

UNIVERSITY OF DELAWARE

MAGAZINE

Volume 26 · Number 3

ENVISIONING THE FUTURE





WHERE
**INNOVATION
FLOURISHES**

PHOTO BY EVAN KRAPE



The newly installed living wall in the Tower at STAR atrium

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ASHLEY BARNAS

A BREATH OF FRESH AIR

The College of Health Sciences' new administrative home—the Tower at STAR, located on South College Avenue—showcases cutting-edge modern architecture, from a 300-person meeting room to interactive lab spaces that merge research, education and clinical care. But one of the building's most striking features is its "living wall." This unique vertical design features more than 5,000 plants, many chosen for their ability to eliminate harmful indoor air contaminants. A visual reminder of the college's overall mission to promote health and wellness, the space also offers opportunities for reducing stress and promoting positive mental health.

ON THE COVER

Illustration by Kailey Whitman

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UNIVERSITY OF DELAWARE MAGAZINE

Volume 26, Number 3

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OUR CULTURE OF INSPIRATION AND IMPACT

This is a special time for the University of Delaware. Building on our strong, 275-year legacy of innovation, we remain focused on the future. We are exploring new ways to teach and learn with greater opportunities for interdisciplinary enrichment. We are constantly reinventing our beautiful campus, embracing tradition and realizing a shared vision to enhance the student experience. In short, we are connecting UD with the world—and the world with UD—in new and exciting ways every day.

With so much going on, I am inspired by the energy I experience on our campus and every encounter with you, our proud alumni and devoted friends. Together, we are fostering a culture that is built for inclusion, connectivity and new adventures ahead. Since our institution's earliest roots back in 1743, UD has cultivated a community of idea giants who have inspired each other and—just as important—worked together to transform that inspiration into impact.

The future of our world will be defined by many dynamic changes ... the role of technology as a catalyst for innovation, the impact of globalization as an operational game-changer for business, the connectedness of cultural consciousness to make a difference and the power of ideas to become transformative with tangible impact. With this in mind, our University has no time for complacency; we must constantly challenge ourselves to create and reimagine. As a nexus of opportunity for education,

business, community and culture, UD not only educates students, it empowers leaders. Our faculty not only teach, they advance our institution. Our students not only achieve, they challenge. And that is inspiring!

We cannot always predict what lies ahead, but I am certain it will be extraordinary. Our diverse community continues to evolve ... not just for any purpose, but for meaningful initiatives that impact society. Think next-generation medicines to prevent, treat or cure some of the most devastating diseases. Or developing sustainable solutions to provide access to clean energy and water globally. Or new and exciting internships and careers with socially responsible businesses. Or engaged and lasting partnerships with communities to advance arts, culture, education, well-being and resiliency. The list goes on.

The next 275 years promise endless opportunities for both inspiration and impact. The University of Delaware—where great ideas emerge, bounce, collide, grow and thrive—is ready to lead! Your generous support for UD's mission and its people is essential in this grand journey. In this season of giving and gratitude, Eleni and I sincerely thank you and wish you a safe and enjoyable time with your family and friends.

Dennis Assanis, President

DELAWARE TO THE WORLD

2018-2019 NATIONAL TOUR



- From curing cancer and creating early education innovations to uncovering fake news and discovering new approaches to environmental challenges, world-changing ideas happen every day at UD.

This winter and spring, we are taking these ideas—and the faculty and staff behind them—on the road to Blue Hens around the country.

This interactive networking and educational series will offer a variety of intriguing, groundbreaking topics presented by UD faculty and designed for every Blue Hen.

Look for events in the following cities:

FORT LAUDERDALE

SARASOTA

SAN DIEGO

LOS ANGELES

SAN FRANCISCO

HOUSTON

DALLAS

DOVER, DE

BRIDGEVILLE, DE

NEWARK/WILMINGTON, DE

NEW YORK CITY

LEARN MORE AND REGISTER AT WWW.UDEL.EDU/TOTHEWORLD

ALUMNUS NAMED NEW ENGINEERING DEAN

Thirty-seven years after graduating from UD, Levi T. Thompson, EG81, has returned to his alma mater in a different capacity—as dean of the College of Engineering and Elizabeth Inez Kelley Professor of Chemical Engineering.

“I am eager to rediscover UD, the special place where my career began,” he says. “I could not be more excited about the possibilities that lie ahead for our entire UD engineering family.”

Thompson succeeds Babatunde Ogunnaike, who has led the college since

2011 and will be returning to the faculty.

After earning his undergraduate degree from Delaware, Thompson went on to earn two master’s degrees and his doctorate from the University of Michigan, where he would spend more than 30 years as a faculty member and administrator.

No stranger to Newark, Thompson has also served on the UD Chemical and Biomolecular Engineering Department Advisory Committee and the College of Engineering Advisory Council. [🐦](#)



KATHY F. ATKINSON

Levi T. Thompson, EG81, became the dean of the College of Engineering on Oct. 1, 2018.

PRESIDENTIAL CHALLENGE ANNOUNCED

Matching funds support new, endowed scholarships for undergraduates

In an unprecedented commitment to strengthen financial support for undergraduate education, the University has launched the President’s Scholarship Challenge, a one-to-one, financial match for gifts between \$50,000 and \$250,000. Through this new program, each dollar donated to UD to create new, endowed undergraduate scholarships will be matched by the University.

The effort is part of the University’s comprehensive engagement and fundraising campaign, Delaware First, and aims to help more Blue Hens reach their academic goals through sustainable funding sources. To date, 30 donors have risen to the challenge, including Christine Evans, EHD69, 99M, O8PhD.

A three-time alumna of UD and the first donor to take advantage of the match, she established the Christine M. Evans Education Endowed Scholarship, turning her \$50,000

fund into \$100,000. “I wanted to give back to the University while helping students who need it the most,” she says.

The Scholarship Challenge is designed to appeal to a broad range of interests and initiatives. For instance, undergraduate student support and global citizenship are key priorities for President Dennis Assanis and his wife, Eleni. As part of the Challenge, the couple recently established two scholarships to enhance international learning: one to facilitate study abroad opportunities in Greece through UD’s World Scholars Program, and another to bring Greek students to UD’s campus.

“Now is a particularly exciting and important time to support students at UD,” says Jim Dicker, vice president of development and alumni relations. “These endowed scholarships will help students today while also aiding future generations of students far after the Challenge has ended.” [🐦](#)

A PLACE FOR ALL TO SHINE

A partnership program with JPMorgan Chase expands support for engineering and computer science students on the autism spectrum

In the United States, it is estimated that a mere 20 percent of people with autism are employed. A new joint initiative between UD and JPMorgan Chase aims to substantially change those numbers.

Administered by the University's Center for Disabilities Studies and backed by a 10-year grant from JPMorgan Chase, the Spectrum Scholars program will provide comprehensive support and career exploration opportunities to UD students with autism majoring in computer and information sciences and in electrical and computer engineering. The program will accept five to eight students a year, beginning in fall 2019, and will also offer training for faculty, staff and community businesses seeking to work more effectively with people on the autism spectrum.

"At UD, we're committed to the success of all our students," says President Dennis Assanis. "Neurodiversity can help drive creativity and innovation in our society, translating into a significant benefit for us all."

The Centers for Disease Control and Prevention estimates that autism affects about one in 59 children, primarily boys. Characterized by a variety of behaviors and cognitive differences, autism spectrum disorder most prominently affects communication and behavior. For instance, those on the spectrum may have trouble relating to people and recognizing others' feelings, and may have high


sensitivity to certain sounds or lights. Meanwhile, schools and workplaces often reward opposite behaviors: conventional communications skills, teamwork, consistent eye contact and the ability to follow standard procedures. Yet students on the spectrum can also exhibit a remarkable ability to comprehend minute details and remain focused on tasks for extended periods.

Finding, cultivating and promoting talent therefore requires innovative approaches and a meaningful commitment to supporting people with diverse (and often untapped) skills.

"We've seen the promise and talent of individuals with autism," says James Mahoney of JPMorgan Chase, executive director of the company's 3-year-old Autism at Work program.

"And we've seen great business results."

Through the Spectrum Scholars, UD students will meet weekly with a coach. Their sessions will be shaped by their academic and professional goals, from learning to recognize the nuances of different relationships to growing as a self-advocate. Students will also spend time with undergraduate peer mentors, while faculty and staff members will receive advanced training on the unique needs of students with autism.

Brian Freedman, Spectrum Scholars director and associate director of the Center for Disabilities Studies, says the program's inclusive nature will have broad effects, because it "enables the campus and community to learn about supporting, working alongside and recognizing the talents of their autistic peers." 



Finnigan Madison, AS19, a UD student with autism, speaks with Spectrum Scholars graduate assistant Kerry Pini (standing) at the Spectrum Scholars launch reception in September.

KATHY F. ATKINSON

FOUR YEARS FOR YOU

Senior Gourtney Ringgold, AS19, offers advice to first-year students as they begin their college journey at the annual Twilight Induction Ceremony. Here, she shares her remarks.



KATHY F. ATKINSON

Three years ago, I was sitting where you are, excited but also anxious to see what the future would hold. I had never been away from home for more than a week, never had a roommate and everything was new.

I started off as a marine biology major because I always loved the ocean, but I struggled with my first chemistry class. In my first year, I didn't get involved in any activities and didn't go anywhere but my residence hall, dining hall and classrooms. I had come from a very diverse high school, but here, I was sometimes the only African-American in my class. I was stressed about classes, stressed about being away from home, stressed about fitting in, stressed about maintaining old friendships. I was stressed, to say the least.

I felt like everybody around me had found their place at this school, and

I was just going through the motions day by day. There were many times when I felt like I wanted to transfer. It was challenging to adjust to this new atmosphere, but that also made me work 10 times harder. I wanted to prove to myself that I deserved to be at this school just as much as anyone else. I came to realize that college is what you make of it; it's where you start to find yourself and decide who you want to be.

There will be tough times and tough classes. After failing my first test in bio, and later, in math, I went to the professors' office hours, determined never to get a grade like that on any test that followed—and I haven't. I switched majors to psychology, and as time went on, I knew I made the right decision.

Don't choose a major you THINK will be easy, because there will be ups and downs and second-guessing in any major. You

have to push through those challenges and seek out help, because it's there. You have to get out and seek out new opportunities. Try something new, join [student groups], and don't be afraid to be yourself. It wasn't until I actually left my residence hall and went to an Hola meeting that I finally felt like I belonged. (Hola is a Latinx programming board that welcomes all UD students, with a specific focus on teaching culture, not language.) I went to the first meeting and ever since, Hola has become a huge part of my college experience.

Don't come to college thinking you have to portray a persona that you feel fits in. You cannot let people and situations make you lose yourself. Don't let college change you into someone you think you need to be. Let college change you into the better person you want to be. No matter how alone you may feel, know that there are people here for you. Be yourself and the right group will migrate your way. Joining Hola and the D-Sharp's a cappella group has greatly impacted my life in the best ways possible. People who were once strangers are now really good friends; some I even now consider family.

Here at the University of Delaware, there is at least one guaranteed thing you share with everyone you pass by: We are all Blue Hens. Our paths may be very different, but we're taking this journey together. There's so much we can learn from each other and so much we'll learn about ourselves, and I can only promise you that the best is yet to come. Congratulations, and welcome to UD! 🐔

CLASS OF 2022

THE UNIVERSITY OF DELAWARE IS GROWING IN MANY WAYS
—AND GROWING MORE REMARKABLE BY THE YEAR.

This year's first-year class—the Class of 2022—can claim the second-highest number of underrepresented minorities in its history, and boasts an average high school GPA of 3.8, up from 3.73 last year. Here's a look at some other significant numbers:

1,377

Delaware residents, *down slightly from last year's 1,402.*

669

underrepresented minority students, *second only to last year's 720.*

599

Honors students, *second only to the 611 in 2015.*

4,249

first-year students, *down slightly from last year's record number of 4,306.*

1275

average SAT, *up from 1263 last year.*

FUN FACTS

Freshman farthest away from home
Domestic: *Alaska*
International: *Malaysia*

Most popular name:
Male—*Matthew*
Female—*Lauren*

Most popular majors:
*University Studies (648),
Biological Sciences (210)*

Youngest=16
Oldest=25

OTHER FALL 2018 STATS

2,246 international students from 105 countries, *a record.*

7,534 Delaware residents on Newark campus, *the most since fall 2005 (7,586), and up from 7,503 in fall 2017.*

RESEARCH IN MOTION

Next-gen technology finds new applications

The sports bra struggle is real. So real, in fact, that an estimated one in five women abandon exercise if they can't find one that does the job.

Fortunately, proponents of more comfortable and effective 21st century brassiere technology now have reason to rejoice—thanks to UD Prof. Norm Wagner and the “shear-thickening” fluid he invented with Eric Wetzel, EG95, of the Army Research Laboratory.

Sportswear giant Reebok has begun using Wagner's seemingly magical texture-changing gel in its new “PureMove” sports bra, designed to quickly adapt its texture to different intensities of movement. The gel inside the material is liquid and “soft” in low-impact conditions (yoga, Pilates), but stiffens in support of its cargo when there is rapid movement (tennis, running).

Simply put, Reebok says, the work with UD has “upped the ante on industry standards for breast biomechanics.”

In other applications—body armor, space suits—Wagner's development has proved to be critical, inspiring him to start a spinoff company called STF Technologies, which he co-founded with UD alum Richard Dombrowski, EG03. Reebok calls its version of Wagner's invention “Motion Sense Technology.”

Danielle Witek, senior innovation apparel designer for Reebok, says the success of this tech connection has prompted Reebok to build a new franchise around it—extending styles, sizes and making additional garments with the possibility of integrating into footwear.

To help Reebok develop the shape-shifting garment, Wagner called on the biomechanics expertise of Jim Richards, distinguished professor in the Department of Kinesiology and Applied Physiology in UD's College of Health Sciences. Richards and Assistant Prof. Elisa Arch developed a breast biomechanics testing center and gathered the data Wagner would need using 54 motion sensors to record

and observe movement during exercise (as opposed to the industry standard of two to four motion sensors).

It took more than a year to gather enough data for scientists and Reebok product designers to develop the PureMove. But none of it would have happened if Witek hadn't spotted Wagner's research in a science journal one day. She told *Runner's World* magazine that it was her “a-ha” moment, inspiring her to reach out to scientists and begin a three-year effort to develop the new bra.

The innovative material, trademarked as STF-Armor, adds little weight to the fabric without reducing flexibility. Wagner, who is the Robert L. Pigford Chaired Professor of Chemical and Biomolecular Engineering, sees other potential uses for STF technology in inflatable space habitats, protective equipment, firefighting and law enforcement gear, industrial gloves and hazmat suits. The company was recently asked by NASA to provide enhanced astronaut protection for future manned exploration missions, including the Journey to Mars.

But back on Earth, the technology's capabilities seem to have already inspired a sense of wonder. And, as a headline in *InStyle* magazine straightforwardly enthused: “I'm a 34-DD, and This High-Tech Bra Actually Holds My Boobs In Place During Workouts.”

Available in 10 sizes—in any color you like, so long as it's black—the PureMove Bra retails for about \$60. 🐦



COULD TV KILL YOUR SEX DRIVE?

You've probably heard about how people love to "Netflix and chill." Turns out this beloved leisure activity could be chilling more than your mind.

Modern society's tube-adoring couples are increasingly choosing TV over more amorous activities, according to a new study co-authored by UD economics Prof. Adrienne Lucas. Even before time spent on their smartphones is factored in, TV ownership alone is

associated with a 6 percent reduction in the likelihood of having had intimate relations in the past week.

"Our findings demonstrate just one way in which electronic media might be replacing our human relationships," Lucas says. The massive study used data from nearly 4 million people from 80 countries spanning five continents, and while it refrains from concluding that TV is killing our sex lives outright, "it is associated with some sex life morbidity."



Although this would seem to be grim news indeed, the study suggested that TVs may actually prove quite handy for countries hoping to decrease fertility rates.

"If coital frequency is highly responsive to television ownership, this would suggest that humans are willing to substitute electronic media for intimate human companionship," the study says. "Policymakers in countries

that are concerned with high fertility rates may wish to consider subsidies, taxes, information campaigns and other methods to promote television ownership."

The reverse might also work—countries with lower fertility rates could raise taxes on TV sets and benefit from the consequent increase in amorous activities. Of course, getting people to pay more taxes in the pursuit of more sex could prove another challenge altogether. [🐦](#)

INSIDE THE TEENAGE MIND

Ever thought your teenager was a little soft in the brain? Yet somehow hard-headed as well?

Your suspicions are well-founded, according to a research team led by UD biomedical engineers.

The still-developing brains of adolescents are softer than adult brains in outer regions, yet stiffer toward the center, researchers have discovered through non-invasive medical imaging technology, known as magnetic resonance elastography (MRE).

The next step will be to see if these "mechanical" differences in tissue are somehow connected to developmental delays, risk-taking behavior or even psychiatric disorders in teens, says study author and assistant engineering Prof. Curtis Johnson. Other studies have shown that as the growing brain transitions from soft to stiff, it rebuilds in ways that are important for the development of memory, intelligence and decision-making.

While much research has been done on the brains of small



ILLUSTRATION BY JEFFREY C. CHASE

children, adults and elderly adults, there has been little data about teens. The UD study was the first to focus on the mechanical properties of adolescent brains in living study subjects.

