME), Jacksonville, Fla., 2/9/15.

William B. Johnson (ME '48), Littleton, Colo., 11/15/14.

Joseph W. Moschler (GSC '50), Midlothian, Va., 10/11/15.

Robert T. Redd (DASC), Rice, Va., 10/2/15.

Howard W. Treadway (ME), Madeira Beach, Fla., 11/15/15.

**'50**  William E. Hassinger Jr. (PHYS), Greensboro, N.C., was inducted into the Virginia Tech College of Science Hall of Distinction.

Robert L. Semel (EE), Pikesville, Md., published a book, "The Third Strike," about his family's experiences dealing with his son's struggle with cancer.

 Lawrence E. Alff (ME), Had-donfield, N.J., 11/1/15.

Lawrence C. Heiskell (AGED '60, ANSC '60), Blacksburg, Va., 11/23/15.

John W. Hypes (ANSC '49), Harrisonburg, Va., 11/6/15.

William L. Kibler (ME '49), New Market, Va., 10/26/15.

W. Eugene Lewis (ARCH '52, ARCH '52), Danville, Va., 11/17/15.

Earl B. Manning (BAD), Eatonton, Ga., 2/26/15.

Baird M. Martin (EE), Houston, Texas, 9/1/15.

Alfred M. McCauley (CHE), Broomfield, Colo., 10/13/15.

James S. McGuire (AGEC '51), Wilson, N.C., 10/10/15.

Thomas W. Moss Jr. (BC '51), Norfolk, Va., 11/26/15.

Carl K. Overstreet (CE), Bedford, Va., 10/28/15.

Arthur O. Parker Jr. (BAD), Charlotte, N.C., 11/27/15.

Frank R. Postma (GBUS), Hilton Head Island, S.C., 10/16/15.

Wendell Seibert (IE), Beaumont, Texas, 3/19/15.

Lawrence T. Southall II (CE '51), Virginia Beach, Va., 9/13/15.

**'51**  John S. Autry (CE), Arlington, Va., 10/3/15.

Floyd Bradd Jr. (ARCH '53), Mineral, Va., 11/11/15.

Sherman L. Davis (AGED), Montross, Va., 9/24/15.

W.T. "Bill" Hylton Sr. (MINE '56), Blacksburg, Va., 11/3/15.

Carl E. Landes (BAD), Greenville, S.C., 9/22/15.

Edwin E. Lee Jr. (ASE), Gloucester, Va., 11/5/15.

L. Conway Rogers Jr. (CE), Hamp-ton, Va., 9/21/15.

Margaret Foote Snead (BAD), Midlothian, Va., 11/8/15.

Robert W. Ward (BAD), Upland, Calif., 3/9/15.

**'52**  R.I. "Dick" Brinkley (BAD), Louisville, Ky., 11/28/15.

Kenneth E. Dawson (IAED), Blacksburg, Va., 9/10/15.

Duff G. Porter (ME), Spartanburg, S.C., 12/17/15.

James J. Shepard (BAD), Annan-dale, Va., 12/8/15.

Charles F. Speight Jr. (CHE, CHE '57), Norfolk, Va., 11/27/15.

Stanley Tocker (CHEM '51), Wilmington, Del., 10/29/15.

**'53**  Patrick J. Johnston (ASE), Norfolk, Va., 11/15/15.

**'54**  Henry "Hank" O. Brown (ME), Charlotte, N.C., 12/18/15.

Robert S. Davis (BAD), Statesboro, Ga., 11/10/15.

Thomas "T.C." Moore (ACCT), Orange, Calif., 10/23/15.

James V. Mottley (BC), Mineral, Va., 8/24/15.

**'55**  Curtis H. Bondurant (EE), Hardy, Va., 11/14/15.

E.H. "Jack" Copeland Jr. (ARCH), Charlotte, N.C., 10/4/15.

James P. Milliken (BAD), Nan-tucket, Mass., 12/27/15.

Samuel B. Stone (EE), Newport Beach, Calif., 10/17/15.

**'56**  Harold "Crick" P. Crickenberger (EDBS), Hastings-on-Hudson, N.Y., 10/13/15.

**'57**  Leonard P. Harris (GEOL), Hagerstown, Md., was inducted into the Virginia Tech College of Science Hall of Distinction.

 Douglas R. Estes Jr. (EE), New Church, Va., 9/23/15.

Thomas A. Hassard Jr. (BAD), Greensboro, N.C., 10/17/15.

Raymond M. Powell (CE '58), Sewickley, Pa., 9/28/15.

Robert F. Warren (DASC), Danville, Va., 9/21/15.

Thomas "Del" Watkins II (BAD), Fayetteville, N.C., 9/8/15.

**'58**  William Grossmann (ASE, ASE '61, ASE '64), Berlin, Germany, received the 2015 Alumni Distinguished Service Award from Virginia Tech's College of Engineering.

 Dean P. Agee (AGED), Louisa, Va., 11/7/15.

James A. Broadus (EE '60), Little-ton, N.C., 9/8/15.

Thomas R. Moscati (ARCH '61), Grand Island, N.Y., 11/1/15.

Warren S. Sellow (BAD), Kilmarnock, Va., 11/21/15.

**'59**  William A. Atwell Jr. (ARE), Morgantown, W.Va., 10/23/15.

Robert H. Digges (BAD), McLean, Va., 12/1/15.

W.E. "Bill" Howell (MATH, EE), Seaford, Va., 9/18/15.

