



THE UNIVERSITY OF
ALABAMA IN HUNTSVILLE

FALL ISSUE 2016

LEADING BY EXAMPLE

For world-renowned
scientist Dr. Gary Zank,
research and teaching
are a package deal



INSIDE:

ACADEMICS

Service learning
adds depth to
honors seminar



RESEARCH

Student's work
may improve
outcomes



ALUMNI

Achievement
awards honor
three alumni



HIGHLIGHTS: SIMULATION EDUCATION, 3-D PRINTING, SPACE WEATHER, & MORE!

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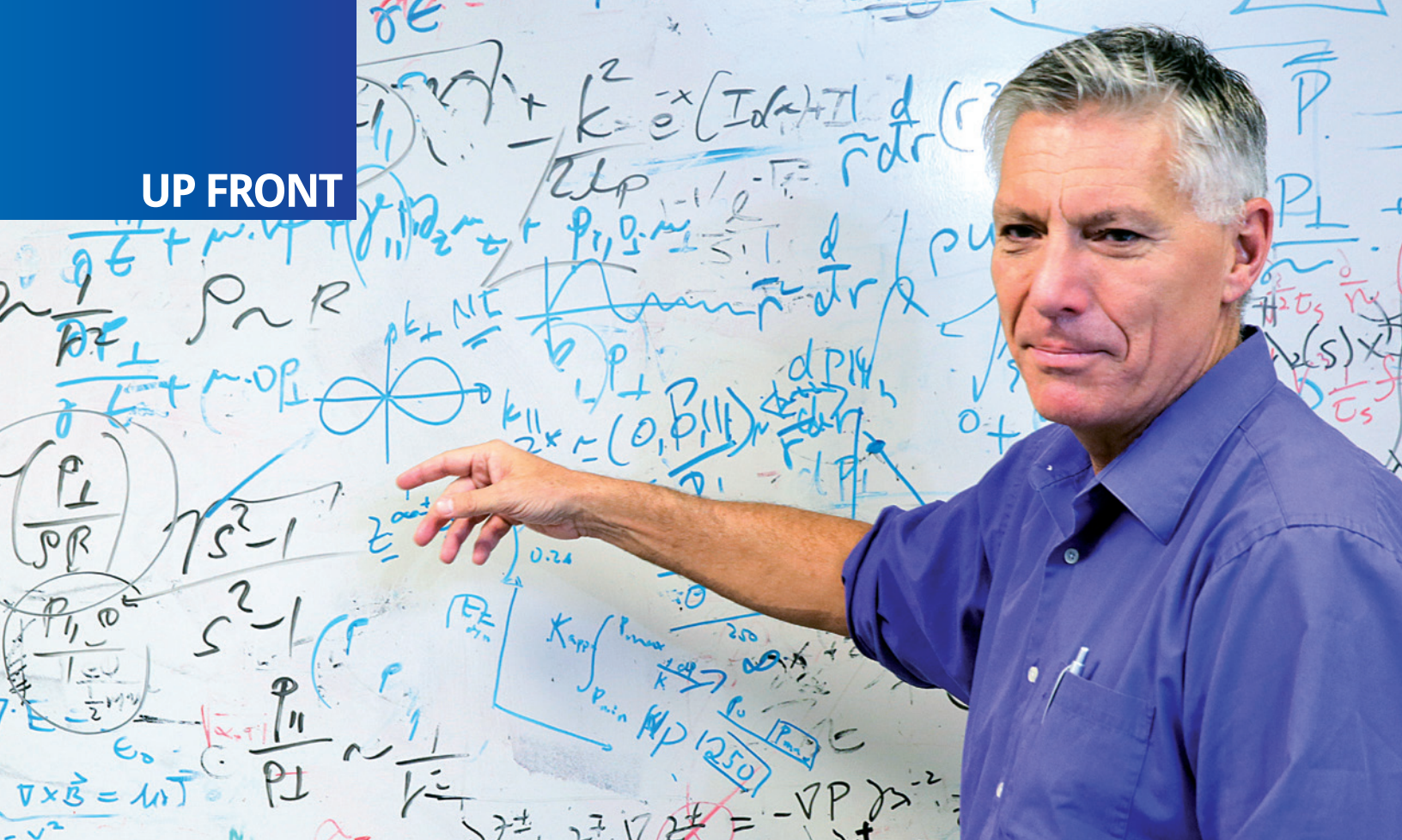
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UP FRONT



LEADING BY EXAMPLE

Dr. Gary Zank is not only setting a high bar as a world-class researcher, he's also setting a first-class example for his students at UAH

It took a moment for Dr. Gary Zank to process his recent election as a full member of the National Academy of Sciences (NAS) this past spring. After all, no other scientist in Alabama has ever received what is widely considered the field's highest honor. "I had some idea that I had been nominated, but it is an arcane and complicated process that takes several years to materialize," says Dr. Zank, chair of UAH's Department of Space Science and the director of the university's Center for Space Plasma and Aeronomic Research. "Many people have been nominated and almost as many are not elected."

Once it sank in, however, his first thought was not of what the momentous achievement would mean to his career but rather how thankful he was to those who had helped him achieve it. "This truly represents an honor that is shared by all the people I have been fortunate to work with, the people who have been with me in my life who have encouraged and supported my work and ideas and ambitions," he says. "It is not, and never can be, simply a reflection on me, but it reflects the wonderful people I have been fortunate enough to share my life and career with."

The NAS election was far from the first time that Dr. Zank, an eminent scholar and distinguished professor, has been recognized as a leader in his field. Last June, for example, he received the Axford Medal, the

highest honor given by the Asia Oceania Geosciences Society, in recognition of his outstanding achievements in the geosciences and his unselfish cooperation and leadership in Asia and Oceania. But while these accolades underscore his accomplishments as a scientist, they don't speak to his equally valuable contributions as an educator.

Since coming to UAH in 2008, Dr. Zank has taught, advised, and mentored many graduate students, some of whom have done their Ph.D. thesis work with him, and others who have simply attended his classes or spent time talking about their research with him. And with an acclaimed researcher at the front of the class, it's hardly surprising that many have been recognized in their own right. Among them, Ph.D. candidates Anthony Stefano and Parisa Mostafavi each received a prestigious NASA Earth and Space Science Fellowship, which provides up to \$30,000 a year in funding for recipients, while Ph.D. candidate Laxman Adhikari was awarded funding from the highly competitive Alabama EPSCoR Graduate Research Scholars Program.

Yet ask the students themselves about the benefits of being in Dr. Zank's orbit, and it's not the possibility of financial remuneration nor his reputation as a researcher of world renown that they point to. It's his willingness to spend his precious time and energy to ensure their long-term success. "I have been very fortunate to work with Dr. Zank, who has always been supportive and encouraging," says Mostafavi. "I have learned from him that a good researcher should be hard working, think deeply, and be able to work within a team. He wants all of his students to do their best from day one, and I deeply appreciate all his help and support."