"Mechanical properties reveal a lot about very subtle aspects of the brain that are hard to see otherwise," says Johnson. [🐦](#)

WHAT THE DUCK HEARD (QUACK)



PATUXENT WILDLIFE RESEARCH CENTER

Brush back the topmost feathers of a cooperative duck—any duck will do—and you will find two small openings. These are its ears, the places where (presumably) sweet ducky nothings are whispered, and where their fowl friends’ quacky scoldings are heard and heeded.

But what other kinds of stimulating sounds do ducks respond to? And, more crucially, what difference does it make?

Quite a lot, if you happen to be a duck. For years, diving ducks, dolphins and whales were getting snagged and killed by humans’ fishing nets, until about 1998, when the federal government began demanding that nets carry noise “pingers” to warn the critters away. It seemed to work: Deadly “bycatches” of the whales and dolphins plunged.

But the ducks didn’t seem to be getting the message. And so UD

entomology and wildlife ecology Professor Chris Williams and graduate student Kathleen McGrew, ANR19M, decided to ask: “What’s up, duck?”

Gathering an assortment of suitably waddy test subjects, lead investigator

“WHEN HE HEARS THAT TONE, HE KNOWS TO SURFACE AND PECK A TARGET AND HE’LL GET REWARDED FOR THAT.”

—Kathleen McGrew

McGrew knew she first had to get the ducklings to “imprint” on her as a mother-figure. It was an essential step in their subsequent challenge: Train

the ducks to participate in hearing tests, hoping to find the frequencies that could be used to engineer a more effective net-warning device.

“When I was first introduced to this project, I was kind of like, ‘Really? You want me to train ducks to do a complicated task?’” recalls McGrew, whose research was recently featured in *The New York Times*.

But that’s just what she would do. Driving 80 miles to the U.S. Geological Survey’s Patuxent Wildlife Research Center in Laurel, Maryland, the team set up a 4-meter-deep dive tank, planning to get the ducks in a cooperative mood with the inducement of a few juicy mealworms.

Then, just play a tone, and see if the ducks react. Kind of like a hearing test for humans. Except with ducks. Underwater.

“Instead of a person raising their hand to say, ‘Yeah, I heard the tone,’ or pressing a button, we actually train the duck to peck a target,” McGrew says. “When he hears that tone, he knows to surface and peck a target and he’ll get rewarded for that.”

And so it went—on, and on, and on. Over the summer, as imprinting was underway, McGrew worked with each duck for an hour a day, for five or six days each week. It’s tough work.

“But it’s definitely doable,” McGrew says. “It’s very rewarding when the ducks behave correctly. And it’s gratifying to know my results may help the long-term conservation of diving ducks.” 🦆

MULTIBILLION-DOLLAR IMPACT

UD's economic role in the community and the region

The University is a significant driver of the region's economy, spurring \$2.8 billion in economic activity in Delaware and \$4.7 billion throughout the Northeast Corridor, a new report estimates.

The report—commissioned by UD and created by Econsult Solutions

Inc. (ESI)—examined the impact and multiplier effects of the University's annual operations and capital investments, as well as spending by students, visitors and alumni.

ESI found that for every taxpayer dollar the state invests in UD through

annual appropriations, the University produces \$23 in economic activity within the state. What's more, UD contributes innovative research and entrepreneurial ventures to help the state compete in the national and global marketplace, the report says.

ECONOMIC IMPACT BY THE NUMBERS

\$2.8 BILLION SUPPORTING **24,450 JOBS**
THROUGHOUT DELAWARE, INCLUDING...

**\$1.4
BILLION**

IMPACT OF UD AND EMPLOYEES
SPENDING ON GOODS AND
SERVICES, SUPPORTING VENDORS
AND BUSINESSES IN THE STATE

**\$1
BILLION**

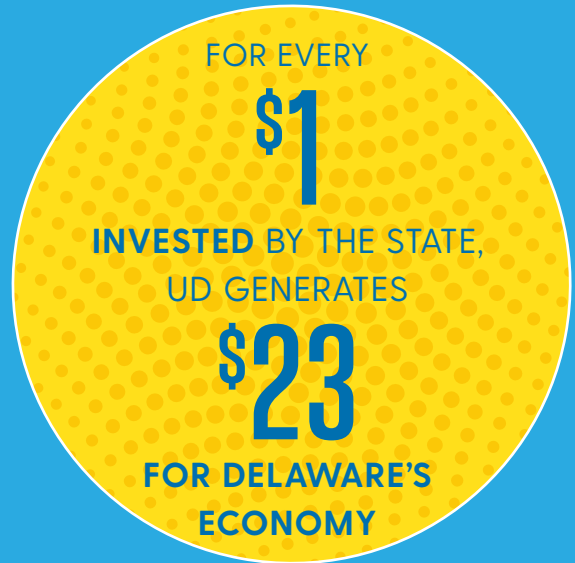
IMPACT OF ALUMNI IN THE
STATE SPENDING THEIR
ADDITIONAL EARNINGS,
THANKS TO THEIR UD DEGREE

**\$227
MILLION**

IMPACT OF STUDENTS, FAMILIES
AND VISITORS (ALMOST 750,000
VISITS IN ALL) SPENDING ON
MEALS, HOTELS AND EVENTS

**\$144
MILLION**

IMPACT OF UD MAINTAINING,
EXPANDING AND ENHANCING
CLASSROOMS, LABORATORIES
AND OTHER FACILITIES



IN THE CITY OF NEWARK,

\$1.2 BILLION SUPPORTING **15,390 JOBS**

IN THE NORTHEAST CORRIDOR,

\$4.7 BILLION SUPPORTING **33,320 JOBS**

For the full report, visit

www.udel.edu/economicimpact

WELCOME TO THE BARN

Student-only tailgating area launched this fall



MARK CAMPBELL

Home football games have gotten a lot more spirited. Unveiled this fall, The Barn, presented by Lyft and Klondike Kate's, is a new, student-only tailgating area that includes live music, food, dancing space, lawn games—and drinks, for those 21 and older. Located between the Bob Hannah baseball stadium and Delaware Stadium, it can house up to 2,000 students and has already impressed the masses. “It’s a really good community feel,” Sarah Shapiro, EHD22, tells *The Review*. “There’s a lot of school spirit here.” 🐦

SAVE THE DATE

Big 10 matchups are on the horizon. The Blue Hens will take on the Nittany Lions in 2023 and 2027, and will face another Big 10 foe even sooner—with a game against Rutgers set for Sept. 18, 2021.

Rutgers and the Blue Hens have a rich history against each other, playing 31 times with the Scarlet Knights leading the series by a slim 15-13-3 margin. The last meeting between the two programs was in 1973.

With conference opponents filling most of the spots on a team’s schedule, openings for non-conference games are few and are often arranged years in advance.

Both Penn State games are scheduled to be played at Beaver Stadium in University Park, Pennsylvania, where Blue Hens head coach Danny Rocco began his collegiate football career. 🐦



MARK CAMPBELL



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[†] You will qualify for \$150 bonus cash rewards if you use your new credit card account to make any combination of Purchase transactions totaling at least \$500 (exclusive of any fees, returns and adjustments) that post to your account within 90 days of the account open date. Limit one (1) bonus cash rewards offer per new account. This one-time promotion is limited to new customers opening an account in response to this offer. Other advertised promotional bonus cash rewards offers can vary from this promotion and may not be substituted. Allow 8-12 weeks from qualifying for the bonus cash rewards to post to your rewards balance.

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THE SHAPE-SHIFTER

INSIDE THE WORLD OF GARY CHANG

BY ERIC RUTH, AS93

Just for a moment, let your thoughts roam. Imagine a desk inside a room, with a chair tucked beneath. You sit down, open your laptop, and get to work, so focused that you suddenly realize it's well past bedtime.

In our everyday realities, we would probably now leave our cozy office and shuffle off with a yawn to our bedroom down the hall. But in Prof. Gary Chang's imagined world, there's no longer any reason to go anywhere at all.

With a push of a button—or even the wave of a hand—the desk changes shape into a bed, and our chair reassembles into a nightstand. The walls themselves flex and morph, reconfiguring themselves so that windows and doors disappear, leaving us in sleepy seclusion for the night.

Welcome to the avant-garde spaces of Chang's "HyperCell" architectural theories, an effort to combine the seemingly incompatible capabilities of technology and nature to produce objects that can mold themselves into new structures—like a living organism combined with a LEGO set. Currently confined to the pages of his doctoral dissertation and his artful website, www.archgary.com, Chang's research seeks to nudge forward the decades-old architectural philosophy that man-made objects should mimic nature in how they are constructed and in the ways they can function.

In this land of "biomimetic interactive architecture," our walls, doors and furniture would all be composed of identical building-block "cells," which in turn could be mechanically arranged and rearranged in response to our needs—or even our movements.

"When you need a door, you just walk toward the wall, and a door appears. When you need a chair, you just sit down, and a chair will be formed beneath you," says Chang, assistant professor of art and design.

Philosophically, HyperCell seeks to reflect nature and ultimately integrate its evolutionary principles deeper into our existence: As with nature, simple elements would serve as building blocks of complex creations. As with nature, his architecture relies on "cells" that would communicate between each other and with their environment.

It all fits nicely with the work at UD's Interactive Design studio (IxD), where Chang and other professors are searching for multidisciplinary ways to teach students how to explore relationships between people and technology.

"I believe you have to have these dreams to move forward," he says. "And when the technology has developed to a certain level, probably we will have the chance to make this happen." 🐦



A man with glasses and a goatee, wearing a blue jacket over a black t-shirt and black pants, is crouching on a grey surface. He is smiling and looking towards the camera. Behind him is a large, green, 3D architectural model of a cityscape with various building heights and shapes. The background is a light grey color.

“ARCHITECTURE SHOULD REACT
TO ENVIRONMENTAL FACTORS,
JUST LIKE A LIVING CREATURE.”

— GARY CHANG

KATHY F. ATKINSON

Prof. Gary Chang believes technology has given designers new opportunities to reimagine architecture.

WHAT'S THE BUZZ?

UD research into drone aircraft gains altitude



PHOTOS BY KATHY F. ATKINSON AND EWAN KRAPE

is gaining altitude under the unrelenting guidance of forward-leaning scholars from seemingly divergent fields, each seeking a different perspective on the roles these marvels could (or should) play in our tech-blessed, conflict-tangled world.

By the side of a grassy field edging the Wilmington Campus, UD's Professional and Continuing Studies instructors teach the rule-bound minutia of becoming an FAA-certified drone pilot. Over flat stretches of cropland in downstate Delaware, a professor coaxes farmers to try these new-fangled contraptions as crop monitors. And in the labs where grad students endlessly toil, experimenters even seek to enlist drones as allies in war.

"Research with drones is well underway at UD. And they are bound to become an even bigger part of research here," says mechanical engineering Prof. Herbert G. Tanner, who has spent the last several years engineering systems that will allow flocks of tiny, radiation-sniffing drones to inspect trucks suspected of carrying nuclear terror into the country.

Across his lab, just above the miniaturized town that fellow Prof. Andreas Malikopoulos has constructed on the floor, Tanner's drones are being tested as traffic monitors in anticipation of the day—probably not too far off—when driverless cars fill the streets. And over at the Department of Chemical and Biomolecular Engineering, Prof. Bingjun



BY ERIC RUTH, AS93

THERE is a place just over the horizon that's coming faintly into view, a hazy landscape hinting at promise and potential, but still holding shadows of uncertainty.

If you get up high enough and look hard enough, you can see just enough to realize: A new day is coming fast. When this dawn arrives, it will be filled with the soft whirl of rotary wings, the purposeful hum of electric motors and a still-startling sight overhead: Tiny unmanned aircrafts, zipping over our heads, hovering above rows of corn or even converging on enemies in swarms; seeking to protect us, help us and lift us to a future we only half-imagine.

All across UD, research into drone aircraft



Xu is exploring ways to power next-generation Air Force drones with hydrogen-powered fuel cells.

For mechanical engineering Prof. Guoquan Huang, the focus is on keeping drones' enemies at bay—by designing ways to counter malicious cyberattacks against them. And over at the College of Agriculture and Natural Resources, Prof. Jarrod Miller is fighting a different kind of enemy—the weeds and pests and faltering crops that threaten Delaware's farm economy.

"Right now, adoption is very low," says Miller, who spends many bug-

swatting summer days demonstrating affordable drone systems to Delaware's farmers. "It's low because no one has been showing them the value. And that's part of my plan."

With eyes in the sky, farmers can see what they cannot from the ground, survey acre after acre to guard against destruction, anticipate crop yields week by week. Seeing the utility a drone can give, Delaware's police, environmental officers and transportation officials are also turning to UD's newest continuing education course for instruction.

"It's a smash hit for a nontraditional

program," says Vic Wang, program coordinator, who saw the initial offering of the two-day course quickly fill to capacity in March, and has already seen 72 graduates get their wings.

"We anticipate that the market for jobs using drones will continue to increase and diversify," says Steven M. Kendus, marketing and communications manager with Professional and Continuing Studies.

"Drones are certainly here to stay." 🐦

WHAT WILL TOMORROW BRING?



20 QUESTIONS

WITH BLUE HEN EXPERTS
ON THE FUTURE OF THE WORLD



1 HOW WILL TECHNOLOGY RESHAPE BANKS AND AFFECT CONSUMERS?

Big data is having a fundamental impact on every functional area of the financial services industry, including investment, operations and consumer analytics. The technology groups of many U.S. banks are now even larger than major technology companies because that's the future of banking: How do they efficiently and effectively harness value from big data and technology in order to provide better products and services to customers? It's a race to answer this question first—and answer it best.

For consumers, this means all of our financial transactions will eventually be customized and tailored to our many needs. In five to 10 years, you may no longer need your credit card at the Walmart checkout line—just imagine a scanner that links facial recognition software to your checking account. Whether it's paying for groceries or borrowing a home loan, we'll be living in a more interconnected, technologic world.



Bintong Chen is professor of operations management and faculty director of UD's Ph.D. program in financial services analytics, the only program of its kind in the world.



2 WHAT EMPLOYMENT SKILLS WILL BE MOST VALUED IN THE FUTURE?

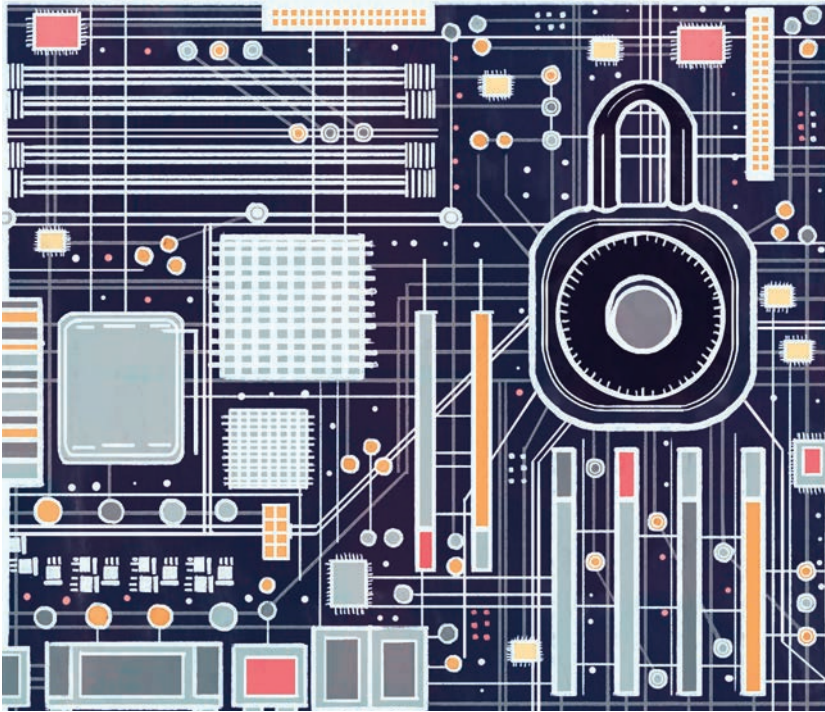
In the last few years, the World Economic Forum and consulting firms like McKinsey & Co and PricewaterhouseCoopers have asked this very question, with a focus on disruptive technologies, because employees are increasingly expected to have digital competencies, research abilities and advanced technical knowledge. Yet some of the most critical job skills of the future are also ones that have remained valued in the past: The ability to take initiative, think critically and creatively, communicate effectively and adapt to meet the demands of a rapidly changing world. One of the consistent themes we're seeing is the importance of continuous learning. Not only does it build skills and credentials, it helps employees revamp their expertise to stay relevant. This means students who actively engage in their academic, professional and personal development at UD will set the foundation for lifelong learning and position themselves for future success.



Nathan Elton is the director of UD's Career Services Center.



“JUST IMAGINE A SCANNER THAT LINKS FACIAL RECOGNITION SOFTWARE TO YOUR CHECKING ACCOUNT.”



3 WILL THE NEXT WORLD WAR BE A CYBERWAR?

When I look around the world today—at Russia’s election interference, at China’s theft of corporate secrets, at the shadowy groups of anonymous hackers intent on (and succeeding in) electronic mayhem—I am inclined to conclude that the next World War is already underway. But it’s not the kind of war we might imagine.

The tanks and bombs of the last great global war have now given way to weapons of cyberwarfare, which have already damaged the foundations of Western democracy and pose fundamental risks to our economy and our way of life. Those vulnerabilities will only heighten with time—unless somehow the United States finally recognizes its peril and counters its enemies.

Part of the difficulty in defending against this new form of war lies in its asymmetric nature. The U.S. is huge and technologically advanced—and bears all the vulnerabilities of that complex interdependent infrastructure. Yet some of our most determined enemies, waging battle in small groups armed only with laptops, have little to lose and plenty of ways to hide.