Ernest D. Seneca (FW, FW '61), Wake Forest, N.C., 11/12/15.

Frank W. Urbanowski (CERE), Winooski, Vt., 9/19/15.

**'60**  James W. Bryan (GEOL), Pearisburg, Va., 5/1/15.

Aaron H. O'Bier Jr. (BOT, BOT '61), Lottsburg, Va., 5/15/15.

Frederick J. Stockey III (CHE), Virginia Beach, Va., 12/1/15.

James W. Strickler (BAD), Virginia Beach, Va., 9/23/15.

**'61**  William W. Hall (ANSC), Eggleston, Va., 1/31/15.

Edward "Tom" T. Rowell (BAD '62), Roanoke, Va., 11/27/15.

Arnold "A.J." Smith Jr. (BAD), Pulaski, Va., 11/6/15.

Roger R. Smith (EE), New Church, Va., 11/16/15.

**'62**  John J. Bartko (STAT '61, STAT), Newville, Pa., was inducted into the Virginia Tech College of Science Hall of Distinction.

 Charles H. Butzgy IV (IE), Arlington, Va., 1/24/15.

Cyrus I. Dillon Jr. (EDBS), Boones Mill, Va., 12/17/15.

Harry V. Fuller Jr. (ME), Cary, N.C., 6/17/15.

Bobby R. Holland (IE), Florence, S.C., 11/30/15.

Edward F. Keller (EE '64), Arlington, Va., 10/17/15.

**'63**  James G. Beaver (ME), Hardyville, Va., 9/27/15.

William J. Caimo (EE), Punta Gorda, Fla., 10/13/15.

Anne Devonald Lash (BAD), Alexandria, Va., 9/14/15.

Robert B. Leonard (GEOL), Lawrence, Kan., 9/22/15.

Robert J. Quesinberry (BAD), Pace, Fla., 9/21/15.

**'64**  J.K. "Jim" George (EE), Austin, Texas, authored a book, "Contact Sport: A Story of Champions, Airwaves, and a One-Day Race Around the World," about the 2014 World Radiosport Team Championship.

 Paulette M. Barnhardt (BAD '67), Spring, Texas, 6/18/15.

William A. Herrington (EE), San Jose, Calif., 11/28/15.

J. Davis Hodsdon Jr. (BAD '69), Newport, Va., 10/3/15.

William H. Russell III (BAD), Lynchburg, Va., 11/18/15.



Horse racing steward Erinn Higgins '09, '11 in the stewards' booth at Saratoga Race Course in Saratoga Springs, New York. Photo by Skip Dickstein, Times Union; Albany, New York.

 At the track:

To view a race that triggered a stewards' inquiry, go to [vtmag.vt.edu](http://vtmag.vt.edu).

# Eight Things Horse Racing Stewards Do

Odds were squarely at even money that Erinn Higgins (animal sciences '09, M.S. '11), a native of Saratoga Springs, New York, would pursue a career in the thoroughbred horse racing industry.

The daughter of a trainer and an exercise rider—and the great-niece of National Museum of Racing's Hall of Fame trainer Charlie Whittingham—Higgins made history last year as the first female to serve as a steward at the New York Racing Association's three tracks: Aqueduct, Belmont, and Saratoga.

Having completed the Racing Officials Accreditation Program in 2014, Higgins currently serves the New York State Gaming Commission as the alternate steward at Finger Lakes Racetrack in Farmington.

- 1) It is standard practice for a racetrack to have three stewards who oversee races, much like referees in other sports.
- 2) During each race, the stewards watch for any incident or infraction, including issues at the starting gate, that may have affected the race's outcome.

3) If an incident or infraction occurs during a race, the stewards will launch an inquiry. Jockeys can also lodge an objection against another rider or horse if they feel their horse's progress was impeded. As with all competition, fouls do occur.

4) Upon an inquiry or claim of foul, the stewards review the race video—multiple angles of each race are recorded by cameras placed in various spots around the track.

5) By way of a phone near the finish line, the stewards also talk to the jockeys involved.

6) Based on the information gathered, the three stewards decide whether to disqualify the horse in question.

7) Stewards can suspend jockeys for infractions during the course of the race.

8) To ensure compliance with all rules and regulations, stewards also serve as a regulatory body overseeing the conduct of all licensees at the track, including jockeys, trainers, owners, and grooms.

**'64**  J.K. "Jim" George (EE), Austin, Texas, authored a book, "Contact Sport: A Story of Champions, Airwaves, and a One-Day Race Around the World," about the 2014 World Radiosport Team Championship.

 Paulette M. Barnhardt (BAD '67), Spring, Texas, 6/18/15.

William A. Herrington (EE), San Jose, Calif., 11/28/15.

J. Davis Hodsdon Jr. (BAD '69), Newport, Va., 10/3/15.

William H. Russell III (BAD), Lynchburg, Va., 11/18/15.

**'65**  Sheridan "Butch" Barringer (ME), Newport News, Va., authored a book, "Fighting for General Lee: Confederate General Rufus Barringer and the North Carolina Cavalry Brigade."

 Fred W. Allen (EE), Virginia Beach, Va., 12/6/15.

Thomas A. Wilson (ACCT '67), Laurinburg, N.C., 7/7/15.

Lou Woodruff (EE), Palm Bay, Fla., 6/21/15.

**'66**  William R. Fore (BAD), Herndon, Va., 12/8/15.

Emmett C. Overstreet Jr. (BAD), Crofton, Md., 9/13/15.