Adhikari feels much the same way. "He has a very deep knowledge of plasma physics, but he is also a friendly and kind person," he says of Dr. Zank. "His ideas and advice are always useful in my research and also broaden my knowledge and understanding." Adds post-doctoral student Xiaocan Li, "He is great at explaining physics processes and mathematics in a clear and inspiring way, and his broad knowledge and deep understanding of many research fields encourages me to learn more."

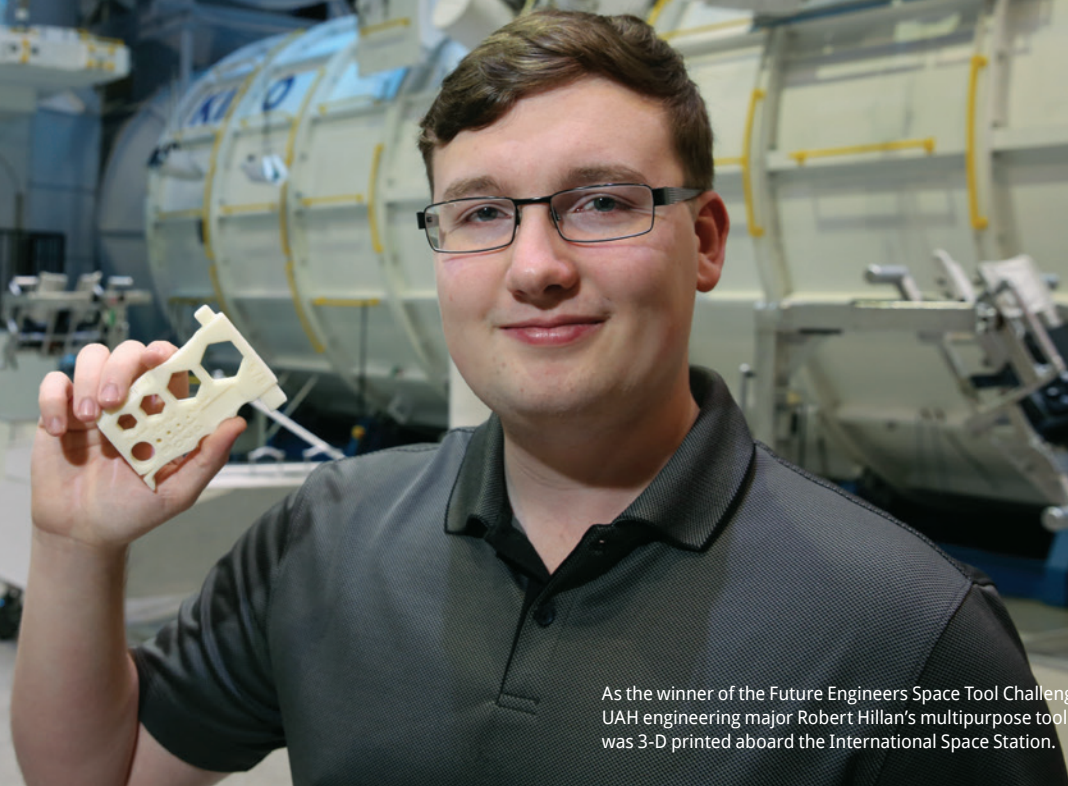
DeStefano, meanwhile, calls Dr. Zank "a strong role model" whose commitment to his work serves as an inspiration. "Anyone who has a conversation about

science with Dr. Zank will know that he has a passion for what he does," he says. "It might seem like an obvious requirement that to excel in a field you need to love it, but I really have begun to understand what it means to marry passion and work." He adds that he's also figuring out how to improve his focus and concentration by studying Dr. Zank's own work habits. "He has made it a point to learn how to work anywhere, be it on an airplane or while mowing the lawn!" laughs Stefano.

Indeed, Dr. Zank admits that his workday often lasts until the wee hours of the morning most nights of the week. "I would almost always rather go home and work on my research than watch TV or movies," he says, citing an inner drive that comes from more than just the satisfaction of formulating and solving problems. "It comes from the pleasure of understanding something about nature that has not been understood. Perhaps there is also a sense of contributing to the creation of knowledge and the broadening of culture that somehow renders one's purpose on Earth meaningful."

Whatever the motivation, it's an approach that has served him well thus far, leading to recognition on the international stage and election as a full member of the NAS. But while other scientists might be tempted to abandon their classroom duties and double down on their research, Dr. Zank's students are fortunate that he is in no hurry to do so. "Teaching is, of course, part of my job as a professor," he says with a laugh. "But I enjoy working with students and seeing them blossom, especially as they learn to do research and ask good questions, and develop the skills to formulate problems and to solve them. It can be very satisfying."





As the winner of the Future Engineers Space Tool Challenge, UAH engineering major Robert Hillan's multipurpose tool was 3-D printed aboard the International Space Station.

To infinity and beyond!

Student's multipurpose tool 3-D printed aboard ISS

Despite rushing to finish his last-minute entry, a Multipurpose Precision Maintenance Tool (MPMT), sophomore aerospace engineering major Robert Hillan ended up winning the first-ever Future Engineers Space Tool Challenge. His prize? A long-distance call to the International Space Station, where his tool had been 3-D printed by Commander Tim Kopra and Flight Engineer Jeff Williams. "I got the bragging rights for winning the very first of these competitions, but that was the most epic prize," says the native of Oberammergau, Germany.

Of course, as a long-time space enthusiast and a seven-time attendee of Space Camp, Hillan had "a better understanding of the environment" than most of his competitors. That led him to limit his design to only those tools that would be

most useful to astronauts: four wrenches, two drives, a pry bar, an ergonomic grip, a single-edged wire stripper, a ruler, a slot for Velcro, and a clip for a carabiner. He also prioritized safety, incorporating rounded edges and eliminating any moving parts to prevent pieces from snapping off. And knowing that two astronauts would be judging the finalists, he came up with a name that he knew would catch their attention – the MPMT. After all, he laughs, "NASA has an acronym for everything!"

After being chosen as the winner, Hillan was invited by competition co-sponsor NASA to attend the NASA Alabama Aerospace Day in Montgomery, AL, where he was joined by Marshall Space Flight Center (MSFC) Director Patrick Scheuermann and future ISS astronaut Scott Tingle. But nothing could compare to the day he was

invited to sit in MSFC's Payload Operations Integration Center and speak with the ISS crewmembers. "It was one of the first times, if not the first time, a regular person has gotten to speak with astronauts one on one," he says. He was also thrilled at his tool's reception. "They said they were really impressed! They thought it was cool and that it could have big advantages for deep space exploration."

That said, Hillan hopes they won't ever have an actual need for the MPMT. "I don't want the crew to use my design unless it's an absolute emergency – it could snap!" he says. "But I am glad that, if there is an emergency, they don't have to rely on pre-made things." Instead, as Hillan's tool has effectively demonstrated, future astronauts will now be able to 3-D print the tools they may one day need in space.

