

# 2021 Annual Report



# MISSION

The University of Alabama in Huntsville is a research-intensive, internationally recognized technological university serving Alabama and beyond. Our mission is to explore, discover, create, and communicate knowledge, while educating individuals in leadership, innovation, critical thinking, and civic responsibility and inspiring a passion for learning.

# VISION

The University of Alabama in Huntsville will be a preeminent, comprehensive, technological research-intensive university known for inspiring and instilling the spirit of discovery, the ability to solve complex problems, and a passion for improving the human condition – a university of choice where technology and human understanding converge.

# CORE VALUES

## ***Integrity and Respect***

We are guided by principles of ethics, treat others with deferential regard, and are civil in our interactions.

## ***Diligence and Excellence***

We work hard and are tireless in the pursuit of our goals and achieving outcomes of the highest quality.

## ***Inclusiveness and Diversity***

We honor the individual. We celebrate differences and use them to create unity.





# PRESIDENT'S MESSAGE



I am honored and humbled to serve as the interim president of The University of Alabama in Huntsville. I fully understand how important this job is, especially at this moment in time. There are so many good things happening at UAH. The faculty and staff are talented and dedicated. The caliber of our students is excellent. Our graduates are making a positive impact around the world as the next generation workforce. A foundation has been laid that fosters an environment that provides an education that is second to none.

We intend to go even further with that level of success. We're going to recruit the brightest students, hire more faculty, and construct the best facilities. We're going to work hard to convince great people to be a part of our team. And we're going to support them to achieve at the level they want to achieve and accomplish their dreams. We're also going to strive for excellence in everything we do. We want every person involved with UAH to be more successful as a consequence.

To meet these goals, there are several things we need to do. First, we don't want to be a best kept secret! We must make sure everyone understands how good we are at what we do and the terrific career opportunities available to them.

But we must go beyond that. We will also provide our students with enhanced learning experiences through internships, undergraduate research, and involvement in the community. And we must support the faculty with the resources they need to be productive and continue to grow research and funding opportunities.

UAH provides the talent and knowledge necessary for this region to excel and grow. At UAH we strive to work a little harder, care a little more deeply, and give a little bit more. And we're going to be resilient to meet the challenges ahead.



Charles L. Karr  
*President*



# BY THE NUMBERS

## University Community

**9,636**

STUDENTS

**556**

FACULTY

**1,620**

STAFF

**46K+**

ALUMNI

## Incoming Freshman Class – Fall 2021

**27**

AVERAGE ACT

**3.97**

AVERAGE HS GPA

**1,204**

FRESHMAN CLASS

## Graduates

**2,284**

DEGREES AND CERTIFICATES AWARDED IN AY 2020-2021

**93%**

CAREER OUTCOME RATE 2019-2020 GRADUATES

**\$58,700**

HIGHEST AVERAGE STARTING SALARY IN ALABAMA

–SmartAsset

**#1 ROI**

IN THE STATE FOR BOTH IN-STATE AND OUT-OF-STATE STUDENTS

–Payscale

## Research

# #12

IN NASA-FUNDED  
RESEARCH EXPENDITURES

# #19

IN DOD-FUNDED  
RESEARCH EXPENDITURES

### National rankings for federally-funded research expenditures

**#6** AEROSPACE/AERONAUTICAL/ASTRONAUTICAL ENGINEERING

**#9** COMPUTER AND INFORMATION SCIENCES

**#10** ATMOSPHERIC SCIENCE AND METEOROLOGY

**#13** ASTRONOMY

**#18** INDUSTRIAL AND MANUFACTURING ENGINEERING

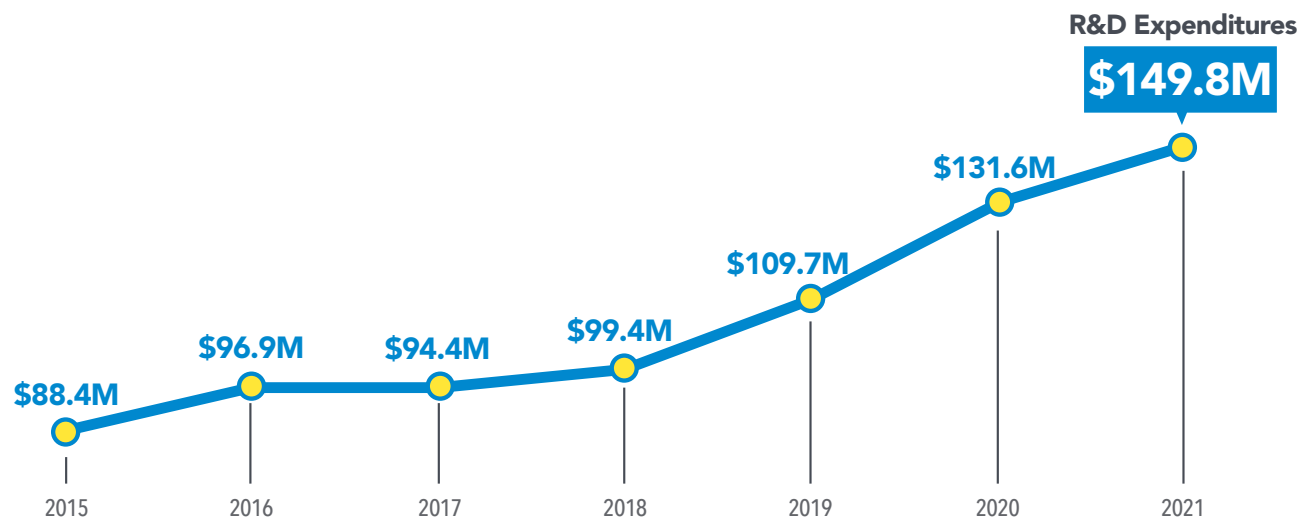
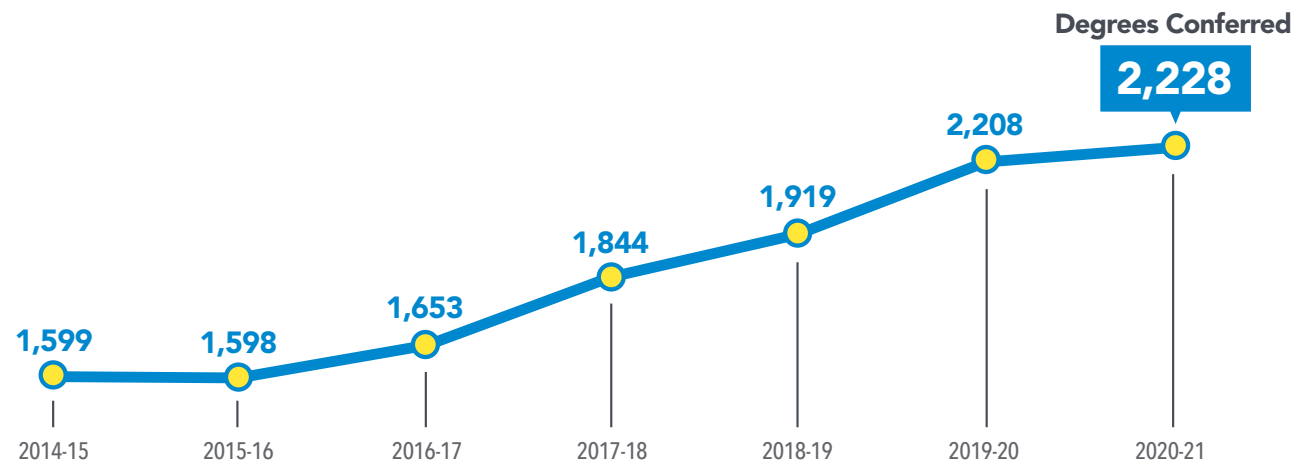
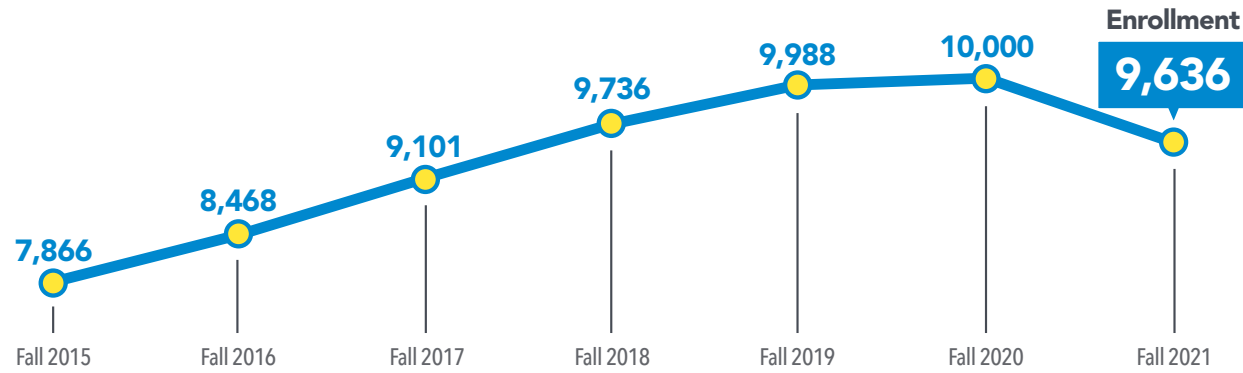
**#22** ECONOMICS