**'67**  Charles O. Cornelison (PSCI), Fort Myers, Fla., 10/23/15.

Kenton S. Gibbs (BIOL), Manakin-Sabot, Va., 9/24/15.

C.F. "Fred" Hord (CE), Lighthouse Point, Fla., 11/18/15.

Boris Iglewicz (STAT), Margate City, N.J., 8/25/15.

Wayne F. Lippy (CHE), Dayton, Ohio, 10/13/15.

Thomas N. Wilson (BAD), Norfolk, Va., 11/24/15.

**'68**  Kenneth W. Blevins (EE '69), Louisville, Ky., 10/20/15.

Thomas E. Cahn (SOC, SOC), Colonial Heights, Va., 4/25/15.

Nelson B. King Jr. (MGT), Mooresville, N.C., 11/28/15.

Lewis I. Ramey III (BAD), Midlothian, Va., 10/5/15.

Cecil Rose Jr. (ASE), Apex, N.C., 5/14/15.

James W. Walton (BAD), Rockledge, Fla., 9/3/15.

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## Balancing acts

**A**s manager of Monomoy National Wildlife Refuge, a trio of islands stretching eight miles off the elbow of Cape Cod, Matthew Hillman (M.S. fisheries and wildlife sciences '12) maintains critical habitat for migratory shorebirds, sea ducks, spawning horseshoe crabs, and a variety of other protected species—but also educates local residents and governments. Here's how he achieves that balance:

- 1 **Educate the public about Monomoy's ecological role and recreational activities consistent with that role.** "We help people understand uses appropriate to the refuge—canoeing, kayaking, hiking on the islands, birdwatching. We want people to understand why the refuge is so important, on a hemispheric scale, as a crucial place for birds not only to nest, but to stop over during migration."
- 2 **Draw the line when necessary—and use the moment as an opportunity to teach.** "To use the example of prohibiting kiteboards, there are places where people can kiteboard on Cape

Cod, but the wildlife refuge is not an appropriate place. It falls on us to educate those users as to why."

- 3 **Find ways to engage people's imagination.** "Our common tern colony, one of the largest on the Eastern Seaboard, nests on offshore islands that are closed off to the public in season. The nonprofit Friends of Monomy applied for and won a grant to install a remote video camera to show the public how unique and important that colony is."
- 4 **Emphasize the positives that come with the wilderness designation, the highest level of federal land protection.** "Visitors don't have to deal with anything like a weed whacker or ATV driving by. It's rare to have an 8-mile stretch of beach that's completely natural—no sea walls, no vehicles. You can go and experience this wilderness character for yourself, which many of our visitors really love."

### For the birds:

For the full story, visit [vtmag.vt.edu](http://vtmag.vt.edu).

'69 **Robert A. Archer** (MKTG), Salem, Va., was elected to the Virginia War Memorial Foundation Board of Directors.

**Joe W. Meredith** (ASE, ISE '97), Blacksburg, Va., received the Virginia TradePort Innovator of the Year Award from the Virginia Conference on World Trade.

**Douglas R. Hastings** (ME '70), Chesapeake, Va., 9/5/15.

**Hugh "Randy" Leonard Jr.** (BAD), Mount Vernon, Wash., 9/6/15.

'70 **David C. Russell** (GEOL, BAD '72), Melbourne, Fla., wrote a novel, "The Socratic Contract."

**D.J. Bertz** (BAD), Hydesville, Calif., 9/26/15.

**Mary I. Poos** (BIOL), Silver Spring, Md., 7/7/15.

**Thomas E. Robertson** (EE '71), Orange, Va., 9/8/15.

'71 **Thomas V. Mukai** (EE), Alexandria, Va., received the project management professional certification from the Project Management Institute.

**Daniel W. Etzold** (GBUS), Easton, Pa., 11/21/15.

**Kathleen Buck Swain** (PSCI), Bristol, Va., 9/20/15.

**David T. Wilson** (BIOL), Crockett, Va., 11/15/15.

'72 **Cecil T. Avery** (CHE), Houston, Texas, 10/29/15.

**Richard I. Brooks Jr.** (MAED '73), Panama City Beach, Fla., 11/13/15.

**Patricia M. Furey** (SOC), Blacksburg, Va., 9/10/15.

**Suzanne Peery** (EDAD, EDAD '76), Fredericksburg, Va., 9/5/15.

'73 **Linda Swartz Tagliatela** (BAD), Alexandria, Va., is the U.S.

ambassador to Barbados, with responsibilities for St. Kitts and Nevis, Saint Lucia, Antigua and Barbuda, Dominica, Grenada, and St. Vincent and the Grenadines.

**C.N. Tankard** (HPE '74), Richmond, Va., 10/8/15.

**Sheila Henzey Walker** (ELED), Warrenton, Va., 11/30/15.

'74 **Brian D. Damant** (MGT '75, BAD '77), Upper Arlington, Ohio, received the 2015 Association Executive Distinguished Service Award from the National Electrical Contractors Association.

**Raymond A. Dewberry** (CHEM), Salley, S.C., is a senior Fellow scientist at the Savannah River National Laboratory.

**Herbert W. Morgan** (CE '75), Rockville, Va., was elected as a new member of the National Academy of Construction.



"The biggest mishap on the wedding day was losing to East Carolina in football—and rain, so [the wedding] had to be indoors." —Michael Williams

Michael K. Williams '97 and Mandy Terrill, Suffolk, Va., 9/26/15.