Learning by Doing

Service-learning classes combine classroom curriculum with practical experience, ensuring that students not only learn academic theory but also its real-world application. Such is the case with “Understanding Poverty in the U.S.,” a service-learning course offered by the Honors College at UAH.

“The class itself meets Mondays and Wednesdays,” says Dr. Charles Hickman, clinical associate professor of accounting. “But instead of meeting on Fridays as well, the students are required to spend 50 hours over the course of the semester volunteering with SaveFirst, which provides free tax-preparation services to low-income families.”

Providing volunteer manpower to SaveFirst is nothing new to UAH stu-

dents; the university has been involved with the Impact Alabama program for several years now. What is new, though, is combining the volunteer aspect with guest lectures from sociologists, historians, economists, and non-profit staffers to give students a more nuanced understanding of poverty and to help them become more socially conscious.

So far, it seems to be working. Brittney Whitten, a chemical engineering major, says poverty wasn’t really on her radar when she enrolled in the class. “I thought, I’m in college, so it’s not going to happen to me,” she explains. Since then, however, her beliefs have evolved. “It’s easy to categorize all people who are living in poverty and say it’s their fault,” she says, “But in reality a lot of things are

“I’ve learned I can use my knowledge and expertise to make a difference.”

– Alexander Mascarenhas

situational – they could happen to anyone. So now I’m more conscious about making judgments.”

For biology major Stacy Solomon, just learning about the cycle of poverty has opened up her eyes to the many ways she can help improve others’ lives. “The way I grew up I didn’t have a lot of direct interaction with poverty, but I think I’ve become a lot more aware about how changeable poverty is,” she says. “If people were more educated about things like predatory lending practices, then these things could be fixed. There are not a lot of reasons for things like that to exist.”

The same is true for Alexander Mascarenhas, an accounting major who recently received UAH’s CPA award. Like Solomon, he looks forward to using what he’s learned in class and the insight he’s received as a SaveFirst volunteer to add an altruistic element to his chosen career field. “I always thought accounting was an important aspect of business, but I’ve learned I can use my knowledge and expertise to make a difference,” he says. “College provides structure, but personal responsibility is the most important skill you learn. And what we’re being taught in this class can be used to help people.”



Students in the service-learning course are required to volunteer 50 hours of their time with SaveFirst, which provides free tax-preparation services to low-income families.

Meeting in the Middle



Kelly Fisk Hamlin founded Wolf Gap Education Outreach Inc. to make history education accessible and affordable to public and home-schooled students in the Tennessee Valley.

This past fall, Kelly Fisk Hamlin became the executive director and principal educator of Wolf Gap Education Outreach Inc., which makes history education accessible and affordable to public and home-schooled students in the Tennessee Valley. It's a role that's she is both passionate about and prepared for, after earning her master's degree in history from UAH.

"We realized schools in Giles and Lincoln Counties weren't going on field trips because they couldn't afford to rent a bus and travel to Nashville or Huntsville, so I thought what if I could bring those field trips to them?" says Hamlin, who is also the founder of the non-profit organization. "So far it's gotten a really good response, and we're trying to coordinate with the teachers' state curriculum requirements to design programs on subjects they've requested."

While at UAH, Hamlin also worked as a historic park manager and educator at Burritt on the Mountain where she was responsible for designing hands-on educational history programs for visitors to the 167-acre 19th-century living history park. "It was neat to be able to take people back in time," she says. "I got to spend lots of time wearing an 1800s dress, churning butter, and spinning wool!"

Her work there also dovetailed neatly with the research she was doing on the civil rights movement for her master's thesis. And because it had to have a public programming component, she says, "I asked the curator if it could be added to the schedule of rotating exhibits." Her


idea met with approval and her seven-panel installation – "This is Rocket City U.S.A., Let Freedom Begin Here: The Civil Rights Movement in Huntsville" – ended up on display in the museum's main building for three months.

Now that she has graduated, Hamlin has turned her focus toward growing Wolf Gap and restoring a historic home on her family's property that she hopes to one day turn into a museum. "Ultimately, I wish every student in every class could go to a museum site," she says. "But even if they can't, they can still see what it's like to actually churn butter or use the tools that people were using in the past."

That's become even more important nowadays, given how quickly technology is advancing. "My grandparents' world is lost to children growing up today, so this will help them see how we got to where we are now," says Hamlin. "And if you think history doesn't apply to everyday life, then you haven't been paying attention!"

"My grandparents' world is lost to children growing up today, so this will help them see how we got to where we are now."

– Kelly Fisk Hamlin


 A photograph showing three individuals seated at a conference table. On the left is a woman with dark hair wearing a white blazer. In the center is another woman with dark hair wearing a black top. On the right is a man with a beard wearing a dark suit and a yellow tie. They are all smiling at the camera. In front of them is a table with a microphone, a glass of water, and some papers. A blue banner is overlaid at the bottom of the photo.

Organizer and UAH nursing professor Dr. Lori Lioce (left), along with colleagues Ms. Colette Foisy-Doll and Mr. Matthew Aldridge, hosted several expert panel discussions at the annual International Simulation Symposium in Nursing Education in Istanbul, Turkey, this past January.

An Education in Simulation

UAH nursing professor champions widespread adoption of clinical simulation

Universities are increasingly recognizing the value that clinical simulation can add to nursing education. “National studies have shown that you can replace regular clinical experience with up to 50 percent simulation education with the same or better outcomes if there is a well-developed, standardized simulation program framework and faculty development,” says Dr. Lori Lioce, a clinical associate professor of nursing at UAH and the executive director of the College of Nursing’s Learning and Technology Resource Center.

That’s why she successfully advocated for its implementation at UAH – and why she’s now helping other universities do the same as the vice president of operations and the past chair of the standards committee for the International Nursing Association for Clinical Simulation and Learning (INACSL). Just this past January, for example, she was selected to organize the first annual International Simulation Symposium in Nursing Education in Istanbul, Turkey.

Presented in partnership with INACSL and the Florence Nightingale School of Nursing at Istanbul University, the two-day conference was held at the

university’s Congress and Cultural Center. In addition to presenting six times over the course of the conference, Dr. Lioce also hosted several expert panel discussions with her colleagues Ms. Colette Foisy-Doll, a professional resource faculty member in the Clinical Simulation Centre at MacEwan University in Alberta, Canada; and Mr. Matthew Aldridge, a senior lecturer with the Faculty of Health and Wellbeing at the University of Wolverhampton in England.



“It was a call to action for them,” says Dr. Lioce of the 400 physicians, administrators, nurses, and faculty members who took part in the conference. “They see that they’ve got everything they need to be successful; it’s just a matter of implementing the delivery differently.” Learning, she continues, is no longer about teaching on a stage. “It’s about re-creating an on-demand, immersive, learner-centered environment, where instructors are facilitators and debriefers in clinical situations as opposed to lecturers or one-way communicators.”