# GROWTH







**23%**

INCREASE IN  
ENROLLMENT  
SINCE 2015

**39%**

INCREASE IN  
DEGREES CONFERRED

**69%**

INCREASE IN  
R&D EXPENDITURES

# WHERE WE EXPAND HORIZONS

No matter the field, UAH students are welcomed at any phase in their scholastic careers to experience the innovative research and educational opportunities this university offers. UAH is the place that opens new vistas of creativity, unlocking the intellectual curiosity needed to meet the complex demands and challenges of the future. The customized career preparation and academic support found here encompass professional development, certification and individualized training. UAH encourages lifelong learning and outreach from early childhood through career to retirement, a journey of continual growth, exploration and discovery.



### K-12

- ▶ Alabama Math, Science, and Technology Initiative Host University
- ▶ Systems Management and Production Center – STEM Help Outreach Program
- ▶ Girl Scouts Cybersecurity Training
- ▶ GenCyber Camps
- ▶ Creating Entrepreneurial Opportunities Program
- ▶ College Academy
- ▶ Shadowing Summer Community of Scholars



### Undergraduate and Graduate Studies

- ▶ College of Arts, Humanities, and Social Sciences
- ▶ College of Business
- ▶ College of Education
- ▶ College of Engineering
- ▶ College of Nursing
- ▶ College of Professional Studies
- ▶ College of Science
- ▶ Graduate School
- ▶ Honors College

## The UAH Education Continuum



### Early Learning

- ▶ UAH RISE School
- ▶ Office of School Readiness
- ▶ 4-Year-Old Grant Classrooms
- ▶ Early Head Start Classrooms
- ▶ Head Start Classrooms



### Community College

- ▶ Pathways Joint Admission Program
- ▶ Visiting Student Program
- ▶ Shadowing Summer Community of Scholars
- ▶ Dual Nursing Degree Programs



### Professional and Continuing Studies

- ▶ Professional Development Solutions – Certificates, Short Courses, and Customized Training
- ▶ Osher Lifelong Learning Institute

# ACADEMICS

Education begins in the classroom, but it doesn't stop there. UAH offers over 100 fields of study across nine colleges, in addition to 17 separate research centers and institutes. Our students sharpen their skills through real-life research, with a multitude of internships and co-ops available where their knowledge is tested and honed by an array of business and industry partners. UAH educational opportunities are there to fit any need. Our innovative experiential approach to learning provides undergraduate and graduate students alike the chance to apply career-ready skills to help them grow and succeed.

## UAH TEAM SHINES AT NATIONAL CYBER SUMMIT

Binary Opposition, a team comprised of students Jasmine Le, Carter Grimmeisen and Marcus Jefferson, won the academic category and a \$5,000 prize in a Cyber Cup capture the flag cybersecurity competition at the recent National Cyber Summit in Huntsville. Binary Opposition placed fifth overall with participants tackling a number of true-to-life challenges that mirror those faced by professionals. Tasks performed ranged from exploiting a vulnerable web application, to reverse engineering software binaries and deciphering encrypted data. These competitions provide an invaluable experience to examine concepts learned in the classroom against industry applications. The competition gave team members the opportunity to network with professionals in the field as well.

## UAH HOSTS NATIONWIDE POSTER CONTEST

UAH hosted the 14th annual Wernher von Braun Memorial Symposium student poster competition, open to academic research by students from any university. Students presented projects relevant to the aerospace industry, such as atmospheric science, earth observation, space life sciences, space health, aerospace systems engineering and design, astrophysics, space weather, optics, economics, business, policy, sustainability, history, international relations, education, STEM outreach and related areas. More than 80 students applied from across the country and internationally, and UAH made a strong showing, capturing two of the eight finalist spots. Students had an opportunity to explain their research to a team of judges made up of American Astronautical Society members, and participants also joined symposium sessions and networking events to interact with professionals in the aerospace field.