"Virginia Tech football is one of our favorite things in life, as I grew up going to games. Witten's middle name is in honor of Lane Stadium because it is symbolic of our beloved alma mater that brought us together and the lifetime of memories we've made there."  
—Courtney Anderson



Courtney Cecil Anderson '07 and Richard L. Anderson '07, Charlotte, N.C., a son, Witten Lane, 10/6/15.

STELLAR EXPOSURES

COURTNEY ANDERSON

**Kevin Patrick** (PSCI), Basalt, Colo., authored a political thriller, "Unholy Alliances."

**Lois Poland Bersch** (EDCI), Lima, N.Y., 8/23/15.

**George A. Keck** (BC), Ceres, Va., 11/1/15.

**William "Tom" West Jr.** (HORT), Mechanicsville, Va., 1/28/15.

**'75 Michael F. Hochella Jr.** (GEOL, GEOL '77), Blacksburg, Va., received the 2016 Outstanding Faculty Award from the State Council of Higher Education for Virginia.

**Benjamin M. Townes II** (ARCH), Pensacola, Fla., was part of Gulf Power Company project team that was awarded a 2015 sustainable design award by the Precast Concrete Institute.

**Linda J. Allen** (EDCI '76), Northglenn, Colo., 8/4/15.

**Ralph W. Petrone** (HPE '76), Blacksburg, Va., 9/27/15.

**Mary Whaley** (EDSC '76), Harrisonburg, Va., 10/30/15.

**'76 John A. Coulter II** (PAD), Honolulu, Hawaii, authored a book, "Cadets on Campus: History of Military School in the United States."

**Deborah Ayers Koller** (BIOL), Chesterfield, Va., was inducted into the Virginia Tech College of Science Hall of Distinction.

**William N. Klimczak** (EE), Bowie, Md., 8/11/15.

**Dabney T. Waring** (ECON), Charlottesville, Va., 11/25/15.

**'77 Mary E. Baptiste** (FW '78), Laramie, Wyo., authored a book, "Altitude Adjustment: A Quest for Love, Home, and Meaning in the Tetons," that appeared on the New York Times' bestseller list for e-book nonfiction and was named the Foreword Review's 2014 INDIEFAB Book of the Year gold winner in the autobiography and memoir category.

**Margaret "Peggy" Hilton Carozza** (MKTG), Parkersburg, W.Va., 2/21/15.

**Stephen P. Griffin** (CS), Brightwood, Va., 8/8/15.

**Ann Baldwin Heck** (EDBS '76), Harpers Ferry, W.Va., 9/15/15.

**Carolyn Weaver Mackay** (ECON), Vienna, Va., 8/26/15.

**Robert S. Munson** (FW), Ashland, Va., 4/7/15.

**'78 Michael K. Bertelsen** (AGEC), Blacksburg, Va., was named director emeritus by the Virginia Tech Board of Visitors.

**Daryl J. Hodge** (EE), Arnold, Md., retired after 37 years with the National Security Agency.

## Grade: B<sup>+</sup>

### Fan knits season's scores

"What's a Hokie spouse of 40 years to do after all these years of Hokie football? Knit a scoreboard scarf for the 2015 season! I watched every game, knitting as the scores unfolded. ... Why a B-plus? It was great to commemorate Coach Beamer's last season, but I wish we would've won more games."

—Michelle Trahan, wife of Jim Taylor (architecture '73), got the idea from scoreboardkal.com. Michelle loaned the scarf to their friends Jim (architecture '72) and Leslie Maitland, who will show it off in Lane Stadium this fall.

#### Maroon:

403 rows, one for each Hokie point

#### Orange:

342 rows, one for each opponent point

7

wins

6

losses



vs. Miami  
30-20 L

vs. Duke  
45-43 L

vs. N.C. State  
28-13 W

vs. Pittsburgh  
17-13 L

vs. Boston College  
26-10 W

vs. East Carolina  
35-28 L

vs. Georgia Tech  
23-21 W

vs. Purdue  
51-24 W

vs. North Carolina  
30-27 L

vs. Furman  
42-3 W

vs. Virginia  
23-20 W

vs. Ohio State  
42-24 L

vs. Tulsa  
55-52 W

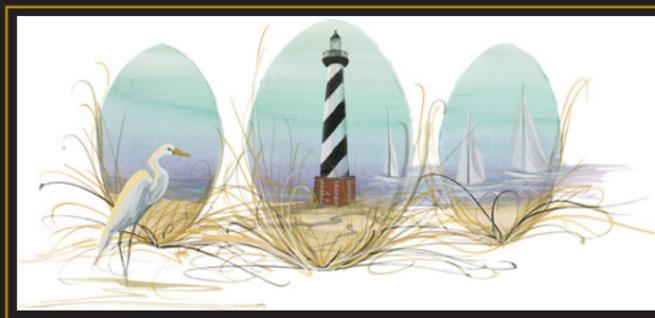
17 unanswered Hokie points

14 unanswered Ohio State points

8'6" long

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**John A. Barden Jr.** (DE, EDVT '83), Alpharetta, Ga., 11/1/15.

**William C. Smith** (SOC), Fairfax, Va., 4/1/15.

**'79 Richard W. Ellis** (CE), Sarasota, Fla., is a senior project manager with Dewberry.

**Wayne A. Hubert** (FIW), Laramie, Wyo., received the Contributions to Wyoming Biodiversity Science Award from the University of Wyoming's Biodiversity Institute.