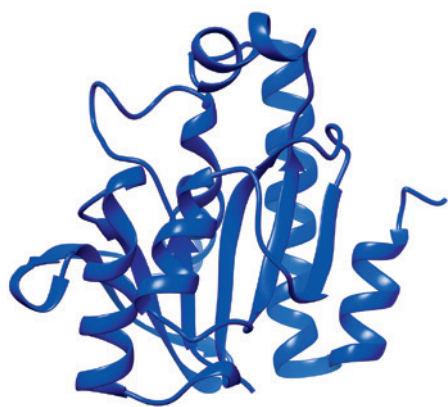
Since the conference’s conclusion, several attendees have contacted Dr. Lioce about pursuing a postdoctoral fellowship at UAH. “They have a real hunger for knowledge and application,” she says. And while that would no doubt add to her workload, the investment would be more than worth it given how much is riding on the outcome. After all, she points out, “we’re not training technicians who watch monitors. We’re training nurses who can assess, clinically reason, communicate, and take care of the whole patient to ultimately improve patient safety.”

Eyes on the Prize

Chemistry major's research may lead to new cure for Rocky Mountain spotted fever

Not long after winning the Department of Chemistry's highest academic achievement award her freshman year, undergraduate chemistry major Jessica Osier was hired on as a research assistant in Dr. Robert McFeeters' lab. There she was tasked with conducting research on essential peptidyl-tRNA hydrolase enzymes, and in particular, on bacterial Pth1 and the ability to inhibit peptidyl-tRNA cleavage as a novel antibiotic approach.

"The big picture is to characterize these Pths so that new antibiotics can be produced for diseases where current antibiotics aren't as effective," says Osier. In the past, that has included Pths for *E. coli*, *Salmonella typhimurium*, and *Pseudomonas aeruginosa*. But Osier's work, while still in the same clade of the phylogenetic tree, involves the bacteria *Rickettsia rickettsii*, the causative agent of Rocky Mountain spotted fever.



Ribbon diagram of a peptidyl-tRNA hydrolase1 (Pth1).



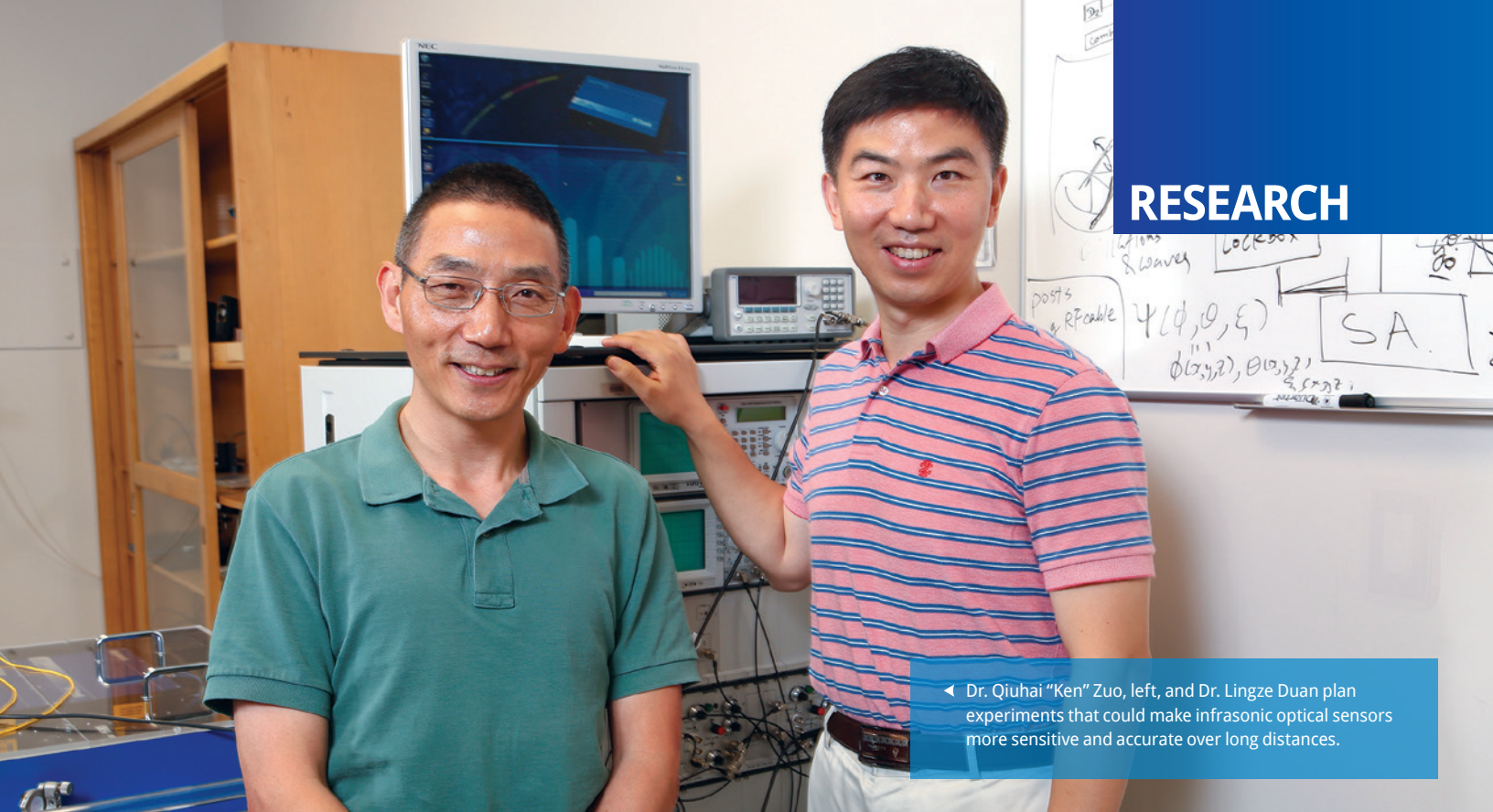
"This bacterium is not similar to *E. coli*, which is commonly used as a host because it grows quickly, is less expensive, and is easier to work with," she says. In fact, it took Osier all of last summer as a participant in UAH's Research or Creative Experience for Undergraduates program to learn how to clone, express, and purify the Pth1 enzyme from *R. rickettsii* (RrPth1).

Now her goal is to make the protein more stable in solution by using what's called a hanging-drop vapor-diffusion method, which will allow her to test various buffers and conditions like Tris and sodium phosphate at different pHs and salt concentrations. "I check every three days and then every week to see if my protein has precipitated in the buffer, which is bad, or if it's still clear, which means it's soluble," she says.

Once she achieves that milestone, she'll then be able to perform the tests needed to characterize the enzymatic

activity of RrPth1. "My plan is to screen for nucleotide inhibition to see if a certain concentration inhibits it," she says. "Because if you inhibit its function, the bacterial cell dies." She's also got her eye on the long game – the contributions that she and the McFeeters Lab can make to the greater good. "Hopefully," she says, "the work I have been doing and will do before I graduate might aid in another journal article for the lab."