## UAH TAKES THIRD IN NASA ROVER CHALLENGE

Team Falcon won third place in the collegiate division at NASA's Human Exploration Rover Challenge. The team relied on a lightweight, simple design that weighed under 150 pounds. For 25 years NASA has tasked high school and college teams from around the world to design, build and test a human-powered rover capable of traversing simulated terrain from the Moon, Mars and other rocky planets. Teams are also required to complete scientific tasks performed during NASA's Apollo Program and may be implemented during NASA's Artemis Program, which seeks to put the first woman and first person of color on the moon. NASA's Office of STEM Engagement uses these competitions to encourage students to pursue careers in the science, technology, engineering and mathematics fields.



100+

AREAS OF STUDY

9

COLLEGES

89

DEGREES



# RESEARCH

Founded as a cornerstone of America's quest to journey to the Moon and beyond, UAH has developed cutting-edge research capabilities in astrophysics, engineering, cybersecurity, data analytics, hypersonics, optical systems, rotorcraft and unmanned systems, severe weather, atmospheric science, space propulsion and more. Our faculty, staff and students conduct research with NASA's Marshall Space Flight Center, the U.S. Army, the Missile Defense Agency, the Defense Intelligence Agency, the Federal Bureau of Investigation, the National Science Foundation, the National Oceanic and Atmospheric Administration, the Department of Energy, the National Institutes of Health, as well as many others.

**6 PROGRAMS  
RANKED IN THE  
TOP 25  
NATIONALLY**

*–NSF HERD survey*

**\$149.8M**

RECORD HIGH ANNUAL  
R&D EXPENDITURES

**R1 STATUS  
"VERY HIGH  
RESEARCH  
ACTIVITY"**

*–Carnegie Classification*

## **UAH RESEARCH RECEIVES R1 STATUS FROM CARNEGIE**

UAH has achieved the highest research activity rating in the current update of the Carnegie Classification of Institutes of Higher Education. UAH's status is "R1 – Very high research activity." The R1 ranking places UAH, which was launched from America's quest to conquer space, in an elite group of doctoral-granting universities nationally that apply the most resources and scientists to research. In fiscal year 2021, UAH performed \$149.8 million in externally funded research, a large amount relative to its size. The university is home to 17 centers and institutes dedicated to research and supplies a highly educated workforce to the State of Alabama, with 72% of its alumni residing in-state. UAH governmental research partners include the U.S. Army, the Missile and Space Intelligence Center, the Missile Defense Agency, NASA, the FBI, the National Weather Service and others.

## **NEW ADVANCE IN SOLAR WIND SCIENCE**

Data delivered by NASA's Parker Solar Probe (PSP), on which UAH teamed to develop the Solar Wind Electrons Alphas and Protons (SWEAP) instrument suite, puts scientists closer to solving a solar heating puzzle. Using SWEAP's Faraday cup, PSP glimpsed part of the solar wind close to the sun, where waves move more rapidly than the wind itself, says Dr. Gary Zank, director of the Center for Space Plasma and Aeronomic Research and coauthor of a paper about the achievement published in the American Physical Society's Physical Review Letters. The direct data is crucial to answering why the solar corona is mysteriously heated in the region the probe has now reached, says Dr. Zank, the Aerojet-Rocketdyne Chair in Space Science and one of the primary developers of two competing theories to explain the coronal heating.

## **PAPER ON 'PERVASIVE WARMING BIAS' IS POPULAR DOWNLOAD**

A research paper co-authored by UAH's interim vice president for research and economic development, Dr. John Christy, was among the top 10% most downloaded from the American Geophysical Union journal Earth and Space Science in 2020. A distinguished professor of atmospheric science, the Alabama climatologist and the director of the Earth System Science Center, Dr. Christy co-authored "Pervasive Warming Bias in CMIP6 Tropospheric Layers" with Dr. Ross McKittrick of the University of Guelph in Guelph, Ontario, Canada. The scientists examined and updated 1979-2014 historical data from the Coupled Model Intercomparison Project Version 6 (CMIP6). They found that what previously were excessive warming rates modeled only in the tropical troposphere are now being excessively modeled globally when compared to satellite observations in the lower troposphere and mid-troposphere, both in the tropics and globally.



# UNDERGRADUATE STUDIES

The quality of our undergraduate programs helps students get off to a fast start in attaining life goals and preparing them to successfully join the global marketplace. UAH's unique academic programs, support services and cutting-edge research deliver an exceptional educational experience, as well as innovative opportunities for students to creatively craft their futures.



## UAH STUDENTS EARN DOD SMART SCHOLARSHIPS


DoD SMART scholarships are provided by the Department of Defense to recipients pursuing STEM degrees that further DoD missions. Four UAH undergraduates were named SMART scholars in 2021: Alencia Hall, an aerospace engineering major with the Missile Defense Agency (MDA) and Johns Hopkins' Applied Physics Laboratory; Savannah Baron, a mechanical engineering student also awarded a scholarship with MDA; Michaela Dent, a cybersecurity student for an internship with the U.S. Army Combat Capabilities Development Center Aviation and Missile Center; and Brooklyn Kelly, a computer science major with MDA in cybersecurity and test engineering. Three UAH graduate students earned SMART scholarships as well. Doctoral student Gabrielle Savoir is serving the U.S. Army Corps of Engineers as an environmental engineer, while Robert Schickling, an aerospace engineering alumnus, is working at Edwards Air Force Base on structural flight testing. Aerospace engineering graduate Michaela Hemming was offered a SMART scholarship, but ultimately chose the NASA Space Technology Graduate Research Opportunities scholarship.

## STUDENT WINS PATTI GRACE SMITH FELLOWSHIP

Aerospace engineering student Megan Jordan was selected for the inaugural Patti Grace Smith Fellowship, one of 43 Black undergraduate students chosen nationally by a program that's helping bring diversity to the U.S. aerospace industry. She will intern as a structures engineer at Hermeus Corp. in Atlanta, Ga., beginning in May. Each Patti Grace Smith Fellow earned a fellowship after a three-round selection process vetted by aerospace industry professionals. Patti Grace Smith Fellows are matched with an internship at one of the nation's leading aerospace firms and provided a living wage, two personal mentors and a grant of approximately \$2,000 to go towards professional or school expenses. At Hermeus, Jordan will support the structures team in designing ground test equipment and tooling for early stage vehicle design.