These anonymous warriors now stand as a bigger and more likely threat than any large-scale, head-on cyber-attack from a larger player like Russia or China, which aren’t likely to risk our inevitable retaliation. In a matter of moments, though, a small-but-determined foe could target the satellites that are crucial to a large society’s communications or even program a drone aircraft to deliver devastating explosive attacks. Our railways, our power plants, our water systems and even our currency all increasingly depend on vulnerable electronic networks.

Even as future attacks against our society are launched, there may never be a day when it can be said that World War III has officially begun. And there may be no day when we can credibly say we’ve finally defeated all of our enemies. But of this I have no doubt: The time to fight this quiet war is now.



Dave DeWalt, EG86, 15H, is former CEO of FireEye and McAfee cybersecurity firms. He is now leading a dedicated cybersecurity investment firm he founded, NightDragon Security.

4

WILL THE U.S. DOLLAR STILL HOLD VALUE?

For the time being, the U.S. dollar (USD) should remain the dominant reserve currency in the world. Over 60 percent of the money held in global banks are in USD; 85 percent of foreign exchange involves the USD; and almost 40 percent of worldwide debt is denominated in USD. The United States has achieved this status through a strong economy, low inflation and the most liquid financial markets in the world, creating a high perception of safety in times of financial crisis and serving as the world's lender of last resort.

So where are we going? The main competitors for dominant world currency are the euro and the Chinese yuan. With Brexit coming up, and as Greece and a number of other EU countries continue to struggle economically—in part because they have ceded monetary policy to the EU—it's hard to believe the euro is on track to replace the USD as the world's leading reserve currency. The yuan, on the other hand, may get there.

China has stated its aspirations in this area and, long term, will be a significant contender for global economic leadership. China is a formidable competitor to the U.S., but global economic dominance will not come easy or quick, as China will need to allow the value of the yuan to be determined by market forces, move toward easing restrictions on the flow of capital in and out of the country, and learn how to deal with the business cycle without manipulating the value of its currency. In addition, it remains to be seen how far an economy can go with limited political freedom.



But I'm optimistic. Over our history, America has proven itself to be highly resilient and adaptable, and I believe we will succeed in keeping the U.S. a desirable place to do business, and ensuring the USD remains the world's currency of choice for business.



John Stocker is an assistant professor of finance and associate chair of UD's Department of Finance.



MORE THAN 85% OF CURRENT FOREIGN EXCHANGE INVOLVES THE U.S. DOLLAR.



5 WILL ELECTRONIC DEVICES MAKE OUR CHILDREN SMARTER?

Ask yourself that question, but substitute the word “television” for electronic devices like tablets and smartphones. Now, what answer would you give? There’s solid research to show that children learn from shows like *Sesame Street* and *Mister Rogers Neighborhood*, and that’s because these programs capitalize on the three key scientific learning principles: active, “minds-on” engagement; meaningful, socially interactive experiences; and learning that is guided by a specific goal.

The same principles apply for electronic applications. In 2013, some 58 percent of parents in the United States reported that they had downloaded apps for their children. In fact, the preschool/toddler category was the most popular category of apps in the app store, accounting for 72 percent of the top paid apps.

But not all screen interactions are created equal. There’s an old computer programming expression, “garbage in, garbage out,” and the same is true for our minds—especially our youngest minds. Apps that creatively combine principles from the science of learning could help our children become smarter. In moderation, of course.



Roberta Golinkoff is the Unidel H. Rodney Sharp Chair and Professor of Education, whose research explores language development and the benefits of play. Her recent book, *Becoming Brilliant*, examines the skills children (and adults) need to succeed in the 21st century.

6 WHAT’S THE FUTURE OF PUBLIC DISCOURSE? WILL WE EVER FIND A WAY TO RESPECTFULLY DISAGREE?

The current national conversation feels too rapid, too aggressive and far too negative to continue. I sometimes wonder if it will make us shut down completely, if we’ll turn away from news and current events, and from our role as public citizens. If you look at discourse through the lens of social media, we’re becoming more passive and disengaged, posting prayer hands on a tragedy update and thinking we’ve done our job. Online communication also leaves little room for nuance, as our texts exist (quite literally) in a world of black and white.

But I’m hopeful. I think we are beginning to realize that we don’t control social media; social media controls us. And because of its overwhelming negative use in the current political climate, that realization is happening faster than we may think. My hope for the future is that we find a greater balance between digital communications and one-on-one, face-to-face interactions. Only then do I see us ever finding a way to respectfully disagree.

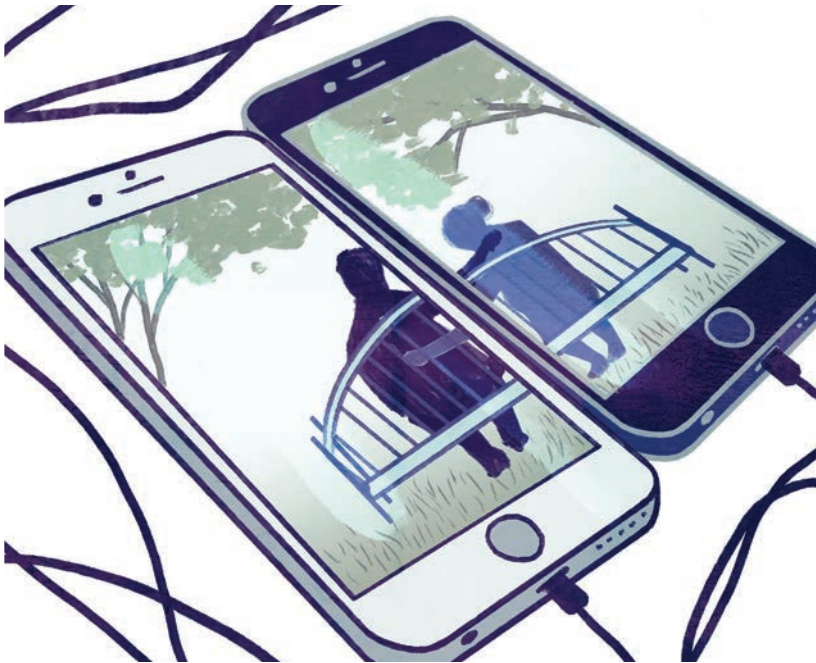


Nancy Karibjanian, AS80, is director of UD’s Center for Political Communication.



“THINK ABOUT FATHERS ON THE PLAYGROUND, LOOKING INTO THEIR PHONE, OR NURSING MOTHERS TEXTING AND SCROLLING THROUGH FACEBOOK. DEVICES ARE MAKING IT EASIER TO AVOID HUMAN INTERACTION.”

—SCOTT CAPLAN



7 HOW WILL TECHNOLOGY CHANGE OUR RELATIONSHIPS?

Our problems will become magnified, but that doesn't necessarily mean our relationships have to suffer. The big fear is that we will replace face-to-face interactions with digital ones, that we will lose our ability to live in the moment—while driving, parenting or just having lunch with a friend. There's the risk that we will tailor our lives to impress the people looking at our online presence rather than the people we're with "IRL" [in real life]. If we're all staring into our phones at night, not talking, we may not have meaningful relationships 20 years from now.

Then again, technological benefits are vast. We now have access to international social networks where we can share knowledge, information and expertise; where we can offer support and feel less isolated. All of the downsides have upsides. Facebook exploded only 13 years ago. The iPhone is 11 years old. Who can say where we'll be a decade from now? Technology has already changed our lives so dramatically, and our world seems to be changing more rapidly, as a result. We're communicating faster, in unprecedented ways, and that brings both the good and bad. It's probably more fun to talk about the dangers, but then we'd miss out on all the benefits, too.



Scott Caplan, AS93, 95M, is an associate professor of communication at UD. His most recent book, *The Changing Face of Problematic Internet Use: An Interpersonal Approach*, examines how our online behavior affects our personal lives and social interactions.

8 HOW WILL PEOPLE GET AROUND IN THE SMART CITIES OF THE FUTURE?

We will fundamentally transform the way we use and access transportation so that we can conserve energy and simultaneously increase our access to goods and services. Connected and automated vehicles, which adjust to driving conditions with little to no human input, could help to improve the social, energy, safety and environmental well-being of our communities and the people who live in them. On a technical front, we will use advanced control technologies and big data from vehicles and infrastructure to develop connected, automated vehicles that work together to eliminate stop-and-go driving and reduce traffic congestion. Socially, as transportation systems become more efficient, people might actually change their behavior and spend more time traveling, and those impacts must be studied. Institutionally, we will have to investigate public acceptance levels, knowledge and planning capacity of these vehicles in order to optimize their safe use.



Andreas Malikopoulos is the Terri Connor Kelly and John Kelly Career Development Professor of Mechanical Engineering whose Information and Decision Science Lab at UD includes a mini "smart city."



9

WHAT MODERN-DAY ARTIFACTS WILL PEOPLE EXPLORE IN MUSEUMS OF THE FUTURE?

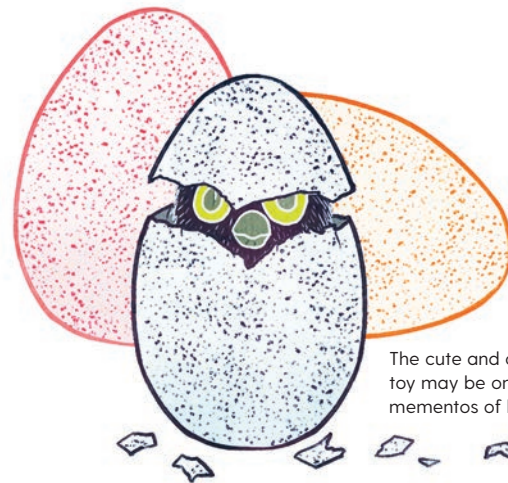
For much of the 19th and 20th centuries, history museums collected artifacts with a personal connection to famous people: George Washington’s dentures or (one of my favorites) Thomas Edison’s last breath, supposedly captured in a test tube for Henry Ford and displayed at the Michigan museum Ford founded. It can be tempting to poke fun at this kind of collecting, but it stemmed from a belief in artifacts’ power to evoke the past, an idea we still hold to some extent. The 9/11 Memorial Museum in New York City, for instance, testifies powerfully to our continued need to encounter objects touched by history.

As a museum-worthy collectable of modern times, I propose a more lighthearted artifact: the Hatchimal. Though intended for children, toys usually reveal the beliefs of the adults who purchase them. And the Hatchimal, a cute and cuddly science experiment, encapsulates our current obsession with artificial intelligence (you can train it to speak), the sciences (STEM) and the “big reveal.” The toy comes in a bird-like shell and—surprise!—20 minutes later, it hatches to display what color and type of Hatchimal is hidden inside. I see this staged disclosure as part of our larger cultural obsession with the body makeovers of the *Biggest Loser*, the splendid concoctions of

the Food Network, and the many home renovations on HDTV. The hatchimal teaches children that not only is technology fun (and adorable), but it inculcates adults’ faith in technology to transform our bodies, our food, our dwellings and our natural world. Not bad for a tiny dragon in a fake shell.



Jennifer Van Horn is an assistant professor of art history and history at UD, specializing in the fields of early American art and material culture.



The cute and cuddly Hatchimal toy may be one of the best mementos of life in 2018.

10

WHAT’S THE NEXT WAVE IN AMERICAN THEATRE?

There are two very different answers depending on the venue for which the work is being created.

On Broadway, we’re seeing more commercial productions like *King Kong*, *Pretty Woman* or musicals based on the lives of Tina Turner and Donna Summers—shows that have an escapist quality to them. Off-Broadway and in regional theatre, there’s a push toward deeper, more profound storytelling. You’ll find plays about racial injustice [*The Scottsboro Boys*], 9/11 [*Come from Away*] and teen suicide [*Dear Evan Hanson*]. Of course, those shows ultimately transferred to Broadway, but they needed to prove themselves commercially successful

elsewhere first. *Hamilton* is another example, having started Off-Broadway at The Public. Its success comes not just from exceptional storytelling, but by introducing audiences to the power of diversity and [race- and gender-] blind casting.

Fortunately for theatregoers, producers are always looking for that one hit show, and the competition to deliver is fierce—which makes for exciting times and for what I hope will be an extraordinary future.



Susan Stroman, AS76, O5H, is a five-time Tony Award-winning choreographer and director.



11

WILL THE MIDDLE CLASS CEASE TO EXIST?

Here's what we know: The unemployment rate is low, but wage growth hasn't kept up with increases in the cost of living. Globalization is accelerating. And, though automation and artificial intelligence likely won't cause a significant net decrease in jobs, there will be specific sectors and communities disproportionately harmed by technological changes, and some of the jobs created will have lower wages than the jobs destroyed.

The question shouldn't be whether a statistical middle class will continue to exist, but whether working Americans in the decades ahead will be able to earn enough to support their families. The answer is that we can have a thriving middle class if we, as a country, make choices that prioritize working Americans.

To start, we need a tax code that rewards work. We need investments in infrastructure and education to spur long-term economic growth. We need to tackle increasing corporate concentration, which ends up reducing competition and hurting not just consumers but employees who have fewer options for employment. And, we need to return power to workers by expanding collective bargaining and eliminating corporate practices like noncompete clauses that serve the sole purpose of keeping wages low.



Stefanie Feldman is director of policy for the Biden Institute and served in the Obama-Biden White House for five years, most recently as deputy director for domestic and economic policy to Vice President Joseph Biden, AS65, 04H.

12

WILL BRICK-AND-MORTAR STORES EXIST IN THE FUTURE, OR WILL WE DO ALL OUR SHOPPING ONLINE?

It's doubtful that there will come a time where everything is purchased online, though it may happen.

The trend is definitely moving in a new direction, as we've recently seen stores like Macy's, JCPenney, Sears, Kmart and Toys R Us go out of business or declare bankruptcy. The reason is not only that consumers want the convenience of online shopping, but also that these retailers failed to meet changing customer demands and effectively differentiate themselves from the competition.

In the future, this could mean lower prices, faster service and extreme convenience for consumers.

While online sales usually have lower overhead costs, in-store locations speak to a brand's presence and prominence, and enable immediate or impulse purchases. They also help build relationships between salespeople and consumers, like the beauty store Sephora, where trained employees can offer make-up tutorials or help people find the right products for their skin tone.

To be successful, retailers must offer a unique value proposition—whether it be low-cost and convenience (e.g., Costco) or enhanced reputation and shopping experiences (e.g., Nike or Zara). Overall, the businesses that differentiate themselves in consumer-friendly ways will likely be the ones to remain open for many years to come.



Julia Bayuk is an assistant professor of marketing whose research examines consumer behavior.

13

WILL OUR BEACHES BE UNDER WATER?

Eventually, yes—especially here in the mid-Atlantic. As the lowest lying state in the nation with over 30 miles of Atlantic Ocean beaches and 100 miles of Delaware Bay shore, Delaware is naturally vulnerable to coastal storms and rising seas. Almost one-fifth of Delaware lies in the 100-year floodplain and one-third of the First State is covered by wetlands. Sea levels have risen about 13 inches along the Delaware coast in the past century, and by the end of this century, 8 to 11 percent of the state could be under water, according to scientific estimates. Sea-level rise will affect everyone—not just communities preparing for storms, but what we pay in taxes; our multi-billion-dollar tourism and agriculture economy; where and how we build our homes and highways; the places we work; our food and water; the wildlife around us; and the recreation services we enjoy.

The University is tackling this environmental issue from multiple perspectives, from its Delaware Environmental Observing System (DEOS) and Coastal Flood Monitoring System, which provide an early warning system to the Delaware community, to partnerships with coastal cities on infrastructure development and action planning. But there is always more work to do. The East Coast is a world hotspot due to rising sea levels and ground subsidence, and higher seas will only compound the impacts of future storms.



Gerald Kauffman directs UD's Water Resources Center and is among several UD representatives who serve on the State of Delaware Climate Change Vulnerability Steering Committee.



14

HOW WILL THE DISASTERS OF TOMORROW DIFFER FROM THE ONES TODAY?

Many of the disasters of the future will arise from familiar kinds of hazards, but they will appear in new places or impact people in new ways. Maybe a region will become more densely populated, further straining its resources. Perhaps deferred maintenance will compromise a town's infrastructure. Climate change, population migration and economic transformation will all play an increasing role in "mundane" hazards that could morph into greater calamities. The distribution of destruction will also vary. We already know that low-income communities face greater strains and challenges following disaster: Their homes may be in poorer condition; they may lack health insurance; their financial resources may be depleted.

Of course, there is always the possibility of a spectacular series of disasters that will affect everyone, like the 2011 Tōhoku earthquake, tsunami and nuclear meltdown; or multiple infrastructure collapses; or cascading failures due to increasing interconnection. Sea-level rise could damage not just coasts, but entire nations. As the Earth warms, diseases and pests could move into new areas.

Fortunately, the scientific community studies disasters as complex, interwoven problems to reevaluate how the social, built and natural environments interconnect. As we grapple with these evolving threats, UD's Disaster Research Center is at the forefront of developing more effective plans and policies for disaster mitigation, preparedness, response and recovery.



James Kendra and **Tricia Wachtendorf** are co-directors of UD's Disaster Research Center, the first such center in the world devoted to the social scientific study of disasters.

15

WE'VE NOW VISITED ALL THE PLANETS. WHERE DO WE GO NEXT?

As we learn more about the nature of life on Earth, and how it began, we are close to answering the eternal question of “Are we alone in the universe?” We’ve already identified more than 3,800 exoplanets, which orbit other stars and suggest an infinite number of possibilities for life. In the future, I imagine we will start landing on more bodies looking for evidence of life in the solar system, bodies that we know either have liquid water or have had liquid water in the past. Liquid water, access to organic carbon and an energy source are, in short, everything we think is required for life to originate.