Certainly Dr. McFeeters appreciates her efforts on the lab's behalf. "As part of our group, Jessica has tremendously advanced antimicrobial development against peptidyl-tRNA hydrolases, including production of the enzyme from a new pathogen and uncovering an unexpected cellular mechanism of inhibition," he says. "Over the last few years she has exceeded expectations, and I have no doubt that her success will continue throughout her career."



◀ Dr. Qiu hai “Ken” Zuo, left, and Dr. Lingze Duan plan experiments that could make infrasonic optical sensors more sensitive and accurate over long distances.

A Fresh Look at an Old Problem

Dr. Lingze Duan, an associate professor of physics, and Dr. Qiu hai “Ken” Zuo, an associate professor of mechanical and aerospace engineering, are exploring the fundamental properties of infrasonic optical sensors in the hopes of making them more sensitive and accurate over long distances.

Fiber optic infrasound sensors are useful for monitoring global nuclear weapon tests, as well as measuring changes in geological properties due to earthquakes, volcanic activities, and the movements of glaciers. Fiber optic sensors are also widely used in applications where the detection of very small changes in material structural properties over long distances is required.

The results of their research could impact future operation of these sensors in areas ranging from national security to Earth system science, which is why the pair recently received a \$340,314 grant from the National Science Foundation (NSF) Electronic, Photonic, and Magnetic Devices Program to fund their efforts. Their work was previously supported by cross-college faculty research funds from UAH’s Office of the Vice President for Research and Economic Development.

“We will explore the fundamental physics that set the ultimate limit of optical fiber sensors,” says Dr. Duan. “With any

fiber sensor, there is an intrinsic limitation of sensitivity. It is caused by spontaneous fluctuations inherent in the fiber and is governed by fundamental thermodynamic laws. In order to make very sensitive fiber optic sensors, we need to understand the physics underlying these spontaneous fluctuations.”

That’s where Dr. Zuo comes in. An expert in computational mechanics and materials modeling, he is helping to develop a three-dimensional model for thermomechanical noise.

“My role in this project is to improve the fidelity of the one-dimensional model by modeling the three-dimensional behavior of the fibers, including the lateral inertia and bending modes of deformation, in addition to the longitudinal modes considered in the one-dimensional model,” Dr. Zuo says. “There are some artifacts in the one-dimensional models that are not present in the data.”

Meanwhile, Dr. Duan’s graduate student Dipen Barot is hard at work developing a new frequency locking system that will stabilize the interrogating laser during future experimentation.

“There are a lot of scientific and engineering challenges that we need to address,” says Dr. Duan. “It wasn’t done in the past, because it is extremely difficult. But we are confident we have the best chance ever.”

Shining a Light on Space Weather



Parisa Mostafavi, a doctoral student in the Space Science Department who is being advised by Dr. Gary Zank, is studying how the sun mediates fundamental forces that affect space weather.

“My research is investigating the structure of shock waves and nonlinear plasma waves mediated by non-thermal energetic particles,” says Mostafavi, who has a bachelor’s degree in engineering physics and a master’s degree in plasma engineering.

Very strong shocks have recently been observed in the inner heliosphere, the region of space where the sun’s solar wind has significant influence. These are generated by massive eruptions of very fast moving gas from the sun and can accelerate particles to relativistic energies in vast quantities, easily destroying computer chips and other sensitive equipment in satellites.

“These very interesting observations of shocks in the inner heliosphere found that many shocks appear to be significantly mediated by solar energetic particles, which have a pressure that considerably exceeds both the thermal gas pressure and the magnetic field pressure,” Mostafavi says.

Shocks in the distant heliosphere and very local interstellar medium are also mediated by pickup ions, which are made of neutrally charged interstellar material that loses an electron as it leaks into the heliosphere and is picked up by the solar wind.

“It is undoubtedly important to understand the physics of these shocks,” she says, “since they contribute importantly to the dynamics of the inner heliosphere, and therefore will have an important impact on space weather.”

To help fund her work, Mostafavi recently received a NASA Earth and Space Science Fellowship. “This grant will help me to completely focus and do my best on my research. It will also help for my future work,” she says. The fellowship provides up to \$30,000 a year, including a \$24,000 student stipend and an allowance of up to \$6,000 that comprises \$3,000 for student expenses and \$3,000 for university expenses.

“Parisa is one of our most outstanding students and this is a very well-deserved honor and recognition of her accomplishments and potential,” says Dr. Zank of the award. “She already has two publications under her belt, a first-author proceedings paper, and a full-length journal paper she is now drafting that will present some exciting new results dealing with the structure of shock waves.”

Show and Tell

More students than ever took part in UAH's Research or Creative Experience for Undergraduates (RCEU) program this summer. For 10-12 weeks, participants undertake a research or creative work project on a schedule equivalent to a full-time job in return for a stipend of \$3,200.

Established more than 10 years ago, the RCEU program fosters collaborative learning between students and researchers and exposes students to academic scholarly work. It also assists in furthering UAH's research activities by providing opportunities for new and ongoing areas of study and creative work.

The program is funded through the UAH Office of the President, the Office of Academic Affairs, the Office of the Vice President for Research and Economic Development, and the Alabama Space Grant Consortium. It is directed by Dr. Bernhard Vogler, associate professor of chemistry, and administered with the help of David Cook, coordinator of student research.

As it did last year, this summer's RCEU incorporated a shadowing element. Students from Huntsville and

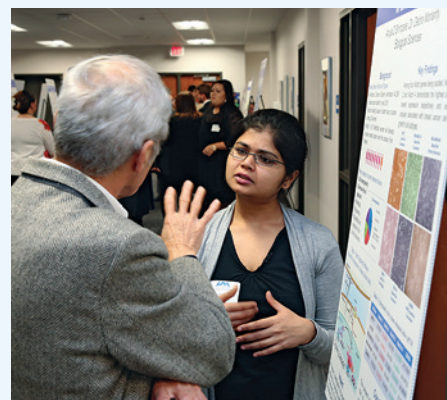
Madison high schools, as well as those from Calhoun Community College and Northeast Alabama Community College, met with RCEU students and their faculty/researcher sponsors to tour the lab space and observe the work being done on the research and creative projects.

"Almost half of the projects had a shadowing student this year, which is a marked increase from last year," says Cook. "We were really pleased, and we hope that this will expose them to the many opportunities available for students to work collaboratively with our faculty and research staff. We expect interest to continue to grow as the program becomes better known in the community."

The shadowing students were also invited back to attend the RCEU showcase event in the fall, so that they could see how the projects turned out. "Although the shadowing program is only a brief one for the visiting students," says Dr. Vogler, "it's a great opportunity for them to visit campus, meet a faculty member and undergraduate researcher, and get a glimpse of what collaborative learning through research at UAH is about."

“Almost half of the projects had a shadowing student this year, which is a marked increase from last year.”

– David Cook



Up, Up, and Away!

Design has begun on a method to distinguish wanted X-rays from stray X-rays on a NASA balloon-borne X-ray telescope. The team behind that method? Eighteen members of UAH's Space Hardware Club (SHC), who received a \$50,000 award from NASA's Undergraduate Student Instrument Project to work on the initiative.