## COS UNDERGRAD INTERNS AT HARVARD

Sidney Martin earned a summer internship with Harvard Medical School's prestigious Summer Honors Undergraduate Research Program in 2021. His research was conducted in Harvard's world-renowned Kalaany Lab studying cancer-associated cachexia, a condition in which cancer cells rob healthy cells of nutrients and patients suffer irreversible weight loss and health repercussions. These experiences were made possible through the College of Science Dean's Excellence Fund and UAH donor support, paving the way for Martin to pursue an M.D.-Ph.D. in the field of oncology, a degree that combines research with patient care. Martin also participates in the Louis Stokes Alliances for Minority Participation program, an organization funded by the National Science Foundation to increase the quantity and quality of underrepresented students pursuing degrees in STEM fields.

A young woman with long brown hair is wearing a black VR headset and holding a black VR controller. She is looking down at the controller. The background is a plain wall with a power outlet and a cord.

**7,569**  
UNDERGRADUATE  
ENROLLMENT

**1,204**  
FRESHMAN CLASS

**51%**  
HS GPA OF 4.0 OR BETTER  
—2021 Freshman class

A man in a lab coat and mask is working in a laboratory. He is looking intently at a piece of equipment. The background shows other people in lab coats and masks, suggesting a busy research environment.

# GRADUATE STUDIES

The UAH Graduate School is here to help you make the leap to the next phase of your academic career. Our master's and doctoral programs include national leaders in engineering, the sciences, business, nursing, education, arts, humanities and the social sciences. Whether you are continuing on to graduate school directly from an undergraduate program or returning to school to gain greater knowledge for advancement or changing careers, UAH is the place to make it all possible.

## STUDENTS ACHIEVE NASA FINESST AWARDS

Two doctoral student proposals in the Department of Space Science were awarded highly competitive, three-year NASA Future Investigators in NASA Earth and Space Science and Technology (FINESST) grants. Katherine Davidson and Dinesha (Dinesh) Vasanta Hegde each won a \$135,000 stipend to cover tuition, research activities and travel costs to attend workshops and conferences to continue their research at UAH. Davidson was awarded to continue her research into the processes that cause the light shows on Earth called auroras. Her proposal is titled, "Investigating Ionosphere-Thermosphere Coupling in the Nightside Auroral Oval." Hegde was awarded a grant to continue his research into space weather. His proposal is titled, "Modeling Space Weather with Quantified Uncertainties." NASA grants FINESST awards to graduate students pursuing research aligned with the NASA Science Mission Directorate in one or more of the following areas: Earth sciences, heliophysics, planetary science or astrophysics.

## EDWIN BEARSS AWARDED I/ITSEC SCHOLARSHIP

Edwin (Michael) Bearss, a doctoral student formally modeling cyberattacks earned a \$10,000 RADM Fred Lewis Postgraduate Interservice/Industry Training, Simulation and Education Conference (I/ITSEC) Scholarship. I/ITSEC is the world's largest modeling, simulation and training event held annually in Orlando, Fla. In addition to the monetary award, the scholarship also enables the recipient to attend the I/ITSEC conference, an opportunity to network with professionals in the modeling, simulation and training field. Bearss is exploring how to model cyberattacks using an extension to the Petri net formalism along with a group of UAH student researchers. A Petri net is a mathematical modeling language that can be used to describe systems. Bearss' research applies machine learning to optimize strategies to develop real-life strategies to combat cyberattacks.

## STEPHANIE FELKER GAINS NIH RESEARCH AWARD

Stephanie Felker, a doctoral candidate doing graduate research at the HudsonAlpha Institute to determine the genetic causes of early onset childhood neurodevelopmental disorders, has been selected by the National Institutes of Health to receive a Ruth L. Kirschstein Predoctoral Individual National Research Service Award. Felker will receive a stipend and tuition funding as a recipient of the highly competitive F31 grant. The grant helps support promising predoctoral students to develop into productive, independent research scientists, by obtaining mentored research training while conducting dissertation research. Funding can be extended for up to five years. Felker is exploring areas of the human genome to try to find the causes of early onset neurodevelopmental disorders like epilepsy.




**2,067**  
GRADUATE  
ENROLLMENT

**80+**  
GRADUATE DEGREE AND  
CERTIFICATE PROGRAMS

**12**  
AVERAGE CLASS SIZE

# DIVERSITY, EQUITY AND INCLUSION



The Office of Diversity, Equity and Inclusion (ODEI) strengthens diversity at UAH through its commitment to improving social and cultural awareness and encouraging self-understanding through education, training and engagement with others. By offering enriching programs that promote cross-cultural perspectives and create mutual opportunities for exchange, ODEI fosters an inclusive environment for people of all races, ethnicities, cultures, ages, religions, languages, abilities, genders and sexual orientations.



Photo credit: Shaniqua McClendon

## 2022 DR. MARTIN LUTHER KING JR. COMMEMORATION

UAH celebrated the legacy of Dr. Martin Luther King Jr. with a virtual remembrance for the annual Dr. Martin Luther King Jr. Commemoration Program hosted by the Office of Diversity, Equity & Inclusion. The theme for 2022 was “What are You Doing for Others?” inspired by a statement from Dr. King’s 1957 address at the Dexter Avenue Baptist Church in Montgomery: “Life’s most persistent and urgent question is, ‘What are you doing for others?’” The featured speaker was Shaniqua McClendon, a political strategist and senior director at Crooked Media. McClendon created a 2020 volunteer engagement and fundraising program called Adopt a State and previously served on Capitol Hill as a policy advisor and spearheaded the creation of the first Congressional Bipartisan HBCU Caucus.



## PROFESSOR ON LIST OF 1,000 INSPIRING BLACK SCIENTISTS

Dr. Sharifa Love-Rutledge, an assistant professor in the chemistry department, was named to a list of “1,000 Inspiring Black Scientists.” The list was compiled by Cell Mentor, an organization that strives to “help hardworking scientists answer the questions that will propel them through satisfying, challenging, diverse careers in the life sciences.” Dr. Love-Rutledge is one of 18 Black scientists and researchers recognized from the state of Alabama. She is the first Black woman to earn a Ph.D. from The University of Alabama Department of Chemistry, and her area of specialized research at UAH includes diabetes and insulin resistance, as well as cognitive decline and aging. As the Principal Investigator in the Love-Rutledge Lab, she focuses on applying biochemistry and molecular biology to understanding and preventing diabetes in adults, such as Type 1 Latent Autoimmune Diabetes of adults and Type 2 diabetes.