**Hallie A. Carr** (EDSP), Salem, Va., 5/20/15.

**William F. Kennedy** (GBUS), Charlotte, N.C., 9/16/15.

**Martin R. Tant** (CHE, CHE '86), Kingsport, Tenn., 8/15/15.

**'80 Calvin W. DuBrock** (FIW), State College, Pa., was appointed to the Maurice K. Goddard Chair in Forestry and Environmental Resource Conservation at Penn State's Department of Ecosystem Science and Management.

**Marilyn Anderson Chase** (MHFD), Venice, Fla., 9/20/15.

**William F. McTernan** (ESEN), Stillwater, Okla., 11/6/15.

**'81 Pamela Harris Bishop** (ANSC), Warrenton, Mo., is the U.S. Equestrian Federation "R" judge in hunter breeding, hunter/jumper equitation, and jumpers.

**Daisy N. Compton** (PSCI), Gate City, Va., 9/23/15.

**David J. Hooley** (CHEM), Findlay, Ohio, 8/18/15.

**Anthony W. Pieleck** (ME), Lynchburg, Va., 11/21/15.

**'82 Leslie Knachel** (HNF), Richmond, Va., was elected to the 2015-16 board of directors for the American Association of Veterinary State Boards.

**Sofia Dukehart Reichley** (CE), Manassas, Va., 3/21/15.

**'83 Thomas N. Bagamane** (COMM), Los Angeles, Calif., received recognition from State Farm for his work with The Giving Spirit, a nonprofit serving L.A.'s homeless population.

**J. Martin Cassady Jr.** (COMM), Hillsborough, N.C., is a real estate agent with Fonville Morisey Realty.

**Kacy L. Cooney Lypka** (HNF), Fairfax, Va., published a fiction novel, "Seeking Solace."

**Mallory G. Martin** (FIW), Raleigh, N.C., is chief deputy director of the North Carolina Wildlife Resources Commission.

**'84 William L. Berry** (MKED), Madison, Va., was named assistant superintendent for student and administrative services with Orange County Public Schools.

**Victoria Hileman Cabot** (MKTG), Escondido, Calif., is a certified implementer of the Entrepreneurial Operating System.

**John R. Copeland** (FW), Christiansburg, Va., received the Wallace and Peggy Carroll Vigilance Award from the New River Conservancy.

**Kendley J. Davenport** (MGT, PAD), Leesburg, Va., was named CEO for Source4teachers/Mission One in Cherry Hill, N.J.

**Herman "Todd" Holbrook** (FIW), Conyers, Ga., received the 2015 C.W. Watson Award from the Southeastern Association of Fish and Wildlife Agencies.

**Pamela J. Swift** (ANSC), Palermo, Maine, authored a book, "Doctor's Orders: One Physician's Journey Back to Self."

**Robin Redfern Bellinder** (HORT '82, HORT), Ithaca, N.Y., 11/13/15.

**James "Edward" Cwynar** (CHEM), Monaca, Pa., 10/1/15.

**Lillie Madison Jones** (EDAD, EDAD '86), High Point, N.C., 10/27/15.

**Amanda C. Tyler** (BAD), Chantilly, Va., 7/25/15.

**'85 Robert D. Allen** (CHEM), San Jose, Calif., was inducted into the Virginia Tech College of Science Hall of Distinction.

**Nermien N. Geerges** (EE, PAPA '98), Falls Church, Va., is the founder and executive director of Coptic Orphans, an international Christian development organization.

**Daniel T. Goulson** (ME), Lexington, Ky., is chief medical officer of Saint Joseph Hospital.

**Charles K. Robertson** (COMM), Glen Ridge, N.J., was named canon to the Presiding Bishop for Ministry Beyond the Episcopal Church and authored a book, "Barnabas vs. Paul," and a DVD series, "Hazardous Saints."

**Stephen C. Parker** (ART), Chesterfield, Va., 12/13/14.

**'86 Hoda Kotb** (COMM), New York, N.Y., authored a book, "Where We Belong: Journeys That Show Us the Way."

**James B. Kuykendall** (FW), Spotsylvania, Va., received the Culpeper Soil and Water Conservation District's 2015 Forest Stewardship Award.

**Stuart Price** (ENGL), Amelia Court House, Va., interned as an undergraduate in the 1980s with the Division of Legislative Services, part of the Virginia General Assembly. At the annual Hokie Day in February 2016 in Richmond, Price reunited with the officials who supported his internship.

**Khaled M. Al-Jaradat** (EE), Springfield, Va., 9/5/15.

**Richard B. Loucks** (ME), Edgewater, Md., 9/24/15.

**Annette C. Slowinski** (VM), Potomac, Md., 9/20/15.

**Elizabeth G. Wills** (TA), New Smyrna Beach, Fla., 7/28/15.

**'87 Lisa M. Derr** (ENGL), Dayton, Md., was the keynote speaker for an English Career Connections event at Virginia Tech.

**Michael B. East** (HIST), Angier, N.C., retired as a North Carolina State Bureau of Investigation law enforcement officer and became a manager of risk advisory services with Cherry Bekaert LLP.

**C. Randolph Wimbish III** (PSCI), Richmond, Va., is the president of the Virginia Association of Defense Attorneys.

**Mariam C. Hurley Wright** (FIN), Atlanta, Ga., 8/16/15.

**'88 Sylvia A. Hunt Flack** (EDCC), Winston Salem, N.C., received the 2015 James E. Holshouser Jr. Award for Excellence in Public Service from the University of North Carolina Board of Governors.