The future of space exploration will likely include satellites of different planets, like Enceladus (a moon of Saturn, where geysers spew water from a subsurface ocean into space) or Europa (an ocean moon of Jupiter and the setting of science fiction novel *2010: Odyssey Two*). We already know that Europa’s ocean contains more water than can be found on Earth, as well as likely hydrothermal vents, which we believe is the likely location for the origin of life on Earth. Fifty years from now, it is quite possible we will have submarines to explore these oceanic worlds. NASA is already working on missions (and helicopters) to fly on Mars and on Saturn’s largest moon, Titan, described as “one of the most Earth-like worlds we have found to date.”

We’re playing the long game. Looking for life in the solar system answers bigger questions about our



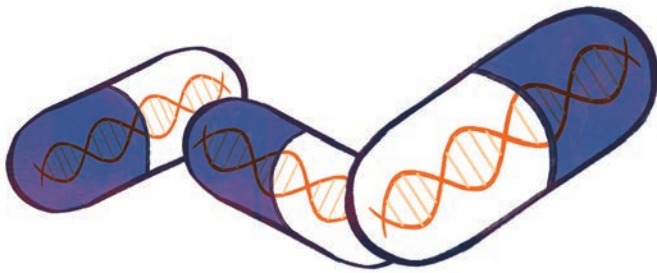
universe and our small space within it. And that is what makes space exploration so fascinating—we never really know what we are going to find.



Luther Beegle, AS90, is a principal scientist at NASA’s Jet Propulsion Laboratory and principal investigator of the SHERLOC instrument on the Mars 2020 rover project.



“IN THE FUTURE, I IMAGINE WE WILL START LANDING ON MORE BODIES LOOKING FOR EVIDENCE OF LIFE IN THE SOLAR SYSTEM.”



16

AS MEDICINES BECOME MORE COMPLEX AND PERSONALIZED, CAN THEY ALSO BECOME MORE ACCESSIBLE?

That's certainly the goal of NIIMBL, the National Institute for Innovation in Manufacturing Biopharmaceuticals, based at UD, which aims to bring groundbreaking but difficult-to-manufacture medicines to market faster and more affordably.

Experts believe that biopharmaceuticals—medicines that are produced by living sources such as cells rather than “constructed” using chemical processes—hold the potential for greatly reducing, or even eradicating, major health ailments. Already, biopharmaceutical medicines have resulted in a 25 percent decline in death rates for certain cancers, brought the hepatitis C cure rates to more than 90 percent, and alleviated patient suffering, from arthritis to Crohn's Disease, according to the Pharmaceutical Research and Manufacturers of America (PhRMA).

On average, the timeline from drug development through FDA approval lasts 10-15 years, and it costs around \$2.6 billion to bring a new medicine to the market. PhRMA estimates that there are currently around 7,000 biopharmaceuticals in global development, and 70 percent have potential to be first-in-class treatments. A significant portion of the challenge to enhancing patient access to medicines is related to the manufacturing of these medicines.

Here at NIIMBL, we are encouraging companies to work together and to work collaboratively with academics and other scientists to innovate manufacturing technologies and train a relevant workforce to help bring that future into focus much more quickly. We believe that the collaborative aspect is essential to solving today's biomanufacturing challenges and creating an environment where this industry can thrive, particularly in the U.S.



Kelvin Lee is the Gore Professor of Chemical and Biomolecular Engineering and director of NIIMBL.

17

WHAT'S THE FUTURE OF HEALTH INSURANCE?

For more than 50 years, Delaware and the U.S. have had the same cobbled-together health insurance system, with about 60 percent of residents getting their coverage through employers, one-third through Medicare or Medicaid, and the rest through other means (including those who remain uninsured, either by choice or not).

In 2014, Delaware had the third-highest per-capita healthcare spending in the nation (\$10,254, compared to the U.S. average of \$8,045), but ranked 30th in the country for overall health. That's why we're working to move from a system that pays for healthcare based on the volume of care, regardless of outcomes, to a value-based model that rewards providers for maintaining or improving the health of their patients.

The path forward includes transforming how care is paid for so that we can slow the growth of spending, improve health outcomes, enhance patient experience and make healthcare more affordable for all.



Kara Odom Walker, EG99, is a board-certified family physician and secretary of the Delaware Department of Health and Social Services.

IN 2014, DELAWARE HAD THE THIRD-HIGHEST PER CAPITA HEALTHCARE SPENDING IN THE NATION, BUT RANKED 30TH IN THE COUNTRY FOR OVERALL HEALTH.





“WE ARE ENGINEERING NANOPARTICLES TO DELIVER GENE REGULATORY AGENTS TO CANCER CELLS.”



18

HOW WILL OUR DIET EVOLVE?

Fast food has become part of our life, and there's little chance that will change in the foreseeable future. We're moving away from “do it yourself” to “bring it to me.” As an increasingly fast-paced culture, we're all relying more on packaged, prepared foods, with statistics showing that middle- and upper-income families are consuming these meals at the same rate as low-income families. The main difference is in quality.

While some of us have access to fresh, affordable, organic options, that's not the case for everyone. Refined foods—which have been processed so that they are no longer in their natural state—are often the most attractive option for families with limited time and money. So the question is really: How can folks from all segments of society benefit from healthy options? Here at UD, we are researching nutrition policy and community-based approaches that will provide us with an answer.



Allison Karpyn is senior associate director in the Center for Research in Education and Social Policy whose newest book, *Food and Public Health: A Practical Introduction*, examines the global food system.

19

WILL WE EVER FIND A CURE FOR CANCER?

All the evidence points to a future where cancer will become more manageable and handled more like a chronic illness than an incurable disease. Our understanding of its causes are continuing to improve, so future prevention efforts seem sure to improve. Treatments for cancer are also improving, and developing technologies aim to provide personalized care or high-precision therapy that could have a substantial impact.

Some of the most promising treatments underway are designed to regulate the expression of the genes that drive cancer growth, something being tackled in my lab, where we are engineering nanoparticles to deliver gene regulatory agents to cancer cells. Doctors and biomedical scientists are also excited about immunotherapy, which uses drugs and tools to train the body's immune system to recognize and attack cancer cells. Treatments based on immunotherapy and gene regulation may help to prevent metastasis, the spread of cancer to distant sites. This is critically important, because the majority of cancer-related deaths are caused by metastatic disease, not primary tumors. Accordingly, gene regulation and immunotherapy could play big roles in keeping cancer under control, thereby extending patient survival.



Emily Day is an assistant professor of biomedical engineering.



HOW DOES AN INSTITUTION LIKE THE
UNIVERSITY OF DELAWARE
REMAIN RELEVANT
IN AN UNPREDICTABLE FUTURE?

Once upon a time, the best way to learn about organic chemistry or Renaissance art or Maslow's hierarchy of needs was to sit in a college classroom and let a professor explain it to you. And employers hired you because you knew useful stuff.

That was B.I.—Before the Internet ... before virtually every bit of human knowledge was freely available to everyone everywhere all the time, accessible from the always-connected, constantly updated little computers we carry in our pockets.

So what's the point of college now? How do you prepare for a career in tomorrow's world, where four out of five jobs haven't even been invented yet? And how does an institution like the University

of Delaware build on a 275-year history to continue being relevant in an unpredictable future?

"UD has always been an excellent place to teach students how to learn and grow as human beings," says President Dennis Assanis. "The real essence of a UD education—the critical thinking, the communication skills, the teamwork—that won't ever change. In fact, it's going to be even more critical in the future."

That's because we live in a world of abundant information—an overwhelming amount of it, in fact, and it's growing exponentially every second. Just a few years ago, global Internet traffic hit 1 zettabyte a year—that's a trillion gigabytes of data zooming around the world's networks. By next year, we'll double



"THE REAL ESSENCE OF A UD EDUCATION—THE CRITICAL THINKING, THE COMMUNICATION SKILLS, THE TEAMWORK—THAT WON'T EVER CHANGE. IN FACT, IT'S GOING TO BE EVEN MORE CRITICAL IN THE FUTURE."

—UD PRESIDENT DENNIS ASSANIS

that amount. And a few years later, we'll double it again.

"So the question is, 'How do we as a university add value to that information?'" asks Charlie Riordan, vice president for research, scholarship and innovation. "We have to teach students how to navigate and succeed in an information-rich world."

A PhD chemist by education, Riordan says a liberal arts education has long been—and will continue to be—an excellent financial investment and one of the best ways to ensure a stable career. "Education is the best antidote to unemployment," Riordan explains, as those with bachelor's or advanced degrees always have lower unemployment rates than those with a high school education. "Yes, choosing

a major in college is important, but any discipline can provide a very fertile framework for acquiring a lifetime of skills, like how to do research and work with people with different backgrounds and perspectives," he adds.

Experts say today's students will change jobs eight to 10 times by age 38, with even more changes as people live longer and extend their working lives. "That means it's going to be hard to maintain a career, and you'll have to work at acquiring new skills," says Ed Ratledge, director of UD's Center for Applied Demography and Survey Research.

Workers will need more "in the moment" education—think YouTube videos to learn computer coding or smartphone

THE CHANGING DEMOGRAPHICS OF HIGHER EDUCATION

The demographic factors that will shape the University of Delaware over the next few decades are already in the pipeline: A smaller, more diverse generation of students with new ideas about education, technology, the economy and more.

"Age distribution drives everything," says Ed Ratledge, director of UD's Center for Applied Demography and Survey Research. "All universities will be facing competition for the fewer number of students who are out there, and the university population will become more diverse because the whole population is becoming more diverse."

The youngest members of the Millennial Generation—those born roughly between 1982 and 2000—are now first-year students at UD, he adds. Compared to previous generations, the older millennials are having fewer children and doing so later in life.

Those children—about 74 million of them known as Generation Z, the youngest of whom are in preschool now—will be the most diverse in modern American

history. They're highly aware of the issue of equality, from sexual orientation to gender identity, and they'll bring that mindset to UD over the next 15 years.

That means diversity and inclusion will continue to be important priorities for UD in preparing students to succeed in the future, says Charlie Riordan, vice president of research, scholarship and innovation. "We're only going to be an excellent university if we bring diverse groups to bear on the challenges of our world," Riordan said.

Generation Z also expects to be constantly connected to each other and the world through technology, which will influence how they communicate and learn. The older members of the generation grew up in the wake of the 2008 Great Recession, so they're concerned about financial security and will value education that connects project-based knowledge with hands-on experience.

**EXPERTS SAY
TODAY'S
STUDENTS WILL
CHANGE JOBS
EIGHT TO 10
TIMES BY AGE 38.**



apps to pick up a new language for an overseas opportunity—and technology will continue to make education more accessible and interactive. Forget the old “sage on a stage” lecture and imagine collaborating online with other students around the world. That means lifelong-learning skills will be just as valuable as subject-matter expertise.

That’s not to discount deep knowledge in a particular domain. Experts say workers will still need experience and fluency in their specialty, but they also have to know how to put that knowledge into a broader context and use it to get things done. What’s more, every worker can benefit from developing an entrepreneurial mindset—one that incorporates vision, perseverance, creative problem-solving and the ability to see failure as an opportunity to learn and grow.

“Entrepreneurship is about far more than just starting a business,” says Dan Freeman, director of UD’s Horn Entrepreneurship program. “It’s about recognizing the problems and limitless opportunities that are all around us, including those being created by rapid change. It’s about developing and using an entrepreneurial mindset and skillset to create, deliver and capture value from new ideas. It’s about the innovation imperative that all organizations face. And it’s about being proactive by making the future instead of simply trying to cope with it.”

Students need these flexible, adaptive skills because they’ll face some big challenges ahead. “As a society, we only have

ONE OF THE PRIMARY MISSIONS OF A MAJOR RESEARCH UNIVERSITY LIKE UD IS TO BE AN INTELLECTUAL INTERSECTION—A HUB OF DISCOVERY THAT COMBINES AND AMPLIFIES THE WORK OF MULTIPLE DISCIPLINES. THE BIG CHALLENGES ARE INCREDIBLY COMPLEX, SO THEY HAVE TO BE ADDRESSED FROM MANY DIFFERENT ANGLES.

the really hard problems left to solve,” Riordan says. “Those solutions will require collaborative, interdisciplinary teams.”

For example, futurists say technological advances will spur more human-machine partnerships in every aspect of life. Artificial intelligence will help improve our healthcare and secure cyberspace; drones will deliver food and medicine in hard-to-reach communities; augmented- and virtual-reality tools will help us manage dangerous environments. Yet, how do we make sure those advances benefit society as a whole? Who will be legally or morally responsible for the decisions that machines

make? How should we redesign streets and sidewalks to make them more attractive to people, rather than just accommodate new autonomous vehicles? What public policies will make “smart cities” not just more connected but also more resilient and more livable? Those questions—and countless others—will require the insights of philosophers, educators, historians, sociologists, anthropologists and more.

Universities are uniquely suited to answer these types of questions, Assanis says. “One of the primary missions of a major research university like UD is to be an intellectual intersection—a hub of discovery that combines and amplifies the work of multiple disciplines. The big challenges are incredibly complex, so they have to be addressed from many different angles.”

UD’s biggest initiatives embrace this holistic approach. The new Data Science Institute, launched in September, will

harness vast amounts of information in medicine, consumer industries, politics, education and other areas to understand and predict what's happening around us. More than 120 faculty members already use big-data tools for environmental monitoring, financial-services analysis, transportation research and more, and UD is hiring more faculty to work in this arena. Another example is UD's Biden Institute, which draws on the experience of former Vice President Joe Biden and experts throughout the university to address a host of domestic policy issues. Also, UD's biopharmaceutical initiative brings together the work of faculty in engineering, chemistry, materials sciences, healthcare and life sciences to develop potential treatments and cures for devastating diseases like cancer, diabetes and Alzheimer's. That effort also involves the National Institute for Innovation in Manufacturing Biopharmaceuticals (NIIMBL), a UD-based partnership of 150 universities, corporations, nonprofits and government agencies.

"Partnerships like NIIMBL will be key to innovation in the future," says Kelvin Lee, Gore Professor of Chemical and Biomolecular Engineering and director of NIIMBL. "No one can




TRUE EDUCATION IS THE THREAD
THAT HAS RUN THROUGH UD'S ENTIRE
HISTORY, AND IT'S GOING TO
CONTINUE TO CARRY US FAR INTO
THE FUTURE.



address society's grand challenges alone."

Collaboration, communication, creativity—these are the essential skills for the knowledge economy of today and tomorrow. Every day, machines are getting faster and more accurate, and artificial intelligence and robotics are taking over human tasks at an ever increasing pace. So universities have to focus on developing

the uniquely human traits of future generations of students and pushing the boundaries of knowledge, says Assanis.

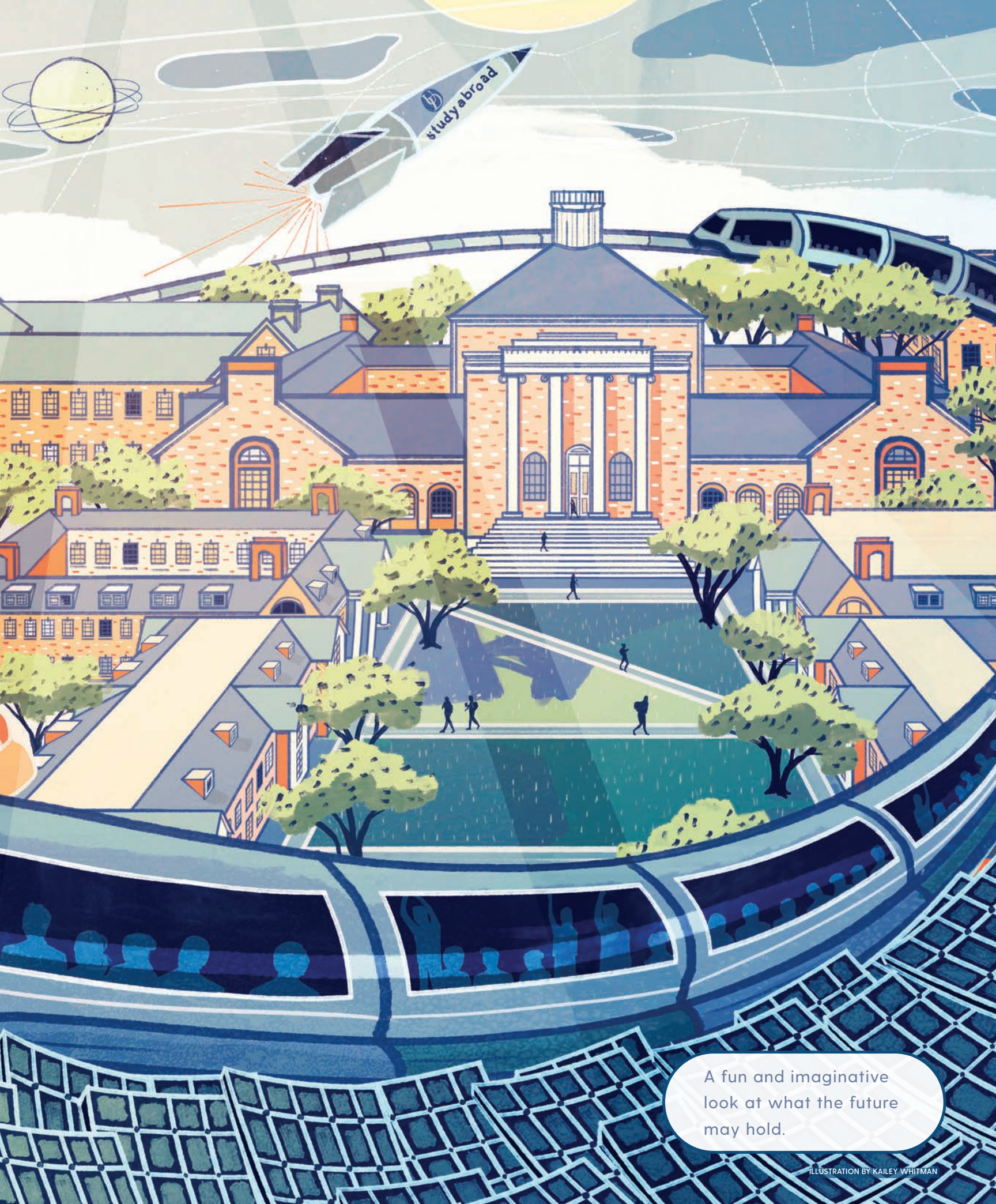
"True education is the thread that has run through UD's entire history," he adds, "and it's going to continue to carry us far into the future, whatever that might hold." 