## CHRIS SMITH NAMED TO HUMAN RELATIONS COMMISSION

Chris Smith, the Diversity Initiatives Coordinator in the Office of Diversity, Equity & Inclusion, was tapped to join the City of Huntsville’s Human Relations Commission. The commission has 13 members, and its mission entails “Promoting mutual understanding, dignity, respect and cooperation among all economic, ethnic, racial, religious and social groups in the City of Huntsville to discourage and prevent discriminatory practices on the bases of race, color, religion, national origin, age, sex, sexual orientation, disability or marital status.” Smith is an alumnus of UAH with an M.S. degree in Human Resource Management. His duties and powers include helping to resolve complaints brought by citizens and articulating community needs to make the city a better place for all. The commission also works to provide mediation and conciliation when conflicts arise.

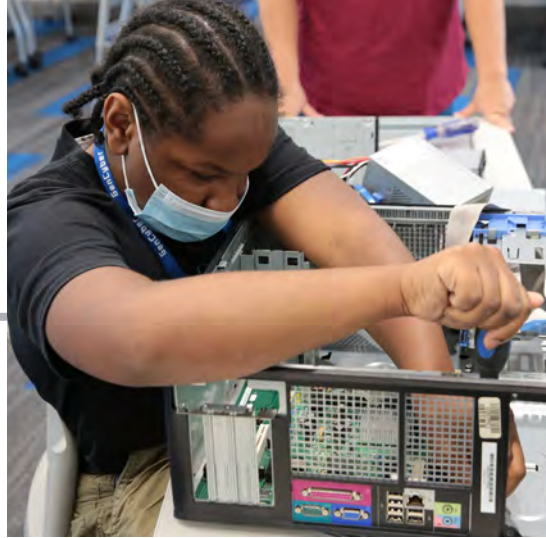
# COMMUNITY ENGAGEMENT

The mission of a premier research university is to explore, discover, create and communicate knowledge, while educating students in leadership, innovation, critical thinking and civic responsibility. One of the best ways to achieve these goals is through essential collaborations within our community through a special emphasis on outreach and engagement. UAH sees this responsibility as an opportunity to share our strengths in meaningful activities that not only benefit our faculty, staff and students, but the community and beyond.



## ROUNDTABLE DISCUSSION WITH ATLANTA FED

UAH hosted a roundtable discussion with representatives of the Federal Reserve Bank of Atlanta, Alabama A&M (AAMU), and local dignitaries to both benefit the community and help the Federal Reserve fulfill its mission in the region. As a driver of economic, workforce and community well-being, UAH facilitated the sharing of information to educate and assist in the mission of the Fed to promote employment and economic stability. Dr. Raphael Bostic, President and CEO of the Atlanta Fed, spoke with community leaders representing various sectors of the economy, including healthcare, agriculture, manufacturing, communications hardware, real estate, transportation, local government, education and biotechnology to examine new ways to work together and grow. UAH later hosted a student session comprised of UAH and AAMU business students where Dr. Bostic described the roles and responsibilities of the 12 regional Federal Reserve Banks and answered questions.



## CCRE HOSTS GENCYBER CAMPS

The Center for Cybersecurity Research and Education (CCRE) held two GenCyber Camps for high school students from Alabama, California, Florida, Georgia, Kentucky, New York, North Carolina, South Carolina and Tennessee. Each group was exposed to a wide range of cybersecurity and computer topics. In the first camp, 10 high school students with blindness and visual impairments built a computer, learned to program and encrypted and decrypted secret messages. The campers also practiced digital forensics and built circuits. In the second camp, CCRE hosted 15 campers who were deaf or hard of hearing. These campers became familiar with the different kinds of tools and systems used to perform various cybersecurity tasks, discussed cybersecurity careers and explored the use of real-world tools for digital forensics.



Photo credit: Chuck Edgeworth

## UAH HOSTS MILITARY APPRECIATION DAY

Nearly two dozen future U.S. military personnel recited their Oath of Enlistment on Jan. 29, 2022, at halftime of a Chargers' basketball game versus Shorter University. Lieutenant General L. Neil Thurgood, Director for Hypersonics, Directed Energy, Space and Rapid Acquisition, on Redstone Arsenal conducted the ceremony. LTG Thurgood is responsible for fielding capabilities to deter rapidly modernizing adversaries, including overseeing development of an Army Long Range Hypersonic Weapon. He leads the Army Rapid Capabilities and Critical Technologies Office mission to field critical technologies that address immediate, near-term and mid-term threats. The annual Military Appreciation Day was sponsored by Lockheed Martin and the Association of the United States Army. Military Appreciation Day for UAH spring sports, men's lacrosse, softball and baseball, will be held in April at Charger Park.

# ECONOMIC IMPACT

U AH is a vitally important driver of the economic engine for this region and the State of Alabama. The research efforts of our faculty, students and alumni provide the innovation and discovery necessary to propel growth and spur the creation of new commercial products and services. UAH is Madison County's 11th largest employer, providing a significant economic impact to the area and greatly contributing to the local and state tax base. Our graduates, partnerships and programs expand company profits, benefit essential government and federal endeavors and attract new companies and talent, resulting in increased opportunity for all in this region and beyond.



# \$615M

ANNUAL ECONOMIC  
IMPACT IN ALABAMA

# 72%

UAH GRADUATES  
LIVE IN ALABAMA

# 54

INVENTION DISCLOSURES  
SUBMITTED IN FY 21

## GRANT TO HELP STATE LEAD IN ADDITIVE MANUFACTURING

A two-year, \$603,000 grant enabled UAH and partner Calhoun Community College (CCC) to help Alabama transition from a low labor cost manufacturing state to a leader in the research and development of next generation additive manufacturing sciences. Led by Dr. Judith Schneider, the program trains Alabama students from a range of backgrounds to enter the state's industrial and government workforces. Grant money will be used to expand the additive manufacturing laboratories at both UAH and CCC for enhancing and expanding education and research capabilities. The workforce training program will address acute shortages of qualified workers. At a broader level, a bridge will be established for students to more effectively navigate from community college to a four-year engineering degree. The program will develop basic educational and employment pathways for students to obtain the skills needed by industry.