**Nigel A. Greene** (PSCI), Elkins Park, Pa., sat as a judge at the University of Pennsylvania Law School's 13th annual mock trial tournament, the Quaker Classic Invitational.

**Theresa Stellwag Mayer** (EE), Port Matilda, Pa., is vice president for research and innovation at Virginia Tech.

**Paul E. Rossler** (IEOR, ISE '91), Sand Springs, Okla., was named to the 2015 Rising Stars list by Thompson Reuters.

**Noel Nunnally Schulz** (EE, EE '90), Manhattan, Kan., was named an IEEE Fellow for her leadership in advancing women in engineering and electric ship technologies.

**George E. Hayward** (CE, CE '00), Haymarket, Va., 8/29/15.

**James M. Webb** (SOC), Blacksburg, Va., 9/30/15.

**'89 Melinda "Melynn" P. Avila-Torrio** (ID, ARCH '93), Duluth, Ga., is a certified interior designer in the state of Georgia.

**Virginia T. Volrath Gorski** (EDSP), Front Royal, Va., 9/24/15.

**'90 Matthew M. Winston Jr.** (MKTG), Blacksburg, Va., received the Distinguished Service Award from the Council for Advancement and Support of Education's District III.

**Kelly J. Meyer** (FIW), Pinetop, Ariz., 11/4/15.

**Danniella M. Muheim** (EM), Columbia, Md., 10/16/15.

**'91 Allen W. Campbell** (ISE), Blacksburg, Va., was named the senior director of application architecture and planning in the enterprise systems unit in Virginia Tech's information technology department.

**Pamela L. Shupe Finley** (BIOL), Blue Ridge, Va., 10/18/15.

**Jin H. Yoo** (CHEM '92, CHEM '96), Chantilly, Va., 10/11/15.

**'92 Donald J. Ferguson Jr.** (BIOL), Fairfield, Ohio, is an associate professor at Miami University in Ohio.

**Robert T. Hicks** (MKTG), Arlington, Va., is a shareholder with Bean, Kinney, and Korman and represents businesses in commercial and civil litigation.

**Teresa A. Martinez** (FW, FIW '98) is the executive director for the Continental Divide Trail Coalition.

**Charles H. Roede** (CHEM), El Paso, Texas, was selected as a Hokie Hero for the football game versus the University of Virginia.

**Francis C. Callahan** (FIN), Johnstown, Colo., 11/18/15.

**Victoria Mink Fry** (MGT), Wilmington, N.C., 8/15/15.

**Andrea R. Stossel** (BIOC), Thurmont, Md., 8/6/15.



COURTESY PHOTO

## Paddling upstream

Two Virginia Tech alumni put their training and service ethic to work during a 500-mile kayaking expedition to assist the launch of a nonprofit environmental organization, Upstream Alliance, which recruits and trains emerging leaders in environmental education, stewardship, and advocacy.

In fall 2015, Alex Crooks (natural resources conservation '12) and Stephen Eren (natural resources conservation '11)—who were recruited to lead the expedition by Crooks' mentor, the nonprofit's president and founder—organized, supported, and participated in a 30-day circumnavigation of the East Coast's Delmarva Peninsula. Each day, the duo collected and posted water-quality data by lowering a black-and-white disc into the water until it was no longer visible. "The [farther] you can see down, the healthier that water is going to be," Crooks said.

One of the most memorable days on the water started early and ended late, as Crooks explained. "We woke up at 4 a.m. and scurried to put our tent away, pack our lunch, and be on the water by 5 a.m., so we got to see the water rise on the Chesapeake and Delaware Canal. You see the huge freighters and the big metal crates they're taking up to Baltimore and the port of Philadelphia. They're just enormous, like 20 stories tall. We got to watch as the sun came up and changed the colors of the sky. It was awesome paddling, but it also turned into our hardest day. A Nor'easter coming through made the water super-choppy. It was only supposed to be an 11-mile day, but our campsite fell through at the last minute, so we had to paddle to another one, and it ended up being our 27-mile day. I had a wrist injury, so it killed me to paddle through."

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ALUMNI ASSOCIATION

6P4

## Revisit life at Tech—from 1990 onward—in the pages of Virginia Tech Magazine.

Browse the archives at [vtmag.vt.edu/archives](http://vtmag.vt.edu/archives).

**'93** **LeRoy A. Selvidge Jr.** (ARCH '94), Reston, Va., was named the Hokie Hero for the football game versus Boston College.

**Daniel C. Wilbricht** (PSYC), Vienna, Va., was named the senior director of federal sales for LogRhythm, a security intelligence company.

**William "Pat" P. McClanahan Jr.** (PHED), Charlotte, N.C., 10/12/15.

**Laura E. Farrell Regan** (BIOL), Cypress, Texas, 9/30/15.

**'94** **Kathryn A. Strickland** (COMM), Aurora, Colo., was named the 2015 Female Teacher of the Year for Rangeview High School.

**'95** **Kelly M. Dickerson** (CHEM), Henrico, Va., was named the Hokie Hero for the football game versus Duke University.

**Robert "Lucas" Hobbs** (COMM), Bristol, Va., is vice president for the Bristol Pirates minor league baseball team.

**Alfred O. Taylor Jr.** (EDAD), Arlington, Va., published a book, "Bridge Builders of Nauck/Green Valley: Past and Present," and received the Charles P. Monroe Civil Rights Award from the NAACP's Arlington branch.

**Mark Weathington** (HORT, SOC, HORT '99), Raleigh, N.C., is director of the JC Raulston Arboretum at North Carolina State University.

