

ASU

ARIZONA STATE UNIVERSITY
VOLUME 25 NUMBER 4

Thrive[®]

PLUS

REVERSE

ENGINEERING

TEDI-London: inviting,
inclusive and able to
generate real-world
solutions

GOING

CARBON

NEUTRAL

A path to benefit
all Arizonans

INCLUSION IN ACTION

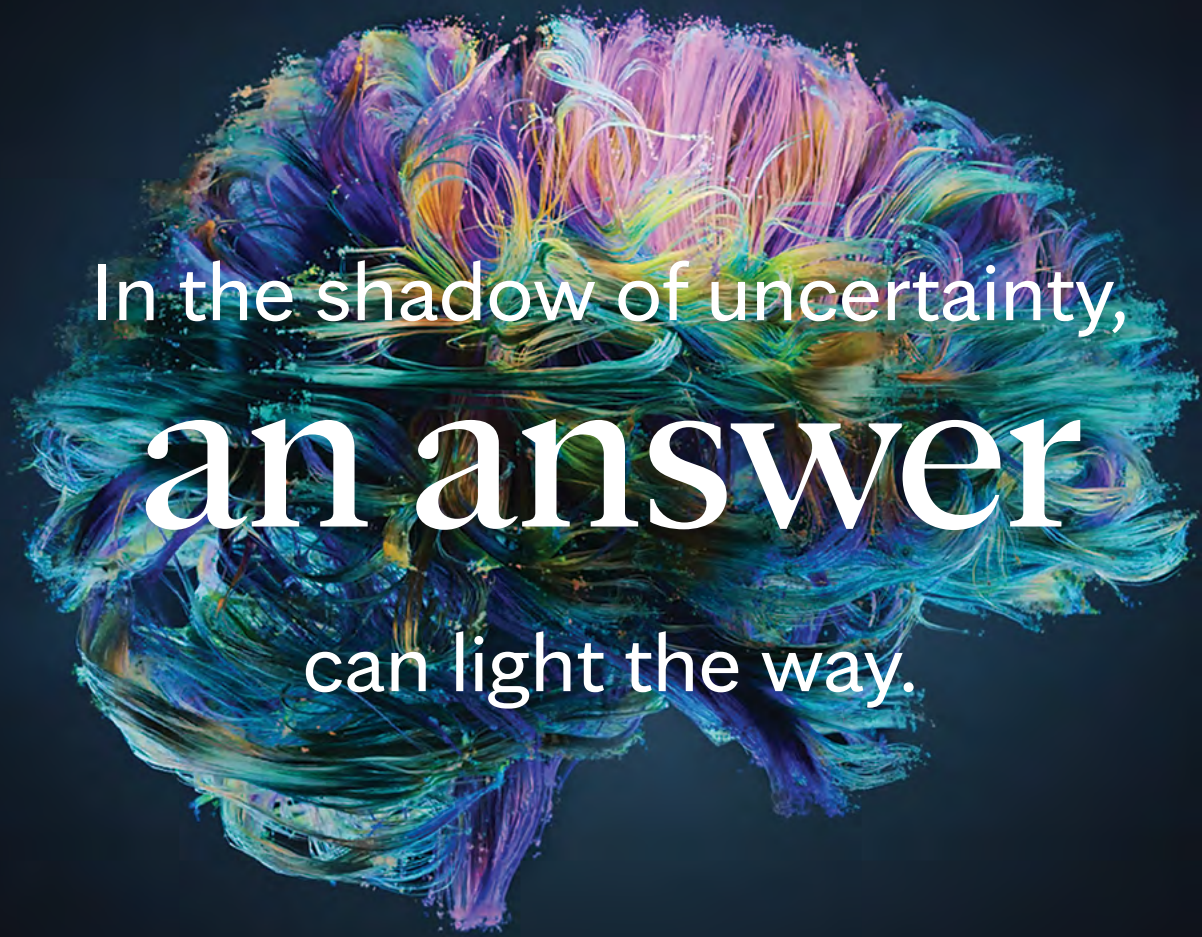
New grad's curation
debut at the
Los Angeles County
Museum of Art

Curating for joy

ASU[®]
Arizona State
University

Scan with your
smartphone
camera to
view the digital
edition.