WAIT, THERE'S MORE!

How will our understanding of concussions change sports? Why are pop cultural references to the future so dystopian? Will we ever learn to distinguish between real and fake news? The conversation continues at www.udel.edu/magazine, where Blue Hens tackle these questions and more.



UO Dept. of Artificial Intelligence



A fun and imaginative look at what the future may hold.



PHOTO COURTESY OF DELAWARE ONLINE/USA TODAY NETWORK

AN ISLAND OF HOPE

BY TONY SERAPHIN, EOE94, O4PHD

I saw my homeland, but it no longer looked like home.

The lush mountain rainforests were now stripped of leaves; bare limbs reached up to blue skies in humble supplication. Home after home stood roofless and torn, bedrooms and belongings flung open to the elements. Crops lay ruined; roads were ripped to pieces; and no tourists lounged on the surf-fringed beaches.

As my flight banked toward Dominica's runway this past summer, I turned from my window and thought back to my childhood, to the people I knew and the hurricanes we saw over the years.

No hurricane had ever hit like this one. No storm ever battered this little 16-by-29-mile island as soundly as Maria, the Category 5, 160-mph monstrosity that devastated Dominica last fall, killing dozens and causing \$1.3 billion in damages.

What could I say to my people? What could I do for them? Not much, I sensed, but I was ready do my best.

I had returned to the land of my birth with two UD colleagues, ready to give a lesson in modern educational methods to the teachers and students of Convent High School in Roseau, the nation's capital. One of my companions was Prof. Mark Serva, an expert on problem-based learning. The other was Prof. Kimberly Bothi, director of Global Engineering Programs and a leader in providing international opportunities to our students. We hoped in our short stay to demonstrate something we believe deeply at UD: That learning and teaching can be more effective when students work in groups to tackle problems instead of listening to endless lectures.

The high school students sat attentively, worked diligently in their tidy parochial uniforms. Their mood was cheerful, even upbeat—and that alone is amazing, considering their ongoing struggle to obtain food, water and shelter.

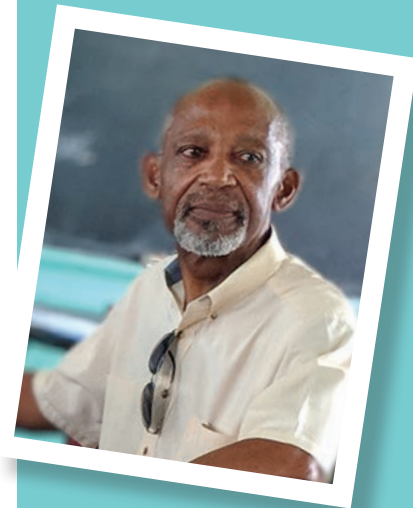
Looking back, I could conclude that these young girls and their teachers did benefit from our visit, and will see new paths to knowledge. But yet, I wondered: How could our simple, short gesture make a difference to those who have so little and have lost so much? Can meager tears of sympathy heal those who weep so deeply inside?

I've since come to believe that we do possess the power to uplift the people around us, with a word or a smile or by lending an ear. Small gestures of kindness ease suffering. Human support will always, inevitably, energize the battered spirit. What's important is not so much the substance of what we offer to our fellow human beings, but the fact that we stood and offered it in the first place.

On an island set so far out in the empty sea, the people know this fact well. In those years during my upbringing when hurricanes lashed at our homes, we had to accept that help may not come—that in the face of catastrophe, we may have no one besides our relatives, our neighbors, ourselves.

So all through Dominica this summer, amid the sounds of hammers and saws and the ceaseless cry of birds, the island people pitched in and rebuilt, for the sake of all. Meanwhile, there we went—three well-fed, well-educated professors—flying away home to our cozy beds, our air conditioned offices, our groceries brimming with food.

In the end, I decided, the true lesson that was shared on Dominica this summer was taught not by us, but to us: That in our bonds to one another, in our ability to help others, heal sorrow, revive hope, we all possess a power no hurricane could ever destroy. 🐦



Prof. Anthony Seraphin, EOE94M, O4PhD, was born on the southernmost tip of Dominica, and has been witness to several of the hurricanes that have struck the tiny Caribbean island. The 72-year-old math professor and climatologist has led students on three study abroad trips to his homeland, and has assisted in recovery efforts there following prior storms. One of his prime areas of research is the effects of island topography on storm systems.

PHOTOS COURTESY OF TONY SERAPHIN



UD faculty traveled to hurricane-ravaged Dominica this summer to offer problem-solving workshops for teachers and students.



10 EASY WAYS TO BE THE ULTIMATE HOLIDAY HOST

Food Network magazine editor and UD alumna
Erica Cohen Finamore, AS11, shares her favorite tips

1 ACCOMMODATE DIETARY RESTRICTIONS
The most important part of making an event fun is making guests comfortable, which is nearly impossible to do if they can't eat the food. Remember to ask about restrictions in advance and provide options for everyone, from vegan and vegetarian dishes to gluten-free alternatives. It takes a little extra effort, but the thoughtfulness won't be overlooked.

2 ANTICIPATE NEEDS
When guests arrive, there are a few things they'll usually appreciate: water, a place to hang their coat and a phone charger. Give someone the job of taking coats, leave large pitchers of water out for people to help themselves and set up a phone charging station outside of the kitchen.

3 EAT YOUR APPS
Just like no one wants to take the last piece of cake, no one wants to be the first person to crack into the appetizers. If you cut into your cheese board or take a scoop of your dip first, then it will feel less intimidating for guests to do the same.

4 CREATE MINGLING ZONES
Use food to create different areas around your home so that guests can spread out and talk in smaller groups. Whether you place the crudité in the den or leave the hot appetizers on the kitchen island, separating dishes gives everyone easier access to snacks and a chance to walk around and talk to new people without crowding one spot in your home.

5 LABEL IT

Labeling helps you two-fold: First, you won't have to explain new or unfamiliar dishes, and second, guests will feel more comfortable with foods they may not recognize. This is especially handy if you're serving something from a particular region or country. People like learning about other cultures, so why not help them out a bit?

6 WRAPPING PAPER RULES

I began using wrapping paper as tablecloth a few years ago and absolutely love it. Not only does it come in a variety of chic and holiday-appropriate patterns, it makes cleanup a breeze. Just roll the paper the down the length of your table or buffet and you now have an instantly eye-catching tabletop. For kids, try using Kraft paper and crayons for easy entertainment.

7 ROOM-TEMPERATURE DISHES ROCK

Skip dishes that require a lot of last-minute preparation or garnish—the stress isn't worth it. Think instead about things that can be prepped before people arrive and left out as long as needed. Crudit , cheese plates, (most) bruschetta, grain salads and green beans all fit the bill.

8 MAKE ONE MEMORABLE MOMENT

Thanks to Pinterest, so many of us feel like every little detail has to be crafted to perfection and every meal cooked from scratch. But just pick one thing that people will talk about and focus on nailing the execution. Whether it's making a signature cocktail, painting your own place cards or using a mixture of mismatching China, you want to create something that your guests will remember long after the party ends.

9 PAPER FOR DESSERT

Not literally! But do serve on it. By this point in the night, all of your dishes are dirty, your dishwasher is full and you can't fit another fork in the sink. Make late night clean-up a bit easier with disposable paper plates. There are so many fun and festive options. Search online for inspiration (Meri Meri, Harlow & Grey and Caspari are some of my favorites).

10 DON'T START CLEANING... YET

Have you ever been to a party where the hosts are anxiously cleaning up at the end of the night? I was once at a holiday party where someone started vacuuming around my feet. There will be plenty of time to put the house back in order after everyone's gone, so relax, enjoy yourself and let your guests do the same. 🍷



ABOUT THE EXPERT

For Erica Cohen Finamore, AS11, the fulfillment of a dream began right here at UD, on these very pages. During an internship with UD's public relations office, the mass communications

major captured our readers' attention with her story on

Taylor Swift's dad and fellow Blue Hen Scott Swift, BE74. Soon after, she caught a lucky break when another fellow Blue Hen, Esther Crain, AS92, plucked her r sum  from thousands in the pile at *Cosmopolitan*. After graduation, Finamore would go on to serve as an editor for *InStyle*, *HGTV Magazine* and most recently, *Food Network Magazine*. "I love the kind of deep-dive storytelling magazines allow," she says. "It's a constant learning experience." She currently lives in New York City with her husband, fellow Blue Hen Jon Marc Finamore, AS11.



The Elephant in the Room

Conservative students adapt and thrive in the liberal world of higher education

Daniel Worthington's school laptop isn't so different from any other student's. It's a bit careworn from academic toil, and its lid is plastered predictably with stickers proclaiming the causes he holds dear.

What sets it apart is what those stickers say. "Drain the Swamp," reads one. Others tout conservative candidates and warn of the nation's perilous tilt to the left under the preceding president.

In class after class, day after day, those few words proved more than enough to draw the glares of classmates, spark confrontations and even prompt some name-calling. Finally, it didn't seem worth the trouble anymore for Worthington, BE19. "Around winter of last year, I pretty much stopped bringing my laptop out in public altogether," he says.

For the finance major and many other right-leaning students here and around the country, academic life routinely includes a few off-syllabus examinations of their ideological acceptability, forcing many to walk a tricky tightrope between their need to coexist and their youthful urges to challenge the status quo.

Despite the occasional classroom dustup, Republican and Libertarian activists say UD should be proud of its relatively open political atmosphere,

its institutional emphasis on diverse viewpoints and its faculty's ethos of impartial instruction.

Since its very founding, the University has produced free thinkers on all sides of the political aisle, from signers of the Declaration of Independence to the campaign managers of the 2008 presidential election: David Plouffe, AS10, who gave the nation its first African-American president and Steve Schmidt, AS93, who led the late-Sen. John McCain's drive for the White House. Notable alumni include Joe Biden, AS65, 04H, and Chris Christie, AS84, 11H, loyal Blue Hens with strikingly different political philosophies.

Still, students and staffers alike are mindful that in the liberal-aligned culture of higher education, it's often easier to sit down and shut up. They're routinely cautious about context before showing their political stripes. A "Make America Great Again" T-shirt at a weekend party, they know, is likely an open invitation to scorn. A right-of-center position in a humanities class, they've found, could end up producing more heat than light.

"It's just hard to carry on a conversation when someone says the facts are 'offensive,' or 'phobic,'" says Rebecca King, EOE20, who remembers

enduring a fellow student's classroom rant that "whoever doesn't oppose Trump is literally a fascist."

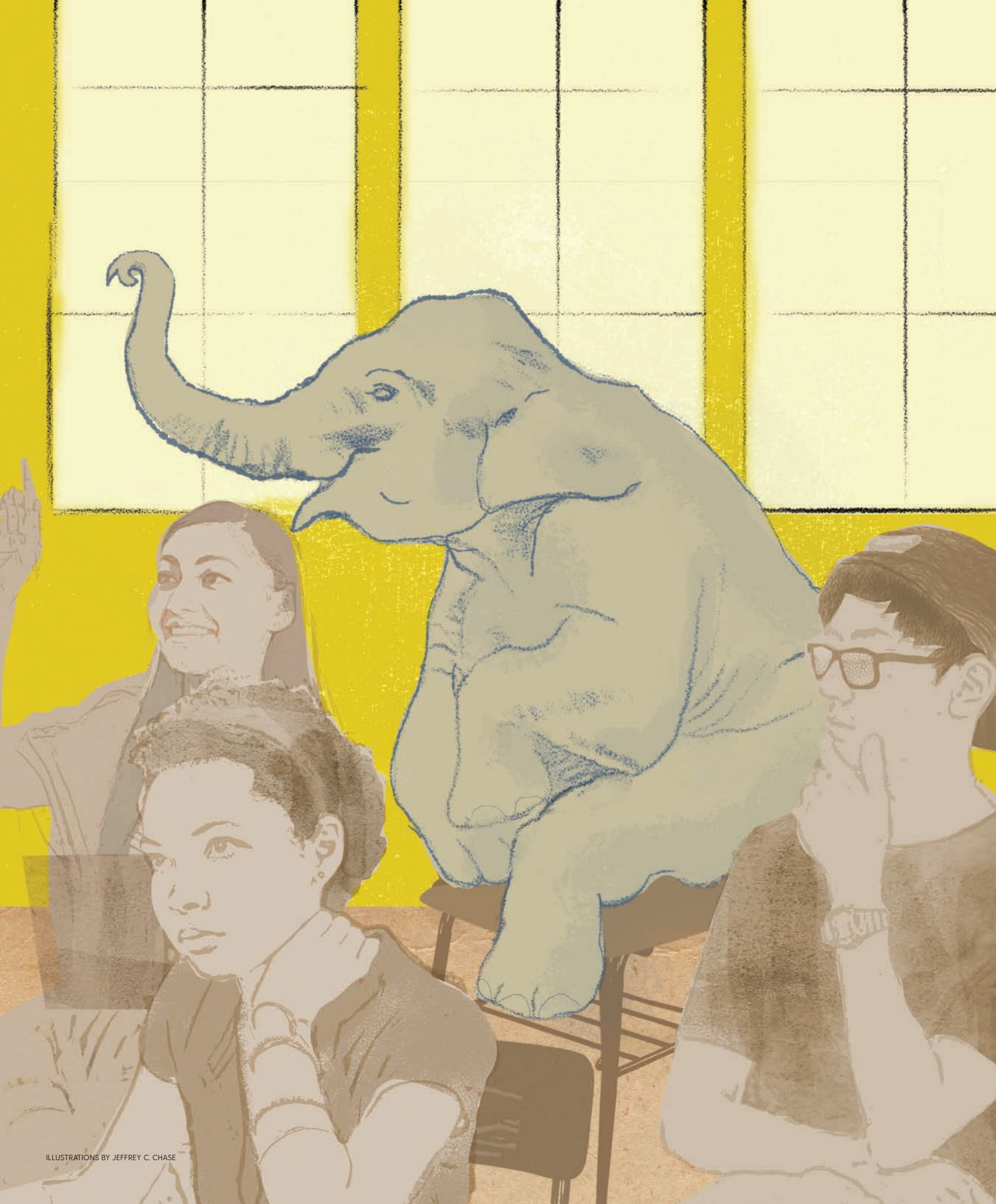
And yet, they say, the disagreements are a predictably frustrating, often invigorating and ever enjoyable part of the intellectual journey they hoped to find. Friction has a way of creating its own synergies and qualities of character: resilience, compassion, even empathy and understanding. The college experience, in other words, may not have changed anyone's minds, but it surely has opened a few.

"It actually has been very beneficial," adds King. "Those who don't understand their opponents' arguments often don't understand their own."

The quest for open dialogue

In an age of agonizing campus battles over ideology and free speech, the level of invective has been relatively low at UD, and right-leaning students say that in most academic situations, their views are welcome, though frequently disputed.

"But we don't really advertise it," King says of the political leanings she and her



friends share, which include support for gun rights, tighter immigration policies and tax reform. “We’re worried there may be too many emotions involved.”

There is no question in their minds that in the halls and classrooms and dorms, outspoken liberal sentiments are far less likely to inspire impassioned pushback. In some places, certain concepts are culturally ingrained as “correct”—affirmative action, for example, or diversity training—while others are so wrong they do not even merit discussion, such as arming teachers or separating children from immigrant parents.

So conservative students begin to ask: Where’s the room in that dynamic for nuance and debate?

Polls reflect a clear plurality for the left—a national freshman survey by UCLA recently found that 35.5 percent of students consider themselves liberal and 22.2 percent conservative (the remainder were “non-partisan”). In the last presidential election, 55 percent of millennials voted for Hillary Clinton; 37 percent backed Donald Trump. In some academic disciplines like history and communications, Democrat professors outnumber their Republican colleagues 20-1, or even 30-to-1.

But some college researchers say the right’s cries of universities as liberal boot-camps are overwrought, and a 2012 book by Amy J. Binder, professor of sociology at the University of California, San Diego, and Kate Wood, then a doctoral candidate in the UCSD sociology department, found little evidence for classroom “indoctrination.” Instead, researchers say, students emerge from the college experience

seeing the “opposing side” more favorably than when they started.

“At UD, we’re very lucky,” says Worthington, chair of the College Republicans. “I’d say we’re an outlier from the rest of the nation. We get along with all the left-leaning groups.”

At the same time, there is clearly a quiet-but-steady pressure to align with progressive ideals in and out of class, he and other conservative students maintain.