## UAH SPINOFF'S RAPID TESTING PRODUCT WINS FUNDING

Cofounded by UAH researcher Dr. Krishnan Chittur, who is its chief technology officer, UAH spinoff company GeneCapture is an associate company at the HudsonAlpha Institute for Biotechnology. It has won contracts from two Department of Defense agencies to prepare its portable rapid pathogen detection technology for independent and in-field testing. These contracts bring GeneCapture's total DoD awards to \$5.5 million. The Defense Health Agency awarded a \$1.1 million Small Business Innovation Research (SBIR) Phase II contract after GeneCapture successfully demonstrated its approach to identifying mixed infections and their antibiotic susceptibility. A \$1 million follow-on contract to a Chemical and Biological Defense SBIR contract was awarded to further mature GeneCapture's portable infection detection CAPTURE™ platform and allow for independent testing.

## LAUNCHING A NEW UNMANNED AIRCRAFT SYSTEMS TEST SITE

Companies and the federal government will come to Huntsville to test unmanned aircraft systems (UAS) at a Federal Aviation Administration (FAA) approved UAS Detection and Mitigation Research Program Test Site that's a partnership between UAH and Huntsville International Airport. It's one of just four airports approved nationally in 2021. UAH's Jerry Hendrix, director of UAS programs at the Rotorcraft Systems Engineering and Simulation Center, led the university's efforts. UAH and the airport submitted a proposal to the FAA that advanced the airport as the operator host. It cited UAH's long research in the UAS field and Redstone Arsenal's capabilities related to UAS, as well as the capabilities available in Huntsville to address detection and mitigation of military and civilian UAS.

# GLOBAL IMPACT

Forging beneficial connections and partnerships with other educational institutions, businesses and individuals will always play a vital role in our mission to promote global education, understanding and prosperity. This is accomplished by continually reaching out internationally to form essential relationships beyond the local region. A world-class institution can only remain so by demonstrating a willingness to explore novel ways to grow as a university, creating and nurturing interactions between our community and the world at large. This openness to new knowledge, cultures and experiences makes a positive impact globally.

## GREENE NAMED PRESIDENT-ELECT OF SRAI

Gloria Greene, assistant vice president for contracts and grants in the Office of Sponsored Programs, is the first woman of color to become president-elect of the Society of Research Administrators International (SRAI). SRAI is the premier global research management society providing education, professional development and the latest comprehensive information about research management to professionals from over 40 countries. Her three-year term begins in November 2022. She plans to work with the SRAI headquarters staff, board of directors and membership to develop and offer educational programs, including a program explicitly designed for principal investigators and post-doctoral researchers. SRAI maintains the largest network of research managers in the world. It is the only research management society whose membership spans the spectrum of research institutions, including colleges and universities, research hospitals and institutes, government agencies, non-profit funders of research and industry.

## UAH SUPPORTS JAMES WEBB TELESCOPE

The successful launch and deployment of the 6.5-meter primary mirror aboard NASA's James Webb Space Telescope (JWST) capped over two decades of crucial UAH involvement. The technical challenges of JWST allied UAH's Center for Applied Optics (CAO) as a partner in the international project with NASA's Goddard Space Flight Center, Marshall Space Flight Center, Johnson Space Center, the European Space Agency, the Canadian Space Agency and private industry. CAO Principal Research Scientist Dr. James Hadaway has been deeply involved in JWST since 1996. Current CAO director Dr. Patrick Reardon's involvement began in 1998 in support of the work led by Dr. Hadaway. JWST will open vast new vistas to scientific exploration, viewing them via an "eye" that CAO researchers have had critical roles in conceiving, perfecting and testing.

## STUDENTS AIM TO MAKE HISTORY WITH ABEX

Students with the Alabama Space Grant Consortium (ASGC), based at UAH, are working on a project that aims to be the very first student-built Cubesat project to leave low Earth orbit (LEO) by hitching a ride on the upcoming Artemis III flight. The mission is called ABEX, for Alabama Burst Energetics eXplorer, and will measure the emission spectrum of gamma ray bursts. Student projects compete toe-to-toe with all other research proposals in the NASA system. For ABEX, the ASGC group had to design the mission to a LEO that's 500 km sun synchronous to allow it to spend significant time outside the Van Allen radiation belts in order to perform its measurements. Prototyping of key ABEX elements has begun, with the goal to develop the most complex student-designed and constructed satellite ever attempted.