In the shadow of uncertainty,

an answer

can light the way.

MAYO
CLINIC



You know where to go.

Contributors

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The former COO of Morgan Stanley Europe is now an executive coach, speaker, advisor, author and executive-in-residence in ASU's Office of the President.

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A commercial photographer located in Los Angeles, his clients include The Guardian, ESPN, The Wall Street Journal and Forbes.

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Inspiring new ways of thinking

America's future depends on embracing the idea that excellence and access in higher education are not incompatible, but synergistic. If individuals are to succeed in an era when knowledge correlates with prosperity and well-being – and if the United States is to retain its leadership and competitiveness in the globalized knowledge economy we need to expand our capacity to create new knowledge.

Our faculty has taken on this charge and mission. They are an elite faculty who are not elitists. And, each year, more and more of the world's brightest minds choose to advance their field of study at ASU because of our reputation for innovation and focus on providing both excellence and access.

This fall we welcomed more than 170 new tenure-track members to join our current faculty community of 4,700. Each of them is hard at work, inspiring new ways of thinking, innovating and solving problems in our region and in the international community.

In this magazine, you will be introduced to just a few of them. For example, Frank Wilczek, Nobel Prize-winning physicist and ASU Distinguished Professor, has received the 2022 Templeton Prize, an honor to a person who harnesses the power of the sciences to explore the deepest questions of the universe and humankind's place within it. He joins past laureates Mother Teresa, Jane Goodall, the Dalai Lama and Archbishop Desmond Tutu to receive this individual lifetime achievement award.

Lindy Elkins-Tanton, Regents Professor in the School of Earth and Space Exploration, shares her incredible journey from MIT student to ASU Regents Professor and the principal investigator for the 14th mission in NASA's Discovery program.

The future holds endless potential for new solutions and advancements. To get there we need creative, inclusive scholars capable of pioneering discovery and inspiring the next generation of agile minds. Our faculty has demonstrated they are up to the challenge.

Michael M. Crow

President, Arizona State University

[✉ michaelcrow](https://twitter.com/michaelcrow) [in michaelmcrow](https://www.linkedin.com/in/michaelmcrow) [@ asuprescrow](https://www.instagram.com/asuprescrow)

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Zhengshan Yu works on solar panel efficiency.

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CHRIS O'DONOVAN; SABIRA MADADY; GHASSAN AL BALUSHI



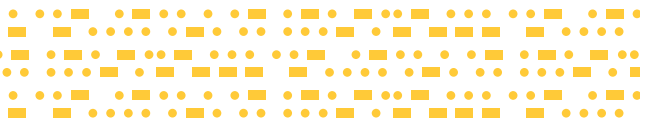
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alumni.asu.edu/linkedin
linkedin.com/school/Arizona-State-University



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instagram.com/ASU_alumni
instagram.com/SunDevilAthletics



Expand

Science as a way to heal and connect

ASU scientist Lindy Elkins-Tanton's memoir explores finding meaning through the wonders of the universe around us. 48

Curating art to inspire joy

ASU grad Dhyandra Lawson leveled up and is planning an exhibition at the world-renowned Los Angeles County Museum of Art exploring connections across the Black diaspora. 54

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Check out Lindy Elkins-Tanton's captivating new memoir about her career in science.



Dhyandra Lawson, '21 MA in art history, assistant curator at LACMA.

STEPHENDENTON; DEANNA DENT/ASU

Play

First in Pac-12

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Mayo Clinic and ASU student-athletes work together on care, treatment and prevention. 63

Build

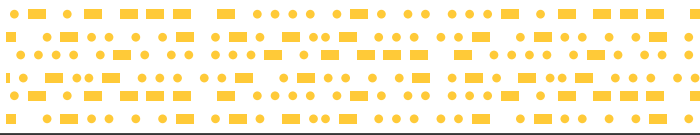
Tempe's rising skyline

The tallest building in the state when constructed 55 years ago; a look at Manzanita's history. 64



Digital extras and the latest updates

Please visit magazine.asu.edu for the digital magazine with embedded videos and links.