"This is a very multidisciplinary project with members from different engineering and physics departments," says aerospace engineering major Adam Bower, who serves as president of the SHC. "The team is made up of a diverse group of international and U.S. students."

In addition to Bower, the SHC team includes Jared Fuchs as the systems engineer, Chloe McFadden as the budget analyst and environmental control systems lead, Matt Haskell as the mechanical lead, Elena Pradhan as the electrical lead, Samantha Johnson as the sensor lead, Chris Helmerich as the software lead, and Kyle Renfroe as the manufacturing lead. Also working on various subsystems are Daniel Corey, Dashiell Hajian, Bradley Henderson, William Hill, Nicholas Jordan, Brent Kennamer, Jarod Matlock, Elizabeth Payne, Devon Suns, and Akifumi Takeyama.

Under the parameters of the project, the team was tasked with figuring out a way to distinguish galactic background X-rays from desired X-rays. While one option would be to encase the telescope in the metal lead, the team was able to devise a more practical solution with guidance from their mentors and their advisor, Dr. Francis Wessling, a professor of

mechanical and aerospace engineering and the faculty principal investigator for the project: an anticoincidence shield that would account for X-rays from sources other than the celestial object being studied.

Now, with the necessary technology research already underway, says Bower, "we will have our preliminary design done by January of next year." After that, the team will validate their active shielding X-ray detection sensor system on a balloon gondola separate from the telescope. "We will be operationally ready by next July for integration tests with the balloon gondola."

The final test will come in August 2017, however. That's when the system will be flown as a secondary payload on a zero-pressure balloon in New Mexico that is being provided by NASA. To ensure the design functions as intended, the team is currently being advised by four NASA mentors who work on the X-ray telescope: Dr. Jessica Gaskin from the National Space Science Technology Center, and Dr. Albert Shih, Dr. Wayne Baumgartner, and Dr. Steven Christe from Goddard Space Flight Center.

Like them, Dr. Wessling is looking forward to seeing the outcome. But regardless of the system's success or failure, the students will have already benefited just by being a part of the project. "The SHC has many members who are bright, creative, self-motivated, and enthusiastic," says Dr. Wessling. "And companies are eager to hire students with real-world experience like this."



GETTING A HEAD START

UAH's Early Learning Center (ELC), located at 4503 University Drive, opened this past August to provide fully inclusive early childhood education services to learners ages three months to six years. The ELC includes Rise model classrooms, which are enrolled with 50 percent typically developing children and 50 percent children with identified special needs or developmental delays; Early Head Start/Head Start classrooms; and a First-Class Pre-Kindergarten classroom funded by the Alabama State Department of Education. The ELC functions as a service and outreach unit of UAH's College of Education.

"The ELC allows us to offer excellent early educational experiences for infants, toddlers, and preschoolers in the greater Huntsville area," says Dr. Beth Quick, Dean of the College of Education. "And it provides an invaluable opportunity for our pre-service and graduate teachers to see developmentally appropriate inclusive practice enacted in the classroom."

The ELC's class sizes are determined by the accreditation guidelines of the National Association for the Education of Young Children. Each is staffed by two teachers; every lead teacher holds a bachelor's degree or higher in early childhood education, special education, child development, or a related field, while every auxiliary teacher has a minimum of an associate degree or equivalent hours specific to young learners. Therapy services for learners with identified special needs are also provided on site using an integrated therapy approach. "I am delighted to see the continued growth and expansion of our Rise model classrooms," says Dr. Quick.

The ELC is open year-round and its calendar is aligned as closely as possible with UAH's and those of the local school systems. Its hours of operation are Monday through Friday from 8 a.m. to 2:30 p.m., with breakfast, hot lunch, and a snack included in the monthly tuition. Before- and after-school care are also offered Monday through Friday from 7 to 8 a.m. and 2:30 to 5:30 p.m., respectively, for an additional monthly fee.

The ELC is supported by gifts and grants from individuals, foundations and corporations, tuition, and UAH. More information can be found at uah.edu/early-learning-center.



Getting Down to Business

Dr. Jason Greene named dean of the College of Business Administration

This summer, Dr. Jason Greene began his tenure as the new dean of the College of Business Administration. He joined UAH after serving as the Henry J. Rehn professor of finance and interim dean of the College of Business at Southern Illinois University (SIU). Prior to that, Dr. Greene held positions as a professor of finance at SIU, and as vice president and senior investment officer at INTECH, a portfolio management company in West Palm Beach, FL. He also served as an associate professor of finance at Georgia State University.

“It is an honor to join UAH and the College of Business Administration, especially at such an exciting time in the history of the university, the college, and the community,” says Dr. Greene. “We are well-positioned to grow and enhance our engagement with technological, scientific, and traditional businesses in Huntsville and across the region. I am looking forward to working with our outstanding faculty and staff to enhance opportunities for our students and expand our partnerships within the community.”

Dr. Greene’s research focuses on financial markets and portfolio management, including the examination of mutual funds, mutual fund flows, trading costs, and market liquidity. He is the author of *A Note on the Sources of Portfolio Returns:*

Underlying Stock Returns and the Excess Growth Rate (2014) and the co-author of *Capacity and Factor Timing Effects in Active Portfolio Management* (2010). His research has been cited in numerous nationally distributed newspapers and financial magazines, including *The New York Times*, *USA Today*, *The Wall Street Journal*, and *The Financial Times* (London); he has also appeared on CNBC’s “PowerLunch.”

“Dr. Greene has numerous distinctions and achievements and brings a wealth of experience in leadership and administration, research, scholarship, and teaching,” says Dr. Christine Curtis, Provost and Executive Vice President for Academic Affairs.

“It is an honor to join UAH and the College of Business Administration, especially at such an exciting time in the history of the university, the college, and the community.”

– Dr. Jason Greene



UAH's College of Nursing launched its independent Doctor of Nursing Practice (DNP) program this fall.

Advanced Care

College of Nursing introduces independent DNP program

This fall, UAH's College of Nursing launched an independent Doctor of Nursing Practice (DNP) program. Previously, UAH's DNP degree was offered as part of a joint program with the University of Alabama's Capstone College of Nursing and the University of Alabama at Birmingham's School of Nursing.

"By having an independent program, we are able to better meet the needs of students seeking graduate education in nursing in the state of Alabama," says Dr. Marsha Adams, dean of the College of Nursing. "We are also able to more effectively achieve our mission to educate and inspire individuals to become nurse leaders who act with integrity, discover through scientific methods, and advocate for the best healthcare experiences in a complex and evolving healthcare environment."

The initiative joins several others that have recently been introduced to increase both enrollment and retention. These

include transitioning to total online testing, creating a new curriculum to promote higher-level learning and application for clinical excellence in the Bachelor of Science in Nursing (BSN) program, creating a new curriculum to promote quality and safety in the RN-BSN program, and adding a state-of-the-art simulation center with telehealth technology.