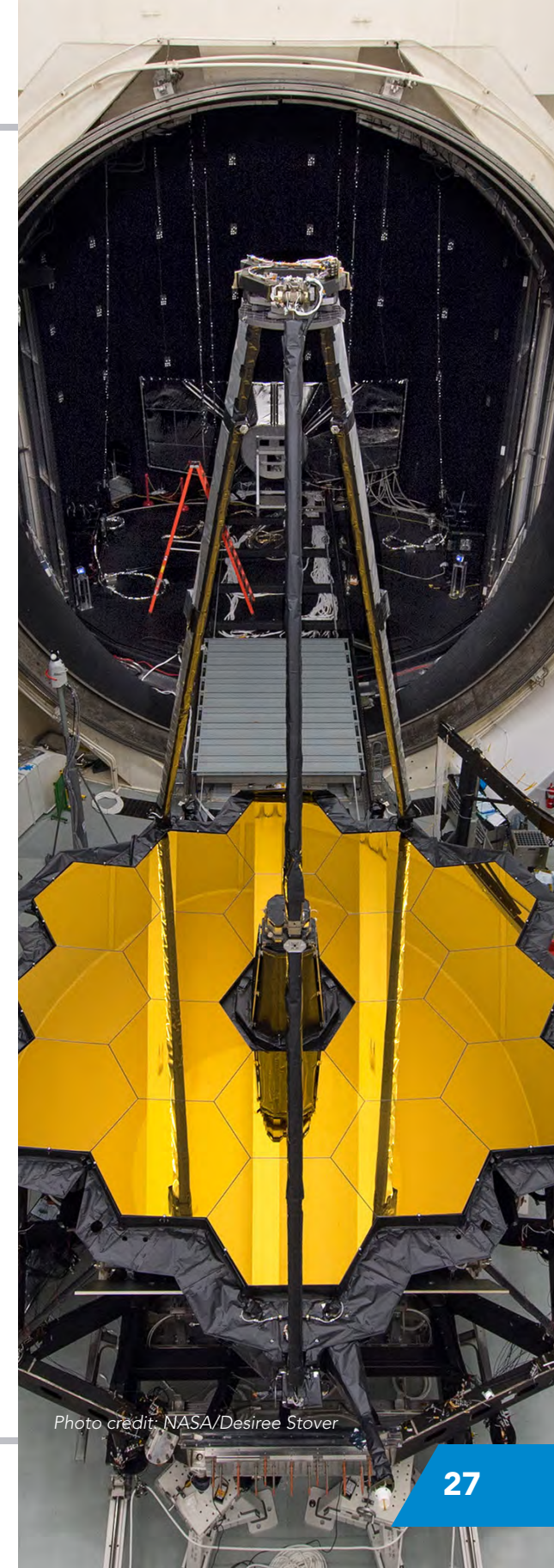


Photo credit: NASA/Desiree Stover

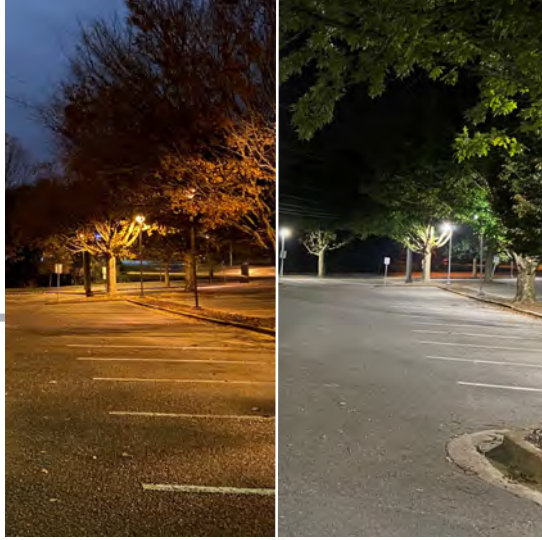
# CAMPUS INFRASTRUCTURE

At UAH, Campus Infrastructure will always be a top priority. Our number one goal in this area is to ensure our students enjoy the highest quality facilities to promote an environment that encourages academic excellence. Each new project is of paramount importance to our mission as an institution, because these enhancements not only improve the campus, but, most importantly, contribute to the quality of life and safety of our students, faculty and staff.



## EXPANSION OF ALTENKIRCH LAWN GREENWAY

Phase 3 of the Altenkirch Lawn Greenway continues to build on earlier phases to provide an interconnecting pedestrian spline within the core of the campus as the main passageway among all University facilities. This phase begins on the north side of the Library parking lot, splits and continues north on the east and west sides of the Library, then joins together and ends at Ben Graves Drive. This phase includes seating areas, walkways for pedestrians, bicycle lanes, extensive landscaping and green space. The area is anticipated to become a vibrant location for gatherings and events. Phase 4 will tie into the quad between Morton Hall and Frank Franz Hall. Its composition will include seating areas, lighting, security cameras, pedestrian walkways, bicycle lanes, extensive landscaping and green space, as well as ADA-compliant site improvements.



## EXTERIOR LIGHTING UPGRADES

The University's overall energy management program is designed to reduce energy and water consumption, along with operating and maintenance expenditures, by implementation of energy conservation projects. Facilities and Operations completed Phase 1 of the Parking Lot Lighting Retrofit Energy Conservation Measure to both achieve energy savings and minimize the environmental impact of the University's current and future operations, while promoting sustainability. These projects adhere to strategies that support energy conservation, cost reduction and infrastructure improvement, bringing multiple benefits to the UAH campus, including: improved illumination/safety; electricity/utility cost savings; and reduced repairs/maintenance. The total estimated annual energy savings for this project is over \$20,000 and nearly 240,000 kilowatt-hours annually. The retrofitted lights will consume 45% less electricity.



## SHELBY CENTER ENHANCEMENTS

For Phase 1, four large-capacity draw down wells have been installed on the east side of the building, and exterior renovations and regrading have been performed to redirect surface and subsurface storm water to alleviate water pressure around the building foundations and prevent basement flooding. The perimeter grounds were enhanced with new landscaping, additional lighting and increased security camera coverage to improve safety and update this area to meet campus standards adopted with the development of the pedestrian greenway and Altenkirch Lawn. Phase 2 renovations were accomplished to update the physics, biology and mathematics classrooms and teaching labs for the College of Science. Many of these spaces will also receive all new furniture and audio/visual equipment. In addition, space was repurposed to expand the existing Vivarium used for research in biological sciences. New lighting, ceilings and finishes will be included throughout this space as well.

Photo credit: Chuck Edgeworth

# ATHLETICS



## BASKETBALL

The 2020-2021 UAH Men's Basketball team won their division in the GSC and advanced to their 10th NCAA tournament in the last 12 years.

## LACROSSE

The 2021 UAH Women's Lacrosse team won their second GSC Tournament Championship, defeating Young Harris 17-6 in the final.

## SOFTBALL

The 2021 UAH Softball team advanced to their 18th straight NCAA Tournament.

## BASEBALL

The 2021 UAH Baseball team advanced to the NCAA tournament for the seventh time in program history and the first since 2014.

## CROSS COUNTRY

The 2021 UAH Men's Cross Country won the GSC Championship, and finished in the top 12 at the National Meet, the highest finish in program history.

## TRACK AND FIELD

The 2021 Men's Track and Field team won the GSC Outdoor Track and Field Championship.

## VOLLEYBALL

The 2021 UAH Volleyball team won the GSC Spring Championship Series and qualified for their second straight NCAA Tournament.



Photo credit: Chuck Edgeworth



# ALUMNI

**A**mong UAH's more than 46,000 alumni are astronauts, scientists, athletes, nurses, educators, entrepreneurs, artists, and some of Huntsville's most influential leaders. With their creativity, innovation, and determination, our alumni are supporting UAH's mission of leadership in research, scholarship, and creative achievement and are shaping the future of our community and the world.





Photo credit: NASA

## JOHNNY HEFLIN

Johnny Heflin ('92 B.S. Electrical Engineering) is the SLS Liquid Engines Manager at Marshall Space Flight Center, responsible for overseeing a team that is developing, manufacturing and testing the RS-25 and RL10 engines that will power NASA's super heavy-lift Moon rocket, the Space Launch System. The alumnus manages an annual budget of over \$500 million and a workforce of more than 1,000 across the country to help usher in a new era of space exploration. Artemis marks the beginning of a historic collaboration between NASA and its partners to establish humankind's first long-term presence on the Moon, as well as provide a staging ground for America's next giant leap: sending the first astronauts to Mars. "It is extraordinarily humbling to be a part of something so monumental," Heflin says. "I get to work on putting people back on the surface of the Moon and beyond."



Photo credit: Ellen Rummel

## DR. ELLEN RUMMEL

Dr. Ellen Rummel ('20 DNP Nursing) chose to transform her personal sorrow into a way to help make life better for children with cancer by forming Zach's Foundation in memory of her son. "Zach passed away in 2015 from brain cancer," she explains. "He was nine years old. Zach's Foundation was established as a way to give back to the community." The 501(c)(3) non-profit organization is dedicated to helping kids with cancer "be a kid." All funds are slated to directly impact pediatric cancer patients and their families. Through this work, children receive beach tote bags filled with items, such as personalized embroidered blankets for every child in the family, gift cards, toys, individualized gifts and cash. Dr. Rummel received the 2020 UAH College of Nursing Graduate Overall Award for Excellence in the College of Nursing.