“I don’t particularly look like a typical conservative,” adds King. “Because I am a woman and a person of color, sometimes leftists will tell me that I’m not pursuing my best interests and that I’m somehow betraying my background.”

“Before I went to college, I thought it would be a place where everyone’s ideas can be talked about,” adds Katie Mazur, AS19. “That’s not always the case.”

Although Mazur says her professors have been overwhelmingly supportive of open dialogue, her peers have been distinctly less accommodating. “People would hear I had certain beliefs and immediately shut down any conversation, like they thought I was a terrible person,” she recalls. “They’d spread rumors, like, ‘Don’t talk to this person.’”

“I have found that if conversations revolve around economic issues, then debate and discussion with liberals can be highly productive,” says Joseph Buxton, AS19, a College Republican. “But I’m generally afraid to discuss social conservatism with anyone, as most liberals believe social conservatism to be bigoted in any number of ways.”

Keeping it civil

To find some like-minded companionship and a platform for action, conservatives often turn to student-run organizations such as the Young Americans for Liberty (YAL) or the College Republicans. Within the structure of such official forums—in the sponsored debates and discussions—civility and tolerance are the norm.

“Compared to many other schools, UD is very open and fair, especially in terms of what RSOs are allowed to do,” says Alex Closs, EG20, vice president of the YAL. “UD has done everyone a service in its attempts to provide equal opportunity for groups to express their opinions.”

“Don’t get me wrong, we don’t agree on everything,” Worthington says. “But we manage to keep it civil.”

In part, they say, this ideological openness is instilled from the top down at UD. Worthington recalls meeting Biden in a sit-down with UD’s College Republicans last year. “He said, ‘You’ll always have a seat at the table.’ And that really struck a chord, because he didn’t have to do that. It did mean a lot.”

The University has made concerted efforts in recent years to foster a culture of “inclusive excellence.” In addition to resident student organizations that span all political affiliations, the Center for Political Communication holds a non-partisan “National Agenda” speaker series each fall, and the Biden Institute invites distinguished guests to campus from all parties, working to increase civic engagement for all members of the campus community. “I don’t give a damn how you vote,” the Vice President told

students at a voter registration drive earlier this fall. “Just vote. Claim that power.”

Current students also commend the tone set by current President Dennis Assanis, who has publicly reinforced UD’s commitment to open dialogue. “He is very good about promoting free speech, which is one of the points of academics, to benefit from other people’s knowledge,” says King.

And when there is resistance to their opinions, or when they feel pressured to stay silent, the students say, it often serves to reinforce their character rather than undermine it.

“It made me question how much am I willing to fight for my personal beliefs,” Mazur said. “It helped me realize, this is who I am and what I stand for.” 🐦

—Eric Ruth, AS93

“Those who don’t understand their opponents’ arguments often don’t understand their own.”

—Rebecca King, EOE20

35.5%

of U.S. students consider themselves liberal

22.2%

of students consider themselves conservative

42.3%

the remainder were nonpartisan

ALUMNI NEWS

WRITING HISTORY

Looking back on his life, 93-year-old Robert Hilliard, AS48, can surely say that he's done a lot of good things.

He has gone from newspaper reporter to acclaimed communications professor. He has written plays, authored dozens of books, dabbled in poetry. He's won the Purple Heart and married a beautiful actress. He's even cruised the Florida coast in a spiffy red Mustang convertible (and that was just last week). But he will tell you: None of those good things can compete with the good he has tried to do for others.

Like pressing for an end to segregation in Newark and at UD in the late 1940s. And standing up for civil rights as a professor in the South during the 1960s—when he would meet a young activist named Jesse Jackson.

To understand the one thing he's most proud of, though, you have to go all the way back to May 1945—when young Pvt. Hilliard was working as an Army reporter in postwar Germany as he recuperated from his wounds. He thought it would be fitting to write about a group of concentration camp survivors who were staging a liberation concert. But the story was far bigger.

"What I saw was a horror," he recalls. "These people continued to die because of lack of food, clothing, medicine and, in many cases, shelter."

For Hilliard, himself a product of the



Great Depression, inaction was not an option. His fellow soldiers agreed. "Individual GIs—not the Army, not the official occupation forces, but everyday GIs—kept many hundreds and probably thousands of survivors alive by giving them food from their mess kits and literally the shirts off their backs."

Hilliard and his buddy, fellow Pvt. Edward Herman, also did something—something brave and maybe even foolish. They detailed the survivors' plight in a letter, then mailed dozens of copies to churches, synagogues and others back home, accusing the government of genocide by neglect and begging for relief. The letter would somehow find its way to the desk of President Truman, who would not choose to court-martial the pair (as Hilliard feared), but instead ordered U.S. relief efforts to be redoubled.

Robert Hilliard, AS48, used the power of the pen to enhance relief efforts for World War II concentration camp survivors.

.....

Soon, the privates were jubilantly driving boxes of food back for the refugees in St. Ottilien.

"I wish I could describe the joy that we found there when we arrived," Hilliard recalls. "Suddenly everything changed, and the relief organizations started coming in."

And 20-year-old Robert Hilliard learned a lesson. "Winners write the history. And as a nation, we have pretty much ignored that part. But through a letter, two privates were able to change the history of the country."

It's a lesson he wishes he could pass down to all children today: "Don't just stand there and let indifference happen. Stop the hate." 🐦

I PUT DELAWARE FIRST

“I put Delaware first because of the amazing experiences and opportunities I have as a Blue Hen—in the lab and on the field. My work on cancer research and my role as part of the field hockey team have helped me grow and learn in ways I never imagined, teaching me invaluable lessons in patience, diligence and commitment.”

—Michaela Scanlon, AS19

Michaela is a captain on UD's field hockey team, double majoring in biology and neuroscience. This past summer, she worked with UD neurobiologist Deni Galileo to understand how glioblastoma, an aggressive form of cancer, spreads in the brain. In recognition of her work on the field and in class, as well as for her role as vice president of the Student-Athlete Advisory Committee, Michaela recently received the David M. and Shirley R. Nelson Athletic Scholarship, given to an upperclassman student-athlete who shows determination, honesty, leadership, sportsmanship and teamwork.



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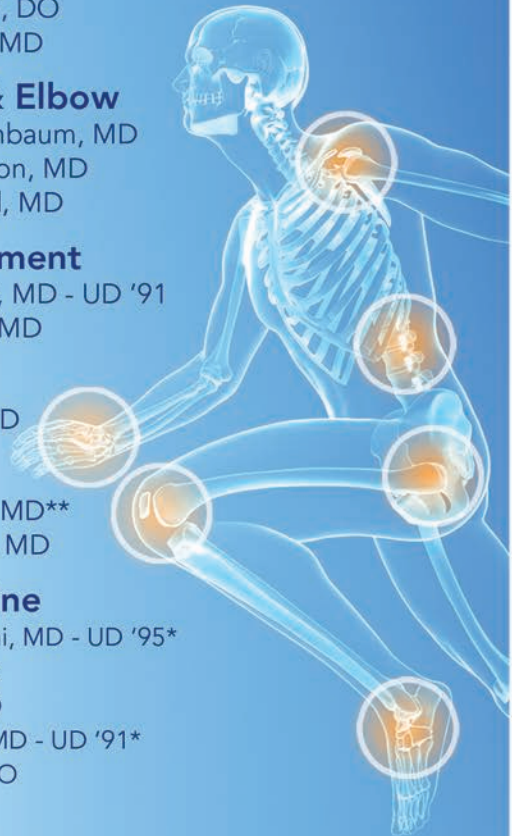
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Douglas A. Palma, MD - UD '91*
Matthew K. Voltz, DO

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Nicholas F. Quercetti, DO

* Orthopaedic Surgeon for the University of Delaware Athletic Department

** Affiliated Faculty Member with the University of Delaware Department of Physical Therapy

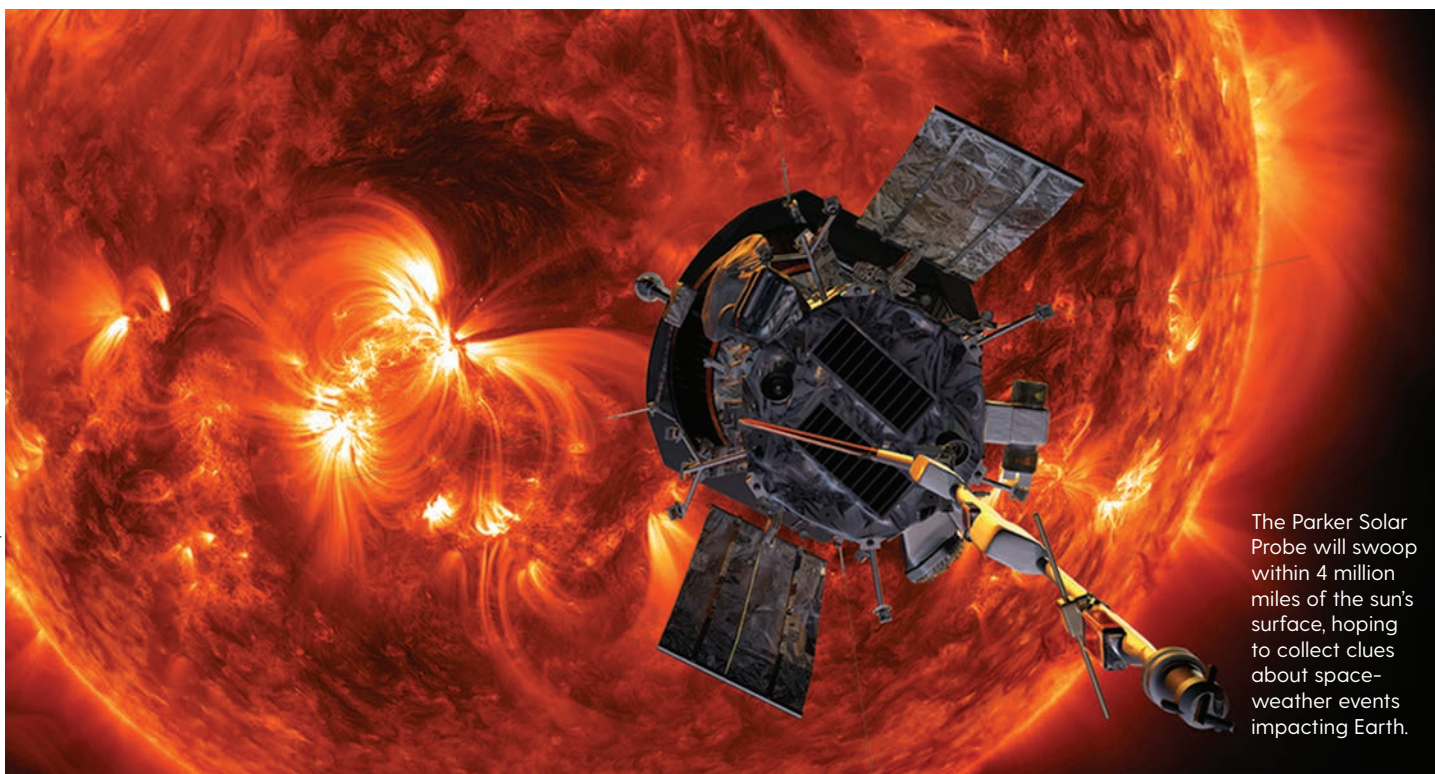


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SOARING TOWARD THE SUN

PHOTO COURTESY OF TOM FREY/NASA



The Parker Solar Probe will swoop within 4 million miles of the sun's surface, hoping to collect clues about space-weather events impacting Earth.

Through Earth's many eons, the sun has stood over us as a distant friend, a life-giving companion no living thing could ever touch.

But thanks to some Blue Hens at Northrop Grumman Innovation Systems, our reach is now closer to it than ever.

One is Tom Frey, EG84, 90M, a mechanical engineer who has spent the last three years working to ensure that his company's tried-and-true rocket motor—known as the STAR 48BV—was ready to help push NASA's unmanned Parker Solar Probe all the way to the sun, where it will undertake the most intimate study ever of our closest star.

Another is Mike Lara, EG82, MBA84, senior director of strategy and business development. "I've had the opportunity to

help NASA go to Venus, Mars, Pluto and the moon. Now we're heading to the sun and soon to Jupiter's moon Europa. One of humankind's most basic questions is, 'How did we get here?' These missions all help us to get closer to an answer."

A veteran of more than 100 launches, the solid-propellant motor—manufactured at the company's Elkton, Maryland, facility (formerly Thiokol-ATK)—was needed to give the mission's Delta IV Heavy launch vehicle the extra oomph needed to bring it close to the sun. As chief engineer of the space motor, Frey had to ensure the motor could tolerate the conditions expected in a three-stage launch, which had never before been attempted with this launch vehicle. The probe will achieve a new speed record

for a man-made object (430,000 mph).

"This type of motor has actually gone to the edge of the solar system in prior missions," says Frey. "In this case we're going in the opposite direction."

The motor fired up about 35 minutes after launch, burning through 4,400 pounds of solid fuel in mere moments before separating, its fiery task accomplished. "It's definitely a fast and furious minute and a half," says Frey, who is one of many Blue Hens at the facility.

"There are probably 20 engineers from UD and I'm sure many more non-engineers," he says. "UD provides its engineers with a good set of fundamentals in problem solving. When it comes down to it, that's pretty much what engineers are—problem solvers." 🐦



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REVISITING THE WORST TEAM IN BASEBALL HISTORY

The Wilmington Blue Rocks are one of the city's calling cards. Frawley Stadium is a fixture on the I-95 corridor, and the Delaware team has a history of producing baseball's future all-stars.

But it turns out that the ancestral relative of one of minor league baseball's finest franchises actually made it to The Show in 1884, when the Wilmington Quicksteps replaced the Philadelphia Keystones in the short-lived major league Union Association.

Their unlikely ascent is captured in a new book, *Once Upon A Team: The Epic Rise and Historic Fall of the Wilmington Quicksteps*, by Jon Springer, AS89.

"It's the story of a minor league team that dominates the minor leagues to a degree that they get promoted to the big leagues only to find out that it was tougher than they thought it would be," Springer says. "It is also the story of the worst major league team ever."

That's right—after going an impressive 50-12, the team was promoted and compiled the worst record in major league history: 2-16, with a winning percentage of .111.

Springer's journey to finding this fascinating (and impressively embarrassing) nugget of Delaware history began in 1993, when minor league baseball returned after a 41-year hiatus. Northern Delawareans, including hardcore baseball fanatic Springer, could finally tell friends that their town had its own team with the Blue Rocks.

"I understood what it meant to the city to have a baseball team wearing its name on its chest," Springer says.

The 52-year-old Long Island native and lifelong Mets fan first came to Delaware when he enrolled at UD.

"The school was big enough to explore many choices," says Springer, who eventually pursued journalism.

After graduation, he came across a book about the famous 19th century player John Montgomery Ward that casually mentioned a traveling, Wilmington baseball team.

"I thought I would try to find out about this 'champion amateur nine' I read about," he says. The find led to an article about the Quicksteps published in *Out & About Magazine* in 2003.

But it wasn't until last year that the idea to focus on the 1884 team materialized.

Springer started to find more and more great characters and stories. There was pitcher Edward Nolan, dubbed "The Only Nolan," who was a lights-out, Randy Johnson-type on the field and a Babe Ruth-esque carouser and drinker off the diamond. There was Oyster Burns, a young star and brawler who was the best player in the league. Then there was the time an umpire was hit in the mouth with a foul ball (a gruesome scene) and had to be rescued by a doctor in the stands.

And of course there was the team's downfall, brought on by money disputes



PHOTOGRAPHER - ALBERT G. SPAULDING COLLECTION, NEW YORK PUBLIC LIBRARY

Pitcher Dan Casey (left) and infielder Charlie Bastian both made their professional baseball debuts with the Wilmington Quicksteps in 1884, the subject of a new book by alumnus Jon Springer, AS89.

and the city's overall boredom with a team that was both too good and too bad.

"Wilmington was fickle about its baseball," Springer says. "They had trouble supporting a winning team, and they had trouble supporting a loser."

Regardless of whether his book's success mirrors the Blue Rocks or the Quicksteps, Springer will fall back on his full-time gig as a business writer covering the supermarket business.

"I write about baseball for fun," he says, "and business for money." 🐦

—Peter Bothum, AS97



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BLUE AND GOLD AND GREEK

In the fall of 1999, Michelle Guobadia, HS03, and Dave Conner, EHD03, 05M, were just two kids from Long Island trying to navigate their first semesters at UD. Today, both are recognized as national leaders in the fraternity and sorority community and proudly attribute their professional success to their Blue Hen foundation.

“What Greek life gives you, I could never fully repay,” says Guobadia, a member of the Zeta Phi Beta sorority. In her current role as director of fraternity and sorority life at the University of North Carolina–Charlotte, she oversees 43 chapters and more than 2,400 students. Meanwhile, as director of student involvement at The College of New Jersey and member of the Theta Chi fraternity, Conner manages 32 Greek organizations with 1,800-plus students.

Earlier this year, the two UD alumni received the Association of Fraternity and Sorority Advisers’ 2018 Distinguished Service Awards. This peer-nominated honor recognizes outstanding contributions to mentorship and advising

and serves as a meaningful accolade to Conner and Guobadia. In their respective roles, the two Blue Hens seek to cultivate the next generation of leaders and help their students gain the life-changing opportunities Greek life affords.

“It was the most impactful, developmental experience of my college career,” says Conner, who met his wife (and Delta Gamma), Stacy, AS01, through the fraternity and sorority experience. “Just the desire to make things better and contribute to the good of the group—that’s an outlook that lasts forever.”