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Drive-in bingo

Invite your friends and family to enjoy a night full of fun opportunities to win free prizes and show off your bingo skills from the comfort of your car. All bingo supplies will be provided.

Friday, Oct. 21, 7 p.m., ASU West campus, parking lot 20, registration required
newcollege.asu.edu/destinationwest

Free Family

Oct



From Tudor queens to pop princesses

The six wives of Henry VIII take the mic to remix 500 years of historical heartbreak into an exuberant celebration of 21st-century girl power. This new original musical is a global sensation that everyone is losing their head over. "Six," says The New York Times, "totally rules!" and The Washington Post hails the musical as "energizing, inspirational illumination."

Tuesday, Oct. 4–Sunday, Oct. 9, ASU Gammage asugammage.com

Ticketed



Stadium Yoga

Led by a lineup of local instructors from various Valley studios, Stadium Yoga is a series of free one-hour classes open to the Sun Devil community and the public. All levels are invited to practice. Bring your own yoga mat, water bottle and towel.

Tuesday evenings, Saturday mornings, Sun Devil Stadium
asu365community.union.com/wellness

Free Wellness

'Lucha Libre: Beyond the Arenas'

In this groundbreaking exhibition, the phenomenon of Lucha Libre transcends the glitz and glamour of the theatrical stage to investigate themes of the underdog and the hero, identity and performance, and collective resistance to authority.

Saturday, Oct. 29–Sunday, May 7, ASU Art Museum, 51 E. 10th St., Tempe
asuartmuseum.asu.edu

Free Family



Check in to events to earn Pitchforks and rewards

Sign in to Sun Devil Rewards in the ASU app for event listings, news, games and more. Earn and be rewarded!
sundevilrewards.asu.edu



Nov.



Salute to Service breakfast

In celebration of Veterans Day, join us for a morning of recognition and honor of student, alumni, faculty and staff veterans at this special breakfast. Attendees will hear from guest panelists Ambassador Michael Polt and U.S. Army Lieutenant Ben Freakley, as well as Shawn Banzhaf, author of “The Five Ls: A Practical Guide for Helping Loved Ones Heal After Trauma.”

Monday, Nov. 7, 8:30–10:30 a.m., ASU West campus, La Sala ballroom, registration required

newcollege.asu.edu/destinationwest

Free Family

Culinary feast

Join fellow culinary aficionados for a sampling of recipes from a cookbook entitled “The Artists’ and Writers’ Cookbook: A Collection of Stories with Recipes,” featuring a compilation of family stories and recipes.

Thursday, Nov. 17, 6 p.m., ASU West campus, La Sala ABC, free for ASU students, registration required
newcollege.asu.edu/destinationwest

Free Family



What does it mean to eat in a world of increasing environmental extremes?

Explore this question at Emerge 2022: Eating at the Edges. Bring your hands, noses and mouths – they are critical tools! Together, we will think and taste our way through asking what alternative forms of food production, distribution and consumption we should consider to build a more inclusive, equitable and delicious culinary world.

Saturday, Nov. 19, Mesa Arts Center, 1 East Main St. emerge.asu.edu

Free Family

Movies on the Field: ‘Elf’

ASU 365 Community Union presents “Movies on the Field” at Sun Devil Stadium. Bring a blanket, sit on the grass and enjoy your favorite films on the big screen under the stars. Events are open to ASU and the community.

Friday, Dec. 2, 7:30 p.m.

asu365communityunion.com

Free Family



Dec.

Visit asuevents.asu.edu for events. Visit thesundevils.com for athletics.



#8 MERLIN ROBERTSON, 5YR



HOME **AWAY**

NALI **NORTHERN ARIZONA**
SEPT. 1 – THURSDAY

OSU **OKLAHOMA STATE**
SEPT. 10 – SATURDAY

E **EASTERN MICHIGAN**
SEPT. 17 – SATURDAY

UT **UTAH**
SEPT. 24 – SATURDAY

SC **USC**
OCT. 1 – SATURDAY

W **WASHINGTON**
OCT. 8 – SATURDAY

STANFORD
OCT. 22 – SATURDAY

CU **COLORADO**
OCT. 29 – SATURDAY

Ucla **UCLA**
NOV. 5 – SATURDAY

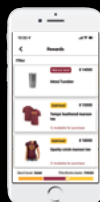
WSU **WASHINGTON STATE**
NOV. 12 – SATURDAY

OSU **OREGON STATE**
NOV. 19 – SATURDAY

A **ARIZONA**
NOV. 25 – FRIDAY

Fan perks and Pitchforks

Sun Devil Rewards has exclusive swag for you and your crew. Redeem Pitchforks to score football tickets, plus ASU-branded apparel and gear. Tailgates and football games are available for check-in and when you're at Sparky's Touchdown Tailgate, be sure to look for a secret word displayed for all to see. Get started today! sundevilsrewards.asu.edu



GA

FOLLOW THE ACTION

f Sun Devil Football **@** SunDevilFB **t** ASUFootball

For tickets, call **480-965-5812**
or visit thesundevils.com



Homecoming week

A time-honored tradition, ASU Homecoming brings together students, parents and alumni to celebrate our Sun Devil spirit. The weeklong festivities highlight all things Sun Devil through athletic events, fun on- and off-campus activities and entertainment.

Sunday, Nov. 13–Saturday, Nov. 19 homecoming.asu.edu

Sparky's Challenge

Begin the week on the right foot with the annual Sparky 5K/10K walk and run for individuals of all ages and ability levels. All participants will receive a free Sparky's Challenge official race T-shirt and finisher's medal.

Sunday, Nov. 13, 2:30 p.m., ASU West campus, Sun Devil Fitness Complex; registration required.

raceroster.com/events/2022/60825/sparkys-challenge-runwalk

Free Ticketed Family

Legends Luncheon: 1982–83 Fiesta Bowl Champions

This annual event honors the players and coaches who built the Sun Devil Football program through more than a century of competition. Join us as we celebrate the No. 6 nationally ranked 1983 Fiesta Bowl Champions!

Friday, Nov. 18, 11 a.m., Sheraton Phoenix Downtown, 340 N. Third St.

alumni.asu.edu/events/legends-luncheon

Ticketed Family

Lantern Walk

The Lantern Walk was first celebrated in 1917 to pass spirit, pride and tradition onto incoming students. On the eve of the Homecoming game, students, alumni, faculty, staff and friends climb to the top of "A" Mountain carrying lanterns to light up Tempe, following in the footsteps of generations of Sun Devils.

Friday, Nov. 18, meet at the base of "A" Mountain with a DJ at 6 p.m.; begin the climb at 6:30 p.m. homecoming.asu.edu

Free Family

Homecoming parade and block party

Student organization floats, the ASU Marching Band, colleges, departments, community organizations, local celebrities and Sparky parade down University Avenue. After the parade, join the block party for a festival-like event filled with food, fun, entertainment and tents hosted by many units at ASU.

Saturday, Nov. 19, before the football game. homecoming.asu.edu

Free Family

Sparky's Touchdown Tailgate

Built for fans of all ages, Gameday is what every fan looks forward to – the chance to take in college football with family and friends. Experience every moment of this spirited celebration at Sparky's Touchdown Tailgate during home games and away games. The pregame event features live entertainment, big-screen TVs with Pac-12/NCAA game action, a chance to mingle with and meet notable Sun Devils including Sparky, and much more!

alumni.asu.edu/events/gameday

Free Family

Football game: ASU vs. Oregon State

Saturday, Nov. 19, Sun Devil Stadium

thesundeils.com

Ticketed Family

GAMEDAY

Chapters



Stay in touch

Update your info to stay in the know with invites to special events and more.

alumni.asu.edu/update

Get involved with chapters based on your interest, college or location

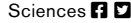
Attend meetups to catch up with friends and make new connections. For a list of all chapters, visit alumni.asu.edu/chapters.

Academic chapters

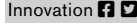
Barrett, The Honors College



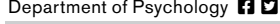
The College of Liberal Arts and Sciences



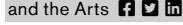
College of Nursing and Health Innovation



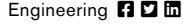
Department of Psychology



Herberger Institute for Design and the Arts



Ira A. Fulton Schools of Engineering



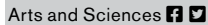
Mary Lou Fulton Teachers College



Master of Real Estate Development



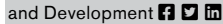
New College of Interdisciplinary Arts and Sciences



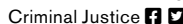
Sandra Day O'Connor College of Law



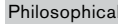
School of Community Resources and Development



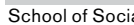
School of Criminology and Criminal Justice



School of Historical, Philosophical and Religious Studies



School of Social Work ASU Alumni



School of Sustainability



W. P. Carey School of Business



Walter Cronkite School of Journalism



Business Intelligence and Data Analytics

Learn about business analytics and the importance of obtaining crucial information for your organization. You'll work on a dataset in Excel and learn essential tasks such as sorting and filtering the data to learn more about the business. Finally, learn how to analyze categorical and numeric data with Excel's Pivot Table feature and by analyzing distributions. By the end of the course, learners will have hands-on practice in preparing data for analysis and analyzing a dataset using descriptive analytic techniques. This course is part of the Data Analytics and Visualization Certificate.

Learn more at careercatalyst.asu.edu/programs/business-intelligence-and-data-analytics.

Online Lifelong Learning Self-paced Digital badge Ticketed

Be the Change: Personally Managing Stress

Developing personal strategies through mindfulness, students will develop skills to manage stress, offering the opportunity to increase quality of life. This course is designed to teach you: how to define stress, how stress affects the brain's normal functioning, how your body reacts to and copes with stress, how to practice mindful breathing exercises and how to reflect on a mindful experience.

Learn more at careercatalyst.asu.edu/programs/btc-personally-managing-stress.

Online Lifelong Learning Self-paced Digital badge Ticketed



Writing Business Reports

Maybe you've earned the chance to pitch your business plan to your company's stakeholders, or you're looking to show your manager what a successful quarter you had. If you went to a conference, you may need to write a summary of your takeaways. A well-formatted report establishes your credibility and professional abilities. In this course, you'll learn about the differences and best uses of formal and informal reports, structure and components, and more.

Learn more at careercatalyst.asu.edu/programs/writing-business-reports.

Online Lifelong Learning Self-paced Digital badge Ticketed

Career



One-half to 2x of an annual salary

cost of employee turnover

— GALLUP, 2019



Retain and grow your team

ASU has partnership opportunities for businesses to keep and grow a talented workforce by providing the skills education they need to advance within the organization.

Learn more at careercatalyst.asu.edu/employers.

Lifelong learning | Workforce development



FinTech Boot Camp

Become a financial technology professional in 24 weeks in this online certificate course designed for working professionals who are seeking to advance their current careers or change paths. Learners will develop knowledge of advanced trading algorithms and modeling strategies while advancing technical skills in Python programming, machine learning, blockchain, cryptocurrency and regulation technology. Learners receive career-planning assistance, networking opportunities and one-on-one career coaching.

bootcamp.cpe.asu.edu/fintech

Online | Lifelong learning

Digital certificate | Ticketed

ASU California Center in Los Angeles

Join in networking events celebrating local Sun Devils and community conversations ranging from architecture and journalism to education and the design of our shared future. In California, where ASU has been deeply connected for many years working with educational, nonprofit and business partners, the university now has a new home, the ASU California Center in downtown Los Angeles, located at the historic Herald Examiner Building. Here, ASU will feature some of its top-ranked and accredited undergraduate and graduate degree programs, and innovative transdisciplinary opportunities will give California students – and those from all of ASU's campuses – new opportunities to connect with LA and global industries through high-demand jobs and internships. All of this reflects a growing commitment to California in ASU's mission of providing access to higher education and fulfilling entrepreneurial aspirations.

Herald Examiner Building, 1111 S. Broadway, Los Angeles. Find event information for the fall and winter seasons at california.asu.edu/upcoming-events.

Community



A full-page underwater photograph. In the lower-left foreground, a scuba diver in full gear is visible, illuminated by a bright light. The diver is positioned near a large, dark, and textured coral reef structure that dominates the right side of the frame. The reef is covered in various types of coral, including some with long, thin, white branches. The water is a deep, clear blue, and numerous small, silvery fish are scattered throughout the scene, swimming in various directions. The overall atmosphere is serene and highlights the biodiversity of the underwater environment.

SAFE HAVEN

Could coral habitats be rebuilt on sunken warships?

Some good news for coral reefs comes out of work done by ASU Center for Global Discovery and Conservation Science researchers and partners from the University of Hawaii. Their study suggests that very large wrecks can serve as havens for reef-building corals, and be a way to create large artificial reefs to help protect coral biodiversity from warming surface waters. The team studied 29 sunken warships around the Bikini Atoll and Chuuk Lagoon in the southwestern Pacific Ocean and determined that ship length, but not water depth, positively correlated with relative abundance and richness at the genus level. Where would ships worthy of sinking be found? The study reported that the National Defense Research Institute has identified more than 350 current U.S. Navy and Maritime Administration ships that would require government-funded disposal in the next 20 years. Converting the vessels into artificial reefs would be the cheapest approach — and help provide homes for essential corals. This study is part of the extensive work ASU is doing on coral reef health in the Pacific and Atlantic oceans, which includes creating the world's largest coral reef mapping program, the Allen Coral Atlas.

An underwater photograph showing a large, rusted metal gun barrel from the USS Arkansas, partially covered in coral and other marine life. The background is a deep blue ocean with many small fish swimming around. The text 'Update in the news' is overlaid in the top right corner in a large, white, sans-serif font. A decorative graphic of white dots and lines is in the top right corner.

Update in the news

Corals grow on a large gun aboard the sunken USS Arkansas, a battleship in Bikini Atoll.

Focus on women's health

Professor sheds light on breast cancer-diabetes link.
15

Educational access

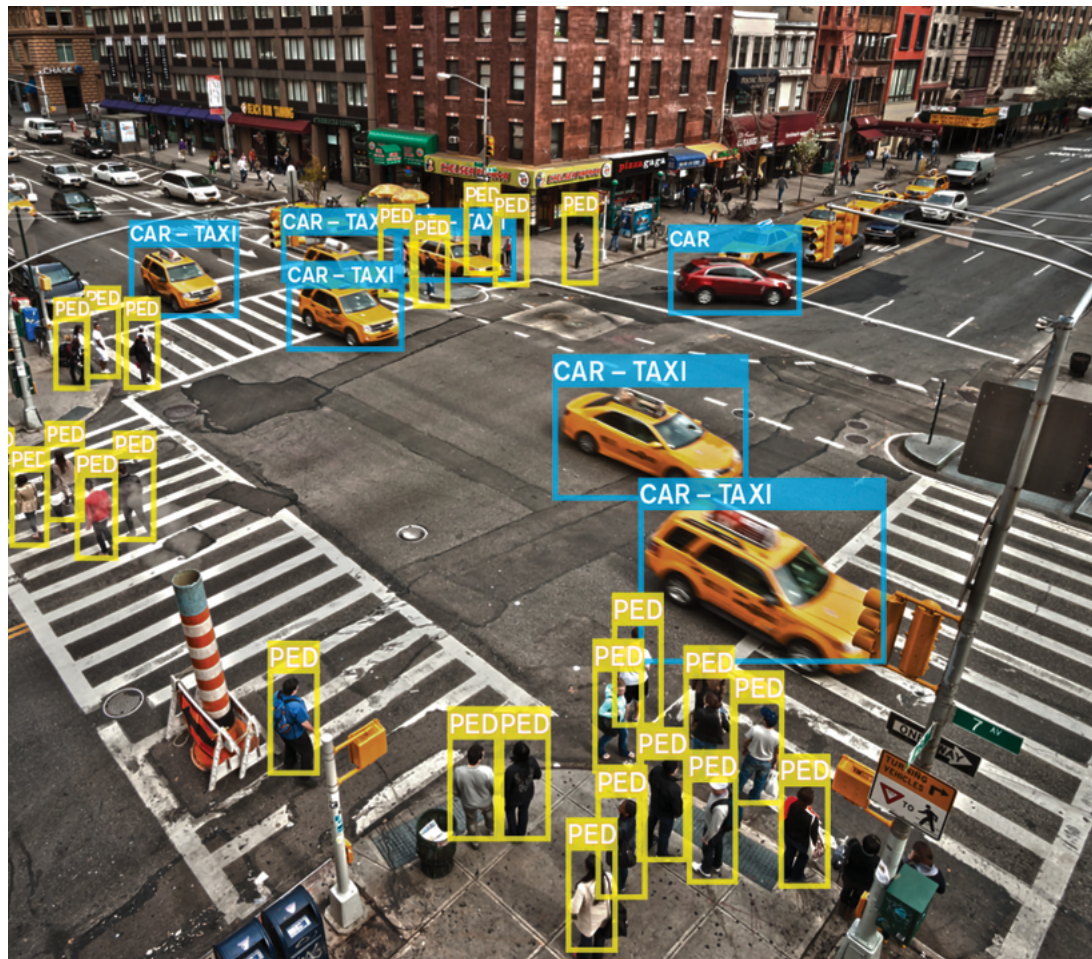
ASU named a Hispanic-Serving Institution.
16



Giving satellites a shared, optical language

ASU's Space-Based Adaptive Communications Node received Defense Advanced Research Projects Agency backing in its development of low-cost, high-speed, configurable optical data links that can connect low-Earth orbit satellites with each other and with their earthbound proprietors.

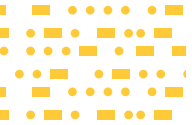
The ASU group is the only university research center recipient of a Space-BACN project, with the others going to major corporations. ASU's Center for Wireless Information Systems and Computational Architectures was awarded \$5.4 million for the project from DARPA.



ASU entrepreneurs develop smart street cameras

Improving the flow of traffic, the efficiency of streets and the safety of pedestrians, cyclists and drivers requires an enormous amount of data, which is often difficult to collect and analyze. Two ASU entrepreneurs are making this data easier to understand and access. Mohammad Farhadi and Yezhou Yang founded Argos Vision, a tech startup developing smart traffic cameras that can passively capture, analyze and deliver droves of data to help cities improve road safety and efficiency.

Argos Vision emerged from Farhadi and Yang's work as researchers in the School of Computing and Augmented Intelligence, one of the Ira A. Fulton Schools of Engineering. The pair created a self-contained, solar-powered traffic camera that uses on-board computer vision, a type of artificial intelligence, to identify and classify what it sees.



Engineering an advanced manufacturing ecosystem

To meet the future needs of manufacturing in a high-tech world, existing manufacturing systems must evolve and new ones need to emerge. This is why the Ira A. Fulton Schools of Engineering at ASU launched the School of Manufacturing Systems and Networks this past year.

The school will integrate academic programs and innovative research to address current and future challenges, improve sustainability and generate economic opportunities to revitalize manufacturing in Arizona and beyond. It will also play a significant role in supplying the skilled talent needed to support U.S. efforts to reestablish its leadership in advanced manufacturing.



Students of the Robotics and Intelligent SystEms Laboratory expand the scope of teamwork between humans and robots.

“ASU’s record of innovation and leadership in engineering education puts us at the center of a national effort to accelerate advanced manufacturing and, in turn, to substantially improve competitiveness and agile innovation for a myriad of critical industries,” says Kyle Squires, ASU vice provost for engineering, computing and technology and dean of the Fulton Schools. “This includes semiconductors and microelectronics, two areas we read about essentially every day and are vital to national security,” he says.



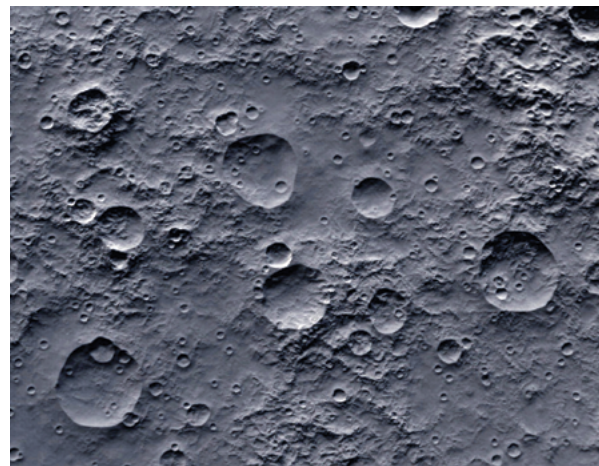
A new dawn for supercomputing

ASU’s supercomputing capability is jumping light-years ahead with the addition of its new Sol supercomputer. Sol will allow ASU to expand its suite of large-scale computing services to further advance research and learning across the university and region.

“This represents an unprecedented investment in ASU’s research computing ecosystem,” says Sally C. Morton, executive vice president of the ASU Knowledge Enterprise. “Supercomputing already undergirds a great many of our efforts, and the addition of Sol provides researchers across all disciplines incredible additional resources to advance their work.”

Keep up with the headlines at ASU

by subscribing to the ASU News e-newsletter at news.asu.edu/subscribe.



ShadowCam: New eyes to look inside the moon’s secret places

A new, powerful science camera is heading to the moon to look inside places we’ve never seen before. ShadowCam, part of a collaboration between NASA and the Korea Aerospace Research Institute, is an instrument designed and led by Mark Robinson, a professor in ASU’s School of Earth and Space Exploration. The specially designed camera will peer into the permanently shadowed craters of the moon. Because the moon does not have the tilted spin axis of the Earth, these dark spaces never receive the sun’s light. Such materials would potentially be useful for future human presence on the moon. Robinson says they may also provide important clues to the past billion years of our solar system.

“The permanently shadowed craters are mysterious. There are some thoughts that there may be large deposits of volatiles there — water, possibly even methane and ammonia.”

— MARK ROBINSON, PROFESSOR IN ASU’S SCHOOL OF EARTH AND SPACE EXPLORATION



“What is essential to Arizona is not just the expansion of manufacturing, but also the leading research, discovery and development for innovation of what comes next.”

— MICHAEL M. CROW, PRESIDENT, ASU

WHAT'S NEXT

Poised to help close microchip manufacturing gap

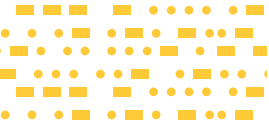
Bipartisan congressional approval of the CHIPS and Science Act, signed into law in August, will drive a \$52 billion investment by the federal government to help expand and accelerate U.S. semiconductor manufacturing, an important step for an industry critical to both economic competitiveness and national security. ASU, along with a host of state economic development and business leaders, has been deeply engaged to support Sen. Mark Kelly's efforts to build consensus in Washington, D.C., for this act.

ASU's Knowledge Enterprise is already working to connect the laboratories where research is done to the fabrication plants where chips are manufactured — a “lab-to-fab connection.”

“Having research and development as part of this bill not only recognizes the nation's capability in innovation and research, but actually supports it in a real way and is a very important commitment,” says Executive Vice President Sally C. Morton, who leads the ASU Knowledge Enterprise.