**Robert "Lucas" Hobbs** (COMM) and **Becky Price**, Bristol, Va., 5/30/15.

**Carla D. Moravitz Martin** (MATH), Laurel, Md., 10/27/15.

**'96** **Suzanne U. Welch** (PAD), Culpeper, Va., a daughter, 5/19/15.

**Gregory W. Shawver** (BIOL, HNFE '98), Ivanhoe, Va., 7/29/15.

**'97** **Andrew S. Boutros** (BIOL), Alexandria, Va., is a litigation partner and co-chair of Seyfarth Shaw LLP's white collar, internal investigation, and false claims team.

**Joshua S. Cumbow** (HIST), Abingdon, Va., was elected as the commonwealth attorney for Washington County, Virginia.

**Delia Grenville** (ISE, ISE '01), Portland, Ore., received the Technologist of the Year Award at the annual Women of Color STEM conference.

**Jeffrey A. Sugar** (AE, ISE '99), Houston, Texas, is an engineer for NASA's Johnson Space Center.

**Michael K. Williams** (AT) and **Mandy Terrill**, Suffolk, Va., 9/26/15.

**Brian J. Godlove** (MGT), Fairfax, Va., 8/5/15.

**'98** **Scott M. Barrett** (FW, FOR '01, FOR '13), Fincastle, Va., received the Society of American Foresters' 2015 Young Forester Leadership Award.

**Joseph H. Wheeler** (ARCH), Blacksburg, Va., received the Virginia American Institute of Architects Prize for Design Research and Scholarship for his work on Virginia Tech's Future-HAUS.

**Leonard B. Vaughn III** (BIOC '09, IT '13), Roanoke, Va., earned the certified information systems security professional certification.

**Laura A. Kaculis Thomson** (IDST), Jacksonville, Fla., a son, 3/3/15.

**John M. Powell** (FST), Columbia, Md., 8/16/15.

**'99** **Mark W. Gosnell** (ARCH), Glen Burnie, Md., is an associate with the WDG architectural firm.

**Roger M. Green** (ELPS), Colonial Heights, Va., 10/23/15.

**'00** **Scott J. Porter** (IS), Charlottesville, Va., was named the Hokie Hero for the football game versus the University of North Carolina.

**Kevin A. Secrest** (ACCT), Wynnewood, Pa., was a presenter at the 2015 Association of College and University Auditors' annual conference.

**Jessica Toye Ghanipour** (MSCI) and **Parham Ghanipour** (BIT '03), Herndon, Va., a daughter, 10/12/15.

**Jacqueline Smith Kerns** (BIOL) and **Justin M. Kerns** (FIN '02), Paris, France, a daughter, 1/17/16.

**SamiDail B. Gilley** (FORS), Charlotte Court House, Va., 10/4/15.

**'01** **Benjamin B. Grove** (APSC, BAD '10), Blacksburg, Va., a son, 12/4/15.

**'02** **Jeremy B. Norman** (PSCI), Dublin, Va., is assistant director of advancement communications at Radford University.

**Jessica H. Klacynski** (HIDM), Lynchburg, Va., a daughter, 10/11/15.

**Erica Weikel Muddiman** (HTM) and **Bryan A. Muddiman** (MGT '03), Marietta, Ga., a son, 7/10/15.

**Emily Gaddy Taylor** (MGT), Christiansburg, Va., a daughter, 10/28/15.

**Jacquelyn E. Rose** (MATH, EDCI '03), Wytheville, Va., 11/19/15.

**'03** **Josh B. Bishop** (MGT) and **Monika Anderson Bishop** (HD '11), Roanoke, Va., a son, 4/8/15.

**Jennifer S. Lemkul Lewis** (CS) and **Will Lewis Jr.** (CPE, CPE '04), Warrenton, Va., a son, 9/9/15.

**Amanda Prettyman Rude** (HD, EDCI '05) and **Colbey A. Rude** (EE '06), Salem, Va., a daughter, 9/27/15.

**Shaun K. Emerson** (ACIS), Wayne, N.J., 9/22/15.

**'04** **James R. Osborne** (ARCH), Baltimore, Md., was named general counsel at the Johnson, Mirmiran, and Thompson architecture and engineering firm.

**John D. Winstead** (ISE) and **Ashley Z. Goodroe Winstead** (ENSC '09), Merrimack, N.H., 7/18/15.

**Frank T. Grogan IV** (BIOL), Danville, Va., 10/2/15.

**Christopher H. Shriver** (ECON), Smithfield, Va., 10/17/15.

**'05** **Andrew J. Griffin** (COMM), Brooklyn, N.Y., is an account supervisor at Saatchi and Saatchi Advertising.

**John N. Hall** (FIN), Lynchburg, Va., earned the certified financial planner designation.

**Stefanie Hartman Chen** (BCHM), Madison, Wis., a son, 2/11/15.

**'06** **Derrick M. Anderson** (PSCI), Nashville, Tenn., was named the Hokie Hero for the football game versus Georgia Tech.

**Jerry O. Andes II** (APSC), Fort Riley, Kan., was named the Hokie Hero for the football game versus Georgia Tech.

**Whitney A. Dawson** (MKTG), Winston-Salem, N.C., earned an M.B.A. with distinction from Wake Forest University.

**Nathan A. Lahy** (LAR), Chesapeake, Va., is a licensed landscape architect in North Carolina and Virginia.

**Thomas B. Ross** (MKTG), Centerville, Va., a daughter, 11/24/15.

**'07** **Mary F. Atkinson** (HTM), Henrico, Va., is a certified leisure travel specialist with Williamsburg Travel Leaders.