Guobadia agrees and often reflects on a study abroad experience she took to South Africa with a fellow sorority sister. While volunteering in an AIDS orphanage there, she saw firsthand the need for service—the very backbone of all Greek organizations. “It changed the way I look at the world, and at my own life,” she says. Now, when speaking to students, Guobadia reminds them, “What we do is bigger than our chapter. It’s about community.” 🐦

THE ETHICS ENDOWMENT FUND

Gift from the Class of 1955 supports debate and dialogue

For the past 13 years, a committed group of forward-thinking alumni have helped ensure an ongoing campus conversation about society’s most contentious issues, thanks to a class gift that was used to create the Class of 1955 Ethics Endowment Fund.

Since 2005, the fund has made it possible to organize an “Ethics of War” conference, worked to strengthen dialogue about human rights and given students a chance to explore their own ethical questions in departments across campus.

“It’s important for students to see rational, ethical arguments, because so often today the public discourse devolves to shouting matches and short little talking points and propaganda,” says Prof. Kai Draper, chair of the philosophy department.

The fund began at the Class of ’55’s 40th reunion, when generous alumni pitched in \$100,000 to go toward a class gift. Within 10 more years, the total had grown even higher, creating a gift with potential to touch students across campus. The endowment is now valued around \$420,000.

“We could have donated elsewhere, says Ruth Draper, AS55 (unrelated to Kai Draper). “We decided instead to do something different, something for academics.”

While the fund is administered by the Philosophy Department, it is available for use by departments campus-wide. 🐦

BLUE HENS IN SOUTH FLORIDA



From arts and culture to industry and nightlife, South Florida's beach cities are a series of vibrant and closely connected hubs. Fort Lauderdale, for one, is home to a range of industries and close to both Miami's bustling metro center and the stunning 1.5 million acres of the Everglades National Park. Travel a bit north and hit the intimate and fun Delray Beach with its Pineapple Grove Arts District, or Boca Raton and its golf courses, boutiques and jazz clubs.

South Florida is also where you can find more than 2,400 UD alumni. The Blue Hen spirit is strong in the Sunshine State. Alumni events in the area include a meetup for the Winterfest Boat Parade followed by dinner and drinks at the Residence Inn Fort Lauderdale Intracoastal/Il Lugano (Dec. 15) and a visit by the "Delaware to the World Tour" at the Westin Fort Lauderdale (Feb. 5).

To get involved, please visit www.udconnection.com/clubs or follow the

University of Delaware South Florida Alumni Club on Facebook.

Meet Andrew Schwartz, ANR93

How did you land in South Florida?

It happened pretty quickly after I graduated in '93! I ended up in Florida the same year for work. Ultimately, my business opportunities started growing here, and then I married my wife Rachel, a UD alumna who had made the move with me, and we had children and established roots down here. I wouldn't have expected that, because I grew up in central New Jersey and intended to go into a family business. It may surprise people, but this is a farming community, and there's no question in my mind that my major in agriculture business management aligns with what I ended up doing. My focus now is on developing and investing in businesses that create healthy, convenient, ready-to-eat produce items using food technology and innovation. One example of this is

Love Beets [where Schwartz serves as managing partner and equity investor].

How do you stay connected to UD?

It's nice whenever you run into alumni and can talk about the past, but there are also opportunities for people who want to be involved with the University and help shape what will happen in the future. The College of Agriculture and Natural Resources has definitely been looking to work cooperatively with its alumni, and as a member of the college's advisory board, I've been able to see how the campus is changing and the investments being made.

What would you recommend to Blue Hens who visit the area?

Florida is one of the fastest-growing states, so there's a lot going on here, from great restaurants to recreational activities. I, for one, like offshore fishing, and the Bahamas are only 50 miles away by boat. If you're into water sports, Florida is obviously a great area, but it's also great for general sports and recreation, because, remember, the weather is good year-round. We live in Boca Raton, but Delray Beach is our go-to area for restaurants, nightlife and art. If anybody comes to Delray Beach, I always recommend Brule Bistro, a very cool French-American restaurant in Pineapple Grove.

What advice would you give to current UD students?

Enjoy your time at school, but always have your sights set on what's happening in the future. 🐔

Ask the UDAA

My child is starting to think about college, and I'm hopeful they will consider UD. What should I know? What programs or opportunities exist for children of alumni?

—*Kristen Pickering, AS91*

Great question! It's actually one that comes up quite a bit, given how much we all loved our own UD experience.

First, I strongly encourage a campus tour from the Office of Admissions. UD has probably changed a bit since you graduated, and the tour is a great

opportunity to hear all about life at the University from a current Blue Hen tour guide.

Second, your family will receive an email inviting you to a Legacy Reception, hosted by the UDAA, during Decision Days (an open house held a few times each spring for admitted students). At that reception, you and your family will have the chance to talk to current UD Student Alumni Ambassadors and members of the UD Alumni Association Board of Directors. Each future Blue Hen will also receive a gift from the UDAA.

Legacy students enrolled at UD are eligible for special funding through the UDAA Academic Enrichment Award. This award provides up to \$2,000 for students to take part in enrichment

experiences outside of the classroom, such as academic competitions, research or program-related presentations, leadership conferences, service learning and other noncredit academic endeavors.

The UDAA is happy to offer guidance and support, and we wish you and your children an enjoyable college search process. 🐔



Steve Beattie, BE87, is president of the UD Alumni Association

Do you have a question you want answered? Send it to alumni-association@udel.edu and it could be featured in a future issue.

CONNECT WITH FELLOW BLUE HENS *AT AN ALUMNI EVENT IN YOUR AREA*

ATLANTA

Jan. 17 – Monday Night Brewing Co. tasting and tour

BAY AREA

March 14 – Delaware to the World Tour

BOSTON

Jan. 31 – Bruins vs. Flyers hockey game

HOUSTON

Jan. 8 – Sushi making class at French Alliance

Feb. 23 – Houston Livestock Rodeo and BBQ cook off

KENT AND SUSSEX COUNTY

Feb. 23 – Nassau winery tasting event

LANCASTER/YORK

Feb. 2 – Phantoms vs. Bears minor league hockey game

LEHIGH VALLEY

Jan. 12 – Bears vs. Phantoms minor league hockey game

LOS ANGELES

March 13 – Delaware to the World tour
April TBD – LAFC Soccer Game

NEW YORK CITY

Feb. 16 – 6-wire and Friends at Carnegie Hall

NORTHERN NEW JERSEY

Feb. 7 – Devils vs. Islanders hockey game
March 21 – Hudson table cooking

PHILADELPHIA

Jan. 8 – 76ers vs. Wizards basketball game

Feb. 19 – Flyers vs. Lightning hockey game

RICHMOND

Jan. TBD – Virginia Museum of Fine Arts

SAN DIEGO

March 12 – Delaware to the World Tour

SOUTH FLORIDA

Feb. 5 (Fort Lauderdale) – Delaware to the World Tour

Feb. 7 (Sarasota) – Delaware to the World Tour

WASHINGTON, DC

Jan. 30 – Life After UD networking event

SIDEBAR/SAVE THE DATE

May 15 – I Heart UD Day

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CLASS NOTES

1940s

Kathryn Ruth Haggerty Johnson, EHD40, of Newark, Del., celebrated her 100th birthday in December 2017. A graduate of the Women's College, she spent a career in education and proudly watched her family members attend UD, including her three sons and three of her four grandchildren. She now has seven great-grandchildren, six of whom live in Newark, "and no doubt she will encourage them to attend the University someday," writes her granddaughter **Noelle Johnson Herrman, AS94**, of Tampa, Fla.



Kathryn Ruth Haggerty Johnson

John Appleyard, AS47, and wife **Eleanor, EHD44**, have spent the past 68 years in Pensacola, Fla., where John has become the unofficial community historian and storyteller, producing 93 15-minute mini documentaries from the

1950s-1950s for local cable stations. He also writes a weekly column on local history for the *Pensacola News Journal* and most recently became a Sunday evening color announcer for the Blue Wahoos, the city's minor league baseball team and Class AA affiliate of the Cincinnati Reds.

1960s

Dan Vale, HS68, EHD72M, of Elkridge, Md., has published his second Kindle book, *Prepare Now for a More Challenging Job Market in the Future*.

1970s

Charles Biehl, EHD75, of North East, Md., spoke on "Computational Geometry: A Teacher's Introduction" at two California Math Council (CMC) conferences earlier this fall. He also wrote a paper with the same name, which was published in *ComMuniCator*, the CMC's quarterly publication.

James Stewart, BE75, AS77M, of Dover, Del., and his wife, Ann, recently encountered a fellow Blue Hen on tour bus from Denali National Forest to Anchorage. "North of Wasilla we passed a dark-colored sedan also heading south, and I did a double take when I saw a bright blue sweat shirt with DELAWARE in gold letters on the driver," he writes. "That was a surprise to say the least."

Peter Andrejev, AS78, BE80M, of McLean, Va., has received the Frank Freiman Lifetime Achievement Award from the International Cost Estimating and Analysis Association.



Peter Andrejev

1980s

Kerri Sullivan, EHD81, of York, Pa., has written an essay, "The goal of life is happiness," which explores such topics as holiness, travel, socialization and more.

Mott Linn, AS83, of Dedham, Mass., has received the Distinguished Service Award from the Academy of Certified Archivists.

Kimberly Patterson, AS88, of Elkton, Md., and daughter **Blair Lee, AS09**, have opened a store in North Wilmington, The Vintage Pantry Co., which sells vintage finds and entertaining essentials.

Frank O'Brien, AS89, of Morristown, N.J., recently retired from a long career in insurance and now teaches surf lessons to dogs (and people) at the Jersey Shore.

1990s

Steven White, EOE90, of Hebron, Md., has been promoted to licensed environmental health specialist supervisor for the Environmental Protection Division of Wicomico County Health Department.

Dave Jones, BE99, of Glen Burnie, Md., has been elected to the Board of Directors for Future Business Leaders of America-Phi Beta Lambda Inc., where he serves as Maryland state adviser. In his role,

Jones has improved the membership experience of Maryland students, increasing their attendance at state conferences by 94 percent and national conferences by 68 percent.

Anthea Piscarik, AS96, of Newark, Del., has written and published her first novel, *Unearthing Christmas*, book one in her series, *The Miriam Chronicles*. Piscarik is also working on a documentary about a blind couple raising their sighted twins.

Janet Cherrington, AS97PhD, of Mankato, Minn., has retired from Minnesota State University, after 18 years of teaching and looks forward to completing an introductory textbook on local government finance. Of her experiences at Delaware, Cherrington writes, "I shall always remember my adviser, Dr. Robert E. Warren, who patiently guided me through the process of preparing my dissertation and defense. There were also several other professors whose classes served as important academic foundations. These included Profs. Dan Rich, Jeffrey Raffel and visiting professor from the U.K., Barry Cullingworth. Their support and mentoring proved invaluable when I moved from graduate student to professor."

COLLEGE DEGREE LEGEND

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 - EOE • Earth, Ocean and Environment
 - EHD • Education and Human Development
 - HS • Health Sciences
-
- M • master's degree
 - PhD
 - EdD • doctoral degrees
 - DPT
 - H • honorary degree

SHARE YOUR NEWS

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Email a note or a press release to
magazine@udel.edu

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BIRDS OF A FEATHER

The following Blue Hens have been named 2018 Top Lawyers by *Delaware Today* magazine: **Richard L. Abbott, AS86**, of Wilmington; **Gary W. Aber, BE69**, of Wilmington; **Susan D'Alonzo Ament, AS79**, of Wilmington; **H. Garrett Baker, AS97**, of Townsend; **John Balaguer, AS81**, of Wilmington; **Adam Balick, AS85**, of Wilmington; **Loren R. Barron, AS03**, of Kennett Square, Pa.; **Doreen H. Becker, AS81**, of Newark; **John M. Bloxom, AS06**, of Wilmington; **William W. Bowser, AS79**, of Wilmington; **Barbara Snapp Danberg, AS87**, of Newark; **Anthony W. Dohring, AS00**, of Georgetown; **Keith E. Donovan, BE88**, of Wilmington; **Kenneth L. Dorsney, AS94**, of Wilmington; **William W. Erhart II, AS79**, of Wilmington; **Alexander W. Funk, AS03**, of Lewes; **Richard Galperin, AS71**, of Wilmington; **William E. Gamgort, BE04**, of Hockessin; **Andrew W. Gonser, AS96**, of Wilmington; **Wilson A. Gualpa, AS12**, of Seaford; **Kevin A. Guerke, AS97**, of Wilmington; the Hon. **Stephanie L. Hansen, EOE84**, of Middletown; **Kevin G. Healy, AS82**, of Newark; **Bruce L. Hudson, ANR66, 68, 70M**, of Wilmington; **Joe A. Hurley, AS66**, of Wilmington; **Gretchen A. Knight, AS87**, of Kennett Square, Pa.; **Robert J. Krapf, AS75**, of Newark; **Timothy E. Lengkeek, AS97**, of Wilmington; **Karla**

B. Levinson, AS02, of Wilmington; **Mary Gibson Matterer, AS71**, of Newark; **Scott R. Mondell, AS82**, of Garnet Valley, Pa.; **Eric G. Mooney, AS91**, of Harbeson; **Francis J. Murphy, AS74**, of Wilmington; **Stephen J. Neuberger, AS00**, of Wilmington; **Maria P. Newill, AS87**, of Smyrna; **Jonathan B. O'Neill, AS97**, of Middletown; **Nina Pappoulis, AS99**, of Wilmington; **Victoria K. Petrone, EG95**, of Wilmington; **Adam W. Poff, AS97**, of Wilmington; **Nina Qureshi, AS99**, of Wilmington; **Rashmi Rangan, AS93M**, of Newark; **Cassandra F. Roberts, AS79**, of Newark; **Yvonne Saville, AS92**, of Wilmington; **Charles J. Slanina, AS76**, of Landenberg, Pa.; **Stephen W. Spence, BE75**, of Rehoboth Beach; **Stephen A. Spence, AS06**, of Lewes; **Steven J. Stirparo, BE79**, of Wilmington; **Barbara H. Stratton, AS78**, of Hockessin; **Gerald I. H. Street, AS69**, of Dover; **Kara Sylvis Swasey, BE04**, of Chadds Ford, Pa.; **Amy M. Cunningham Taylor, AS03H**, of Landenberg, Pa.; **Vincent C. Thomas, BE02**, of Hockessin; **Bruce W. Tigani, BE78**, of Wilmington; **John E. Tracey, AS87**, of Newark; **Robert W. Whetzel, EG81**, of Newark; **David A. White, AS82**, of Wilmington; **Gregory P. Williams, AS79**, of Chadds Ford, Pa.; **Barry M. Willoughby, AS76**, of Wilmington; and **Natalie Wolf Ausprung, AS90**, of Wilmington. 🐦

Matthew Gabriel, AS97, of Blacksburg, Va., has been named chair of the Department of Religion and Culture at Virginia Tech, where he has worked since 2006.

Chris Burgos, BE99, and **Thomasine Bianchi, EHD96, O1M**, of Hockessin, Del., have founded Pong for a Cure, the largest beer pong tournament in Delaware, which seeks to raise \$75,000 annually to support breast cancer survivors, caregivers and families.

David A. Pizzi, EHD99, O1M, of Ponte Vedra Beach, Fla., was recently promoted to senior director of government and legislative relations for Florida Blue, the Blue Cross and Blue Shield plan for Floridians. Pizzi was also recently awarded the Florida Insurance Council's highest honor, the Mark Trafton Distinguished Service Award, which recognizes the insurance industry's most influential lobbyist of 2018.

2000s

Nicole Buckley, BE03, and husband **Matt, EG03, BE18M**, of Lincoln University, Pa., welcomed daughter Brianna on April 19. The newest addition joins big brother, Connor and big sister, Macie.

Will Fetters, BE03, of Studio City, Calif., co-wrote the screenplay for

A Star is Born, the 2018 musical drama starring Bradley Cooper and Lady Gaga.

Jane Elizabeth Taylor, AS03, of Vineyard Haven, Mass., has earned a master rating from the Professional Skaters Association. Taylor is the chief skating professional at the Martha's Vineyard Ice Arena, where she coaches both figure skaters and hockey players.

Gene Kerns, EHD04EDD, of Dallas, Texas, has published *Unlocking Student Talent: The New Science of Developing Expertise*. Kerns is vice president and chief academic officer for Renaissance Learning, a learning analytics company that makes educational software and is used in one-third of U.S. schools.

David Signarovitz, AS06, of Burlington, N.J., will complete his fellowship in cardiovascular medicine at the Deborah Heart

and Lung Center in June 2019, after which he will pursue an additional year of training in their interventional cardiology program.

Kevin Goodyear (Cifala), BE07, and **Maria Tricarico, AS12**, of Newark, Del., were married on May 12, 2018.

Breanne Prisco, AS09, of Millsboro, Del., earned her doctorate of education in educational leadership and innovation. Her dissertation examined the correlation between SAT college-readiness benchmarks and graduation rates at Delaware public high schools.

2010s

Mark Fiore, BE10, and **Emily Ryan, AS11**, of Philadelphia, Pa., were married on June 17, 2017.

Charlie Horn, BE11, and **Bridget Kolp, BE11**, of Philadelphia, Pa., were married on June 9, 2018.

David Rodriguez, AS11, and **Courtney Young, BE11**, of Weehawken, NJ, were married on May 26, 2018.