As for the new degree, it can be earned via one of two pathways: the post-baccalaureate to DNP, which integrates advance practice nursing content from the Master of Science in Nursing (MSN) into the DNP; and the post-master's to DNP, for those nurses who have already earned an MSN. Those in the post-baccalaureate to DNP program can choose from two concentrations: leadership in healthcare systems, and nurse practitioner in family and adult gerontology acute care, which aligns closely with the college's status as a member of the National Hartford Center of Gerontological Nursing Excellence.

"All courses for these concentrations already existed, so it was more of a restructuring of the present curriculum," says Dr. Adams. "And as with our other programs, this one incorporates distance-accessible methods for the delivery of graduate clinical programs." Both pathways are also offered at a flat \$366-per-hour tuition rate with no additional fees regardless of residence.

Despite its newly independent status, however, the program continues to maintain its long-standing ties with its sister campuses through regular meetings among the deans, collaboration among the faculty on research and scholarship activities, and the development and implementation of a joint annual DNP summit. "By collectively increasing the amount of DNP graduates," says Dr. Adams, "we have a greater potential of meeting the projected need for primary and acute care providers in the coming years."

2016 ALUMNI OF ACHIEVEMENT

The UAH Alumni of Achievement Award was presented to three outstanding alumni at a ceremony held Thursday, August 4, in the Wilson Hall Auditorium on the UAH campus. The highest honor bestowed by the UAH Alumni Association, the award recognizes graduates who have distinguished themselves professionally and personally, and who exemplify the high standards of UAH.



Dr. William Emrich (’03 Ph.D. Mechanical Engineering)



A nationally recognized leader and instructor in the field of nuclear thermal rocket propulsion, Dr. William Emrich cites as one of his early influences the late Dr. Clark Hawk, founder of UAH’s Propulsion Research Center. “His review of my dissertation along with many other discussions we had over the years were always thoughtful and wise,” says Dr. Emrich. “Dr. Hawk never let me get away

with saying or writing something in a manner that was unclear or obtuse. I definitely benefitted greatly from his advice during my Ph.D. studies.”

Before attending UAH, Dr. Emrich earned his bachelor’s degree in mechanical engineering from the Georgia Institute of Technology and his master’s degree in nuclear engineering from the Massachusetts Institute of Technology. He has also attended fusion courses at Lynchburg College and courses in astrophysics and plasma physics at Princeton University.

Today, Dr. Emrich serves as the project manager and lead investigator for the megawatt-class Nuclear Thermal Rocket Element Environment Simulator at NASA’s Marshall Space Flight Center; he

also teaches fission propulsion for UAH’s Department of Mechanical and Aerospace Engineering. Among his numerous publications is an article co-authored by Dr. Hawk and published in the *Journal of Propulsion and Power* entitled “Magnetohydrodynamic Instabilities in a Simple Gasdynamic Mirror Propulsion System.”

Dr. Emrich is an associate fellow of the American Institute of Aeronautics and Astronautics (AIAA), a member of the Nuclear and Future Flight Propulsion Technical Committee, a fellow of the American Society of Mechanical Engineers, and a Professional Engineer in mechanical engineering and nuclear engineering. Outside of work, he serves as an elder and leader at Westminster Presbyterian Church,

where he oversees events designed to enrich relationships among families and arranges visitation to provide support for those who are sick.

In addition to being named a 2016 Alumni of Achievement Awardee, Dr. Emrich was also selected by AIAA as the 2015 Engineer of the Year, leading Huntsville Mayor Tommy Battle to present him with

a Dr. William Emrich Day proclamation. As with that award, however, he is quick to share credit for this most recent one – which he calls “an honor and a privilege” – with those around him.

“Many people along the way have had a hand in helping me get to this point,” he says. “Other students and faculty have enriched my knowledge of engineering

and have sparked ideas. My wife and family have been loving and supportive and have given generously of time that I might otherwise have spent with them. There have also been many other people who in small ways and large have contributed to my professional development. To all of them I owe a debt of gratitude that I can never fully repay but to whom I readily dedicate this award.”

Jonathan Hard (’05 BS Management)



Jonathan Hard may have graduated from UAH in 2005, but the chief executive officer of H2L Solutions Inc. maintains close ties with his alma mater. Last year, for example, he was instrumental in helping the College of Business Administration identify and secure guest speakers for their annual Entrepreneurs Roundtable event.

“I wanted to create a relationship with UAH to better the community and provide a channel for its students to not only work for H2L, but to work for as many U.S. Department of Defense companies as possible,” says Hard, adding that he also works closely with UAH’s Office of Career Services to match graduates with employers. “We have currently hired UAH graduates and have other students

that intern with us. I am always looking for ways to support UAH.”

As a CEO, Hard has brought acclaim to H2L. The Huntsville/Madison County Chamber of Commerce named the company one of the Best Places to Work in 2016 and recognized it with the Emerging Business of the Year Award in 2015. Prior to joining the company, which provides cybersecurity solutions for government and commercial customers, Hard served as a cybersecurity engineer in the defense industry.

Hard earned an associate degree from Francis Marion Military Academy and is currently working on a master’s degree in cybersecurity from the Polytechnic Institute of New York University. He also spent 12 years in the Alabama National Guard, graduating from Infantry Officer Basic Course, Ranger School, and Airborne School, and completing a tour in Iraq as an infantry officer. During that time, he earned numerous awards and commendations, including the Bronze Star, the Iraqi Campaign Medal, the National Defense Ribbon, the Humanitarian Service Medal, the Global War on Terrorism Service

Medal, the Ranger Tab, the Parachutist Badge, and the Overseas Ribbon.

Over the years, Hard’s philanthropy has extended far beyond the UAH campus. He has raised money for Delta Zeta’s Bubbly and BonBons, with proceeds benefitting Huntsville Hospital; ATO’s Battle of the Buffalo, which supports cancer patients at Clearview Cancer Institute; Mistletoe Madness, which raises funds for the American Diabetes Association; Harris Home for Children’s Golf Tournament; and the 2016 Empowering Our Veterans event, which he both sponsored and also served as the keynote speaker. Currently, he is on the board of directors for several Huntsville-area community service organizations and small businesses, including the Harris Home for Children, the Huntsville Association of Small Businesses in Advanced Technology, Building Relationships in Community, and the Women’s Business Center of North Alabama.

It is thanks to these efforts, along with his professional accomplishments, that have led to Hard being named a 2016 Alumni of Achievement Awardee.

Michael Slaton

('02 BA Foreign Language and International Trade)



Michael Slaton attended UAH to play ice hockey, so it was only natural that he would turn to his teammates when the time came to decide on a major. "We sat in the cafeteria with a counselor and the university academic handbook for more than an hour, discussing majors and career opportunities," he says. "Ultimately, we chose foreign language and international trade, because each of us had substantial experience with foreign languages and we were inspired by future travel opportunities."