**Timothy M. Creasy** (ARCH), Williamsburg, Va., is a designer and technician for Guernsey Tingle Architects.

## Hindsight A superintendent's first classroom

"I was so excited to have my first classroom. I spent countless hours decorating the room and composing these grand lesson plans. However, after my first year, I realized that I should have invested some quality time learning strategies on exhibiting patience, persistence, personalized learning, and relationship-building. I learned these lessons the hardest way possible—trial and error."

—**A. Katrise Perera** (Ed.D. educational leadership and policy '14), the National Association of School Superintendents' 2015-16 Superintendent of the Year, reflecting on what she wished she had known on her first day of teaching in 1994. For more reflections, visit [vtmag.vt.edu](http://vtmag.vt.edu).



**26** years ago, students' technology needs in their dorms rooms were quite different from today's needs.

**28** years ago, the Virginia Tech Transportation Institute (VTTI), then called the Center for Transportation Research, was founded. Shortly after, Tech began developing plans for the Smart Road, an "electronically monitored highway of the future." Today, VTTI leads the way in autonomous vehicle technology.

BY KIM BASSLER '12, UNIVERSITY LIBRARIES COMMUNICATIONS COORDINATOR. IMAGES COURTESY OF LIBRARIES' SPECIAL COLLECTIONS; MORE CAN BE FOUND AT [IMAGEBASE.LIB.VT.EDU](http://IMAGEBASE.LIB.VT.EDU).

**Rommelyn Conde Coffren** (COMM, COMM '12) and **Zachary B. Coffren** (COMM '08, MKTG '08), Blacksburg, Va., 5/23/15.

**Courtney Cecil Anderson** (ISE) and **Richard L. Anderson** (ISE '07), Charlotte, N.C., a son, 10/6/15.

**'08** **Nicholas R. Nelson** (HIST) was named the Hokie Hero for the football game versus the University of Virginia.

**Manisha P. Patel** (ECAS, HIST), Greensboro, N.C., was named educational committee co-chair at-large for the North Carolina Association of Women Attorneys' 2016 Board of Directors.

**Alicain S. Carlson** (BIOL) and **Brandon M. Graver**, San Jose, Calif., 9/6/15.

**Adam C. MacPherson** (ARCH), Henrico, Va., a son, 9/28/15.

**'09** **Drew B. Hittie** (ARCH), Somerset, Pa., 8/10/15.

**'10** **William T. Satterwhite Jr.** (MUS, EDCI '11) and **Julie Terrell Satterwhite** (STAT '11), Vinton, Va., a son, 7/18/15.

**Mary E. Wright** (FOR) and **Lee D. Wright** (BMES '11), Whittier, N.C., a daughter, 9/15/15.

**30** years ago, Virginia Tech celebrated Founders Day with a visit from Secretary of Defense Caspar Weinberger. Beginning in 1972, the university used Founders Day to recognize outstanding faculty and alumni and, later, outstanding staff and students.

**'11** **Kevin J. Coghill** (FIN), Midlothian, Va., is an associate with Setliff and Holland PC.

**Stephen S. Eren** (NRC), Chapel Hill, N.C., completed a 500-mile, 30-day kayaking expedition circumventing the Delmarva Peninsula to help launch a new nonprofit, Upstream Alliance.

**Olivera Jankovska** (GSCR, AAEC), Kriva Palanka, Macedonia, was named to the United Macedonian Diaspora's 40 Under 40 List for 2015.

**Candace Hummer Crosen** (PSYC) and **Matelin P. Crosen** (HNFE '12), Charlottesville, Va., 9/19/15.



**30** years ago, students thought a sailing skateboard might be a creative way to get around campus.

**Kalen Thompson Graf** (MKTG) and **Andrew S. Graf**, Chesapeake, Va., 6/20/15.

**Mary W. Dransfield** (HNFE), Blacksburg, Va., 6/1/15.

**'12** **Alexandra J. Crooks** (NRC), Arnold, Md., completed a 500-mile, 30-day kayaking expedition circumventing the Delmarva Peninsula to help launch a new nonprofit, Upstream Alliance.

**Virginia I. Harr** (ARCH), Charlottesville, Va., is a registered architect for Tuck-Hinton Architects.



# Homecomings

September

3

**Liberty**  
College of Agriculture and Life Sciences

September

17

**Boston College**  
Corps of Cadets  
Virginia-Maryland College of Veterinary Medicine

September

24

**East Carolina** (*University homecoming*)  
Holtzman Alumni Center Open House and Tailgate  
College of Engineering  
College of Architecture and Urban Studies  
Highly-Tighty alumni  
Marching Virginians alumni

October

20

**Miami** (*Thursday night game*)  
College of Science  
Multicultural alumni

November

12

**Georgia Tech**  
College of Business  
College of Liberal Arts and Human Sciences

November

26

**Virginia**  
Division of Student Affairs - former student leaders  
College of Natural Resources and Environment  
Graduate School alumni  
Young alumni

&

# Reunions

September

24

**East Carolina**  
Class of 1966 – 50th reunion

October

20

**Miami** (*Thursday night game*)  
Class of 1971 – 45th Reunion  
Class of 1976 – 40th Reunion

November

12

**Georgia Tech**  
Class of 1991 – 25th Reunion

November

26

**Virginia**  
Class of 1981 – 35th Reunion  
Class of 1986 – 30th Reunion