Photo credit: Alexis Blue, BPO + Digital Media

## BRITTNIE GRANVILLE

Brittnie Granville ('11 B.S. Acquisition Management) was named Ms. Black Alabama USA 2021, and she is using her platform to advocate for autism spectrum disorder awareness. After a stint with the federal government as an Operations Research Analyst, the alumna turned entrepreneur partnered with her daughter, Brailynn Camille, who is autistic, to create a Mommy and Me brand called 'My RICH Little Best Friend.' This brand encourages parents to create passive streams of income as sources to build wealth for their children. Granville is also the COO of her daughter's company, Brailynn Camille Enterprises LLC, which is the parent company of the brand and a non-profit organization, The Ausome Kid™. The purpose of the organization is to spread autism awareness, promote acceptance and encourage inclusion of children and families who are impacted by autism and other special needs.



# 2021 ALUMNI OF ACHIEVEMENT AWARD WINNERS

The Alumni of Achievement Award is 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. A committee selects the winners from nominations made by alumni, faculty, staff and friends.

### **Paul Galloway ('83 B.S. Chemical Engineering; '90 M.S. Mechanical Engineering)**

Paul Galloway is a Senior Systems Engineer at Teledyne Brown Engineering and has amassed 38 years' experience in space payload design, development, testing, integration and operations for manned and unmanned launch vehicles, including the ISS and SpaceX Dragon. He has designed, developed, integrated and operated 40 science payloads for the Space Shuttle, Mir Space Station and ISS. A career highlight is the Multiple User System for Earth Sensing with DLR Earth Sensing Imaging Spectrometer program, a complex pointing system on the ISS that provides hyperspectral image data that can be used to detect pollution and help preserve the Earth's environment for future generations. In 2010, he received a NASA Silver Snoopy award recognizing contributions to crew safety and scientific utilization of the ISS.

### **Dr. Denise Gardner ('01 B.S. Nursing; '02 M.S. Nursing; '09 DNP; '11 Nurse Practitioner Certificate)**

Recently retired, Dr. Denise Gardner amassed 19 years of nursing experience, first as an ER nurse, then as a nurse practitioner with the Cullman Regional Orthopedics & Sports Medicine. Her specialties included orthopedic surgery, and she has been affiliated with the Cullman Regional Medical Center as well. Much of her career was focused on hospital rounds seeing surgical patients, managing new trauma patients that came into the ER each night, all while providing daily care within the orthopedic clinic. She also taught students, cleared patients for surgery, and managed associated insurance issues. Dr. Gardner devoted much of her work life to a passion for using her experience as a nurse to mentor others, advocating for enhanced treatments, and generating new ways of improving patient care.

### **Josh Magette ('12 BSBA Finance)**

Josh Magette played for the UAH Chargers basketball team from 2008-2012, leading the squad to three Gulf South Conference championships and two NCAA Division II Basketball Championship Elite Eight appearances. The point guard ended his collegiate career as the University's and Gulf South Conference's all-time leader in assists. Magette has played professional basketball for six teams overseas, and from 2012-2020 played in the NBA Summer League for the Memphis Grizzlies, Orlando Magic, Brooklyn Nets, Atlanta Hawks, Golden State Warriors, and San Antonio Spurs. He made his NBA debut on October 18, 2017 for the Atlanta Hawks where he sank his first shot attempt. The Charger was the NBA G League assists leader in 2018, All-NBA G League Second Team (2017, 2020), and NBA D-League All-Star (2017).

### **Angela Curry ('00 B.A. Political Science)**

Angela Curry is the founder and Executive Director of United Women of Color (UWOC), a 501(c)(3) organization based in Huntsville with a mission to empower girls, women and their communities by uniting people across ethnicities to address civic and educational gaps for advancement. UWOC supports advocacy causes such as the Citizen's Coalition for Justice Reform that forges partnerships with local government and agencies to enact criminal justice reforms and establish a community policing model in Madison County. Other UWOC projects include Vote Gone Viral, a civic engagement program which focuses on voter education, engagement and registration, as well as the Start Smart Interview Workshop, designed to create a pathway for the underemployed to obtain a career with livable wages by collaborating with or sponsoring community projects.

### **Dr. Shery Welsh ('14 Ph.D. Materials Science)**

Dr. Shery Welsh is the Director, Air Force Office of Scientific Research (AFOSR), part of the Air Force Research Laboratory (AFRL), where she heads the Department of the Air Force's global basic research. The alumna manages 200 scientists, engineers and administrators in Arlington, Va., as well as international offices in London, the UK, Tokyo, Japan, Santiago, Chile, Melbourne, Australia and Sao Paulo, Brazil. She oversees a basic research investment portfolio of nearly \$500 million a year to uncover leading-edge technologies that can benefit defense missions and transitions these discoveries to the AFRL, defense industries and other Defense Department elements. The AFOSR's annual investment is distributed among approximately 300 academic institutions worldwide, as well as 100 industry-based contracts. Dr. Welsh has earned two Rising Star Awards from the MDA and Engineer of the Year from the Air Force.

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## **2021 Outstanding Young Alumni of Achievement Award Winner**

### **Destin Sandlin ('11 M.S. Mechanical Engineering)**

Destin Sandlin created and hosts the educational video series, Smarter Every Day, a YouTube channel that makes science accessible and fun for those curious about the way things work. Since its debut in 2011, the series has exploded in popularity, recently notching episode number 268. The alumnus sees himself as a "science communicator" who enjoys getting to observe or experience aspects of life that few other people might be privy to and then explaining what he uncovers. "I've always been a 'tinker-thinker,'" Sandlin explains. "I really enjoy exploring and learning stuff. I'm just naturally curious. People can tell when you genuinely enjoy what you are doing." He also hosts the Smarter Every Day podcast. To date, his YouTube channel boasts over 10 million subscribers.



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## PEACE ON EARTH RETURNS

The Peace on Earth 2021 Holiday Spectacular was headlined by chart-topping a cappella singing group, Voctave, and featured performances by UAH music faculty and students, HCC Youth Chorale, and the Huntsville Symphony Orchestra. UAH was recognized during the event as a 2021 honoree in Yamaha's inaugural Institution of Excellence program.