It proved to be a prescient choice. After graduating from UAH in 2002, Slaton joined Northwest Airlines as a financial analyst, first based at the company's global headquarters in Minneapolis and then at its Asia Pacific headquarters in Tokyo. He eventually rose to the position

of senior manager of sales, planning, and analysis before joining Hilton Worldwide in 2009 as their director of finance for commercial services. He now serves as the hospitality company's vice president of finance for the Asia Pacific region, making him the senior executive responsible for all financial functions throughout one of Hilton's highest growth areas.

Slaton credits his UAH education with allowing him to "pursue diverse career and life experiences," recalling in particular the influence of political science professor Dr. Kathy Hawk. "I enjoyed her courses immensely because they had real-world implications as well as practical cultural applications that I refer to even now in my professional life," he says. He also has nothing but praise for Dr. W. David Allen, Dr. Sandra Nielsen, Dr. Donna Reed, and Dr. Dorla Evans. Of the latter, he says, "her willingness to give her time and energy has had a lasting impact on my career."

While at UAH, Slaton was a member of Phi Kappa Phi, Phi Sigma Iota, and Omicron Delta Kappa. After graduating summa cum laude, he went on to earn

an MBA from McGill University in Canada. Along with his wife Ramala Sherchan Slaton, with whom he has three daughters, Slaton is a frequent supporter of philanthropic endeavors. He has served as a volunteer hockey coach for youth programs in Minneapolis, Tokyo, and Singapore; raised more than \$10,000 for the Make-A-Wish Foundation; participated in numerous events sponsored by the National Brain Tumor Society; and assisted need-based organizations such as OzHarvest in Australia and Goonj in India. Most recently, Slaton led a group that traveled to Ban Ao Kung in Phuket, Thailand, to help plant mangroves and protect the local marine community.

As for being named a 2016 Alumni of Achievement Awardee, Slaton says he is "very grateful" for the honor. "I chose to attend UAH because of its reputation for a quality education, as well as the opportunity to wear the UAH hockey jersey and represent my school," he says. "To be recognized by my peers, teachers, and mentors as an Alumni of Achievement Awardee is something I never would have imagined."



The mission of the UAH Alumni Association is to continually build and grow an organization of devoted and proud UAH graduates committed to preserving and promoting the rich history and traditions of the university. There are no dues for membership, and all UAH graduates are automatically members of the UAH Alumni Association. Those who attended UAH but did not graduate may also join the Association.

Learn more at uah.edu/alumni.

A Legacy of Love

Endowed scholarships provide much-needed financial support for students while honoring loved ones with a living legacy



Roberta Howse Yeager with her three children, Vaughn Yeager, Cindy Hutchens, and Holly Rode (l-r).

The approximately \$2 million in privately funded scholarships that UAH disburses each year serve a dual purpose. First and foremost, they offset or even negate the cost of tuition for scholarship recipients, enabling them to attend the university without incurring excess debt. But just as important, they help UAH attract some of the best and brightest high school students from across the country and the world.

These scholarships would not be possible, however, without the generosity of the university's extended community of supporters, many of whom choose to give in honor or memory of a beloved family member or friend. One such donor is Cindy Hutchens, who along with her husband Dr. Dale Hutchens, recently established the \$25,000 Roberta Howse Yeager Memorial Nursing Scholarship in her mother's name.

"My mother was a nurse for more than 40 years. She grew up on a farm and

didn't have the means to go to school without help, so her brother paid the tuition while he was in the Navy. She appreciated him very much," says Ms. Hutchens, whose daughter-in-law is a UAH alumna. "She made a difference in so many lives as a nurturing nurse and gave back much more than the tuition she received. We want to remember her by helping other students achieve their educational goal of being a nurse."

For UAH alumna Anita Smith, it was the memory of her late husband that inspired her to establish the Guy Allen Smith Memorial Scholarship. The \$30,000 endowment seeks to support students who demonstrate "initiative; a creative, innovative bent; an enterprising or pioneering spirit; and exceptional intelligence" – all characteristics exhibited by Mr. Smith, a UAH graduate and recipient of NASA's Silver Snoopy Award.

"Guy loved space exploration, and his goal was to work with NASA. He was able

to fulfill his dream through the opportunity to attend UAH, working on dozens of experiments through UAH-NASA partnerships," says Ms. Smith, speaking on behalf of herself and the couple's three daughters, Hannah, Heather, and Hali. "His most favorite thing was being a mentor to many interning students. It is our hope that we can continue to honor his memory through his scholarship so that other students will also have their dreams come true."

Scholarships are, of course, one of many ways to support the university and its students. But there are few others that have the same impact. By honoring those who have come before, families like the Hutchens and the Smiths ensure that their loved ones live on – not just in name, but also in spirit.



Roberta Howse Yeager, whose brother helped pay for her schooling, enjoyed a 40-year-long career as a nurse.



Guy Allen Smith, a UAH graduate and senior engineer with Tec-Masters, loved camping, tinkering with robots, and looking at the stars through his telescope.

For information about how to establish an endowed scholarship or to support the university in another way, please visit uah.edu/giving/ways-to-give.

HIGHLIGHTS

SOCIAL MEDIA

Check out our most popular social media posts from the last few months.

We're thrilled that Huntsville made the list of *Southern Living's* Best College Towns in the South! We think it's pretty great here too. <http://on.uah.edu/2blo0br>

Those of us already here know this, but now Mint has listed Huntsville as one of the most affordable cities in the country! <http://on.uah.edu/2bEKtnH>

"The robots provide the opportunity for our graduate nurse practitioner students to participate from a distance." <http://on.uah.edu/2b75nsU>

"@UAHBusiness has created a program that prepares future HR managers with the skills needed to be successful." <http://on.uah.edu/2blo76Y>



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[@UAHuntsville](https://twitter.com/UAHuntsville)

The UAH campus is now tobacco & vapor free! <http://on.uah.edu/2bLKR56>

"I loved being able to hear the differences that women have made @NCCWSL." <http://on.uah.edu/2bg9EMg>



▲ Take a tour around the UAH campus without leaving your chair! <http://on.uah.edu/2bg8rod>

ATHLETICS

SEASON TICKETS NOW AVAILABLE

With 14 home games marking the Chargers' fourth year in the prestigious Western Collegiate Hockey Association, the time has never been better for fans of UAH's Division I ice hockey program to purchase season tickets. Choose between the standard 14-game package for \$192 or the \$99 FlexTix package, which gets you 10 tickets to use at any home UAH hockey game. Call **256-UAH-PUCK** to purchase your tickets today, and get ready to cheer on the UAH Chargers to victory this season!

*Want to help the program by joining the Blue Line Club? Learn more at uahchargers.com.



WOW

Week of Welcome



UAH's fall Week of Welcome took place August 12-20. The popular event comprises programs and activities designed to welcome new and returning students to campus.



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The 2016-2017 academic year marks the 50th anniversary of UAH's Department of Music. Join us as we commemorate this landmark occasion with a yearlong Golden Jubilee celebration! Learn more at uah.edu/music-jubilee.