Alison Billings, EHD14, and **Kyle Rodkey, HS14**, of Wilmington, Del., were married on June 9, 2018. 🐦



Brianna Buckley, with Macie and Connor



Allison Billings and Kyle Rodkey and their Blue Hen wedding party



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IN MEMORIAM

Kathleen Bader Lynch, AS41, of Wilmington, Del., Sept. 1, 2018

Anne Clayton Nesbitt, EHD42, of Pennington, N.J., July 18, 2018

Estate of Judith C. Director, AS43, of Wilmington, Del., Aug. 15, 2018

James H. Baxter Jr., ANR45, of Georgetown, Del., Aug. 11, 2018

Joan Schafer Speakman, AS45, of Charlestown, Md., March 2, 2017

Dorothy Kalmbacher DiSabatino, AS46, of Wilmington, Del., June 6, 2018

Jeanne LeFevre Minshall, AS46, of Kennett Square, Pa., June 27, 2018

Marion C. Geesaman, AS48, of Wilmington, Del., June 29, 2018

Barbara Boyer Norman, AS48, of Newark, Del., Aug. 28, 2018

Milton S. Wahl, AS48, of Wilmington, Del., Aug. 30, 2018

William L. Natale, EG49, of Glen Mills, Pa., June 9, 2018

Eugene D. Anderson, ANR50, of Seaford, Del., Aug. 5, 2018

Andrew J. Kelleher, EG50, of Newark, Del., July 20, 2018

Lester D. Wilkes, EG50, of Towson, Md., Aug. 19, 2018

Robert J. Kugler, AS51, of Las Vegas, Nev., Feb. 7, 2018

Sherwood G. Rabenold, BE51, of Whitehall, Pa., July 29, 2018

Norman W. Steele, EG51, of Wilmington, Del., Aug. 16, 2018

R. Bruce Warren, BE51, of Newark, Del., July 16, 2018

Fred H. Baker Sr., AS52, EHD79M, of Delmar, Del., Sept. 6, 2018

Donald R. Carmichael, HS52, of Ocean Isle Beach, N.C., July 11, 2018

W. Richard Foster Jr., EG52, of New Holland, Pa., Aug. 19, 2018

Milton J. Keene, HS52, of Burleson, Texas, Aug. 18, 2018

Jane Vannerson McKenna, EHD52, of Wilmington, Del., Feb. 27, 2017

Nancy Brooks Browning, EHD53, of Castle Rock, Colo., May 4, 2018

Jo Nepa Ditto, AS53, of Lewes, Del., July 9, 2018

Ruth Arak Toor, AS53, of Maplewood, N.J., Sept. 7, 2018

Hugh Martin V., ANR54, of Milford, Del., Oct. 5, 2018

Joanne Kreer Pullinger, AS54, of Jupiter, Fla., May 27, 2018

Paul A. Hiznay, AS55M, of Warren, Vt., Aug. 18, 2018

John W. Spory, EG55, of South Abington Township, Pa., June 4, 2018

John Richter, EG56, of Dover, Del., Sept. 25, 2018

David A. Sharp, AS56, of Allen, Texas, Sept. 5, 2018

George L. Case, ANR57, of Townsend, Del., Aug. 29, 2018

Wynona S. Dawson, AS57, 61M, of Mc Calla, Ala., Jan. 14, 2018

John J. Fleming, BE57, of West Chester, Pa., Sept. 15, 2018

Jane Frandsen Hatchadoorian, HS57, of Wilmington, Del., June 15, 2018

Rita Rosenberg Best, EHD58, of Wildwood Crest, N.J., June 25, 2018

David L. Derbyshire, EG58, of Springfield, Pa., Aug. 14, 2018

John H. Tobin Jr., AG58, of Wilmington, Del., June 23, 2018

Urban N. Bowman Jr., HS59, of International Falls, Minn., Feb. 25, 2018

Douglas W. Carlson, AS57M, 59PhD, of Kingwood, Texas, July 16, 2018

Roscoe L. Exley, ANR59, of Newark, Del., July 13, 2018

Peter V. Steele II, EG59, of Wilmington, Del., June 7, 2018

Emily Donovan Cooke, HS60, of Rockville, Md., June 29, 2018

James H. Lidgley, AS60, of Georgetown, Texas, March 7, 2017

William P. Cornwell, AS61, of Philadelphia, Pa., Aug. 2, 2018

John R. DeWilde, AS61M, of Winchester, Va., July 15, 2018

Manfred Katz, AS61PhD, of Wilmington, Del., June 28, 2018

John E. Logan, EG61, of Lancaster, Pa., April 9, 2018

James A. Strazzella, EG61, of Silver Spring, Md., Jan. 28, 2017

Mary Ellen Ellwanger Wise, EHD61, of Denton, Md., July 6, 2018

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Gerard B. Bijwaard, EG63, of Roanoke, Va., July 19, 2018

Donald Woodmansee, EG63, of Houston, Texas, Sept. 19, 2018

John O. Turk, BE64, of Southbury, Conn., Aug. 3, 2018

Clarence E. Howe Jr., AS65, of Avalon, N.J., Feb. 26, 2018

Marian Sawin Langerak, AS47, EH73PhD, of Greenville, Del., Sept. 22, 2018

J. Ross Vincent, AS65, of Pueblo, Colo., July 7, 2018

Anne Goddin White, EHD65, 67M, of Evergreen, Colo., Sept. 12, 2018

Susan Markham Krall, EHD66, of New Orleans, La., July 16, 2018

Daniel E. Schooley, AS66, of Frankford, Del., July 7, 2018

W. Allen Webster, BE66, of Newark, Del., July 13, 2018

Ronald F. Basara, BE68, of Newark, Del., July 17, 2018

Stuart B. Hirschhorn, BE68, of Willingboro, N.J., March 6, 2017

Helen Nunez Wilson, EHD68M, of Newark, Del., Aug. 14, 2018

Richard L. Woodward, EHD68M, of Felton, Del., Jan. 3, 2017

Doris Staley Patnovic, AS69M, of Newark, Del., June 21, 2018

Elliott H. Snyder, AS69, of Terrell, Texas, June 06, 2018

Douglas C. Toland, EOE69, of Sagle, Idaho, May 20, 2018

Clarence L. Burkey, BE70M, of Ashburn, Va., March 30, 2018

Patricia Mitchell Hoffman, HS70, of Annandale, N.J., Aug. 29, 2018

Perry L. Mitchell, AS70, of Flagstaff, Ariz., July 1, 2018

Edward J. Mulderick Jr., AS70, of Lafayette, La., June 29, 2018

Ann M. Ryan, AS70, of Bear, Del., Sept. 11, 2018

Carol Johns Troxell, AS70, of Charlottesville, Va., Jan. 18, 2017

Douglas D. Hopper, BE71, of Hockessin, Del., July 11, 2018

Kenneth M. Lomax, ANR71M, of West Grove, Pa., June 9, 2018

David A. Newman, BE71, of Wilmington, Del., July 21, 2018

Norman S. Passmore III, AS71M, 76PhD, of Frankford, Del., May 9, 2018

Alan B. Peoples Sr., HS71, of Newark, Del., Aug. 6, 2018

Winthrop S. Smith, AS71, of Plattsburgh, N.Y., Aug. 24, 2018

Kristine F. Ciesinski, AS72, of Victor, Idaho, July 27, 2018

John L. Thomas, BE72M, of Pottstown, Pa., May 21, 2018

John D. Boehner, ANR73, of Rehoboth Beach, Del., Aug. 3, 2018

Karen V. Hadley-Dike, HS73, of Broomfield, Colo., Sept. 5, 2018

Miles F. Johnson, BE73, of Newark, Del., Aug. 18, 2018

Linda Townsend McNicholas, EHD73, of Ocala, Fla., June 16, 2018

Mary McKeown Melson, EHD73, of Bethany Beach, Del., July 4, 2018

Owen W. Blake, BE74M, of Wilmington, Del., July 30, 2018

Thomas I. Brooks, BE74, of Phoenix, Ariz., Sept. 6, 2018

Nancy Gibson Carmine, AS74, of Wilmington, Del., June 25, 2018

Kenneth E. Schubert, EG74M, of Wilmington, Del., June 1, 2018

James A. Somerville, BE74M, of Hilton Head Island, S.C., June 13, 2018

Edward S. Sperring, EHD74, of Medford, N.J., Aug. 22, 2018

FACULTY AND STAFF

Thomas B. Brill, professor emeritus of chemistry and biochemistry, July 23, 2018.

Joachim (Jock) Elterich, professor emeritus and founding member of the Operations Research program, June 27, 2018.

Lalita Manrai, professor of marketing and the first female faculty member to be promoted to full professor in the Lerner College, Sept. 7, 2018.

Frank B. Murray, H. Rodney Sharp Professor Emeritus and dean of former College of Education, Sept. 14, 2018. ■

C. Curtis Stickel, AS74, 94M, of Milford, Del., Sept. 1, 2018

James C. Widdoes, BE74, 78M, of Wilmington, Del., May 16, 2018

Richard A. Dinich, AS75, of Laurel Springs, N.J., July 3, 2018

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Robert E. Sheffield, EG75M, of Sugar Land, Texas, July 10, 2018

Patricia Gausz Skelly, AS75, of Bordentown, N.J., June 21, 2018

James B. Titus Jr., AS75, of Delmar, Md., Sept. 3, 2018

Richard C. Hanewinkel, EG76, of Rehoboth Beach, Del., July 28, 2018

Mary Chariton Odell, EHD76M, of Hull, Mass., Sept. 9, 2018

Michael F. Quinn, AS76, of Montclair, N.J., Sept. 24, 2018

Ilona Istok Banas, AS77, of Hockessin, Del., Sept. 17, 2018

Mary C. Lewis, AS78, of Millersville, Md., July 22, 2018

Gregory A. Raines, AS78, of Knoxville, Tenn., May 27, 2018

David W. Brown Jr., AS79, of Dover, Del., July 21, 2018

Margaret Gyorgy Dynes, AS79, of Newark, Del., Aug. 23, 2018

Elizabeth Blemker Simpkins, ANR79, of Glassboro, N.J., June 21, 2018

Robert S. Weldin Jr., AS80, BE83M, of Andover, Mass., July 2, 2018

Julianne Wunderle Begeman, ANR81, of Naples, Fla., July 24, 2018

Amy Graves Eschenbrenner, AS81, of Newark, Del., Sept. 9, 2018

Lenore A. Luberoff, AS81, of Charlotte, N.C., May 2, 2018

Laura Sowers Brown, AS82, 93M, of New Castle, Del., July 25, 2018

Robert F. Siebert, AS83, of St. Petersburg, Fla., July 19, 2018

Richard F. Atkinson, BE84, of Perkasi, Pa., July 25, 2018

Ralph B. Body, AS84, of Wilmington, Del., July 10, 2018

Sharon A. di Stefano, AS84, of Jersey City, N.J., Aug. 28, 2018

Stephen J. Dobraniecki, BE84, of Wilmington, Del., Aug. 30, 2018

Jacqueline Muchmore Guerard, HS84M, of Wenonah, N.J., Aug. 19, 2018

Brenda L. Kinnamon, HS84, of Camden Wyoming, Del., July 19, 2018

Lozelle Jenkins De Luz, AS85PhD, of Wilmington, Del., July 20, 2018

Elizabeth Glick Van Orden, AS87, of Newton, N.J., July 25, 2018

Linda Beasley Zervas, AS86, EH92M, of Elkridge, Md., Sept. 18, 2018

Michael B. Davis, EG87, of Newark, Del., Sept. 3, 2018

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EDDIE CONTI RECORDS

NCAA DIVISION I ALL-AMERICAN
All-American honors were bestowed on Eddie Conti, a senior defensive end from the University of Delaware, for his outstanding performance during the 2017 season. Conti, a member of the Blue Hen Football team, was named to the All-American team for the second time in his career. He finished the season with 10 sacks and 27 tackles, including 10 solo tackles. Conti's performance earned him a spot on the All-American team, a prestigious honor that recognizes the top players in the nation.

ATLANTED 10 CONFERENCE
Eddie Conti was named the Atlantic 10 Conference Defensive End of the Year for the 2017 season. He led the conference in sacks with 10 and in tackles with 27. Conti's performance was instrumental in the Blue Hen Football team's success during the season.

UNIVERSITY OF DELAWARE
Eddie Conti was named the University of Delaware Defensive End of the Year for the 2017 season. He led the team in sacks with 10 and in tackles with 27. Conti's performance was instrumental in the Blue Hen Football team's success during the season.

CAREER HIGHLIGHTS
Eddie Conti has been named to the All-American team for the second time in his career. He has also been named the Atlantic 10 Conference Defensive End of the Year and the University of Delaware Defensive End of the Year. Conti's performance has earned him a spot on the All-American team, a prestigious honor that recognizes the top players in the nation.

Standing TALL

NFL next stop for Eddie Conti?

Robert G. Mattone, AS87, of Little Silver, N.J., July 13, 2018

C. Curtis Staropoli, AS88, of Wilmington, Del., July 4, 2018

Myles G. Ryan, BE90, of Plymouth Meeting, Pa., June 24, 2018

James J. Roberts III, AS91, of Irving, Texas, Aug. 10, 2018

Julie Sheppard Turner, EOE91, of Wilmington, Del., July 6, 2018

Jamie L. Wolfe, AS91, of Dover, Del., Aug. 22, 2018

Melody A. Garrigus, AS92, of Rockville, Md., Sept. 2, 2018

Michele Gioffre Smith, AS92, of Wilmington, Del., July 11, 2018

Christopher B. Wiggins, AS95, BE99M, of Norristown, Pa., June 1, 2018

Nancy Smith Hubbert, HS96M, of Federalsburg, Md., June 20, 2018

Michele Shaw Steele, EHD97, of Dover, Del., July 4, 2018

Paula I. Chadis, AS98M, of Amherst, Mass., Feb. 13, 2018

Larry A. Masi Jr., AS00, of Coalinga, Calif., June 27, 2018

Gabrielle D. Manganaro, AS01, of Wilmington, Del., Sept. 15, 2018

Richard A. Wilson, EHD06, of Milford, Del., Sept. 20, 2018

Christopher S. Pepe, AS07, of Newark, Del., Aug. 29, 2018

Jason R. Barrowclough, EOE09, of Wilmington, Del., Aug. 24, 2018

Jesse A. Benigno, AS09, of Washington, D.C., July 29, 2018

Jared D. Grove, AS09, EG14, of Smyrna, Del., June 24, 2018

Matthew V. Felicetti, AS10, of Wilmington, Del., July 2, 2018

Sean M. Holland, AS10, of Nutley, N.J., May 27, 2018

Kelvin E. Quiroz, EG11, of Odenton, Md., Aug. 7, 2018

Christopher A. Behounek, BE12, of Yardley, Pa., July 15, 2018

Douglas W. Stevens, BE14, of West Chester, Pa., June 17, 2018

Cristian E. Zeak, AS14M, of Point Pleasant Boro, N.J., Aug. 31, 2018

Sean R. Morris, AS15, of Philadelphia, Pa., June 25, 2018

Sean M. Locke, BE16, of Newark, Del., July 18, 2018

Derek Fils-Aime, AA22, of Georgetown, Del., Oct. 17, 2018

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- Ravi Dattani, CFP®, CPA – 1996
- Karen Rencevicz Malchione, CPA – 1987
- Ryan Cross, CFP® – 1995
- Heather Bell Margolin, AAMS® – 1989
- Amit Suchak – 2007
- Heidi Santora O'Malley – 1983

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A CONVERSATION WITH...

The ability to extract meaning from “big data”—from quadrillions and quintillions of bytes of information—could transform not just the future of research and innovation, but the very foundation of our everyday lives. Here, **CATHY WU**, the founding director of UD’s new Data Science Institute (DSI), talks about what this means for our changing world.

How has big data changed our life already?

We are immersed in big data in every aspect of our life. We have access to more data than ever, and when used properly, it can help us understand the world and change it for the better. At the DSI, we are using the power of data science to study new approaches to health sciences, physical sciences, energy and environment, behavioral and social sciences, public policy, materials and more.

What’s one grand challenge big data could help solve?

Health. The future of medicine lies in precision medicine, which personalizes medical care to suit the need of each individual. If we tap into the vast wealth of health, lifestyle and environment data in electronic medical records, in genetic sequences and from smartphones and wearables, we can accelerate discovery about the prevention and treatment of both chronic and acute health conditions. Of course, it takes tremendous computing resources, including cloud computing, to assess such massive volumes of data, as well as great efforts to keep data secure.

Is the loss of privacy inevitable in the age of big data?

Privacy and cybersecurity are key challenges in this era. There are many ethical and legal considerations for users of big data, and it takes the whole community—government agencies, private sectors and research communities—to address these issues and adopt the best practices and principles that protect privacy.

What kind of education will future data scientists need?

Future data scientists would benefit from foundational knowledge, including machine learning, data mining

and more, all of which will be offered by our new master’s degree in data science. For cutting-edge research, our new faculty members will develop novel approaches and algorithms to enhance the data science expertise of faculty across campus. We will also bring together experts in policy and the social sciences to help analyze the social, economic and policy implications of this data-driven work. Collectively, they will train a diverse next-generation of data scientists and professionals.

What excites you most about the DSI?

It’s for everyone. It’s for all of us. We want to hear from people who have expertise in data science and people who have big data to share, and bring them together to analyze that data to yield new insights. The DSI will also help students, faculty and alumni who want to learn more about data science and how it can transform their work.

Where do you see the Institute in five years?

We will see a lot of transformative changes. I can’t even predict them, because the pace of growth in every aspect is exponential, from the data we accumulate to our ability to compute it. We will see vibrant multidisciplinary team science. We started with a small nucleus of people, but we are growing, and our network is expanding rapidly. The best is yet to come! 🐦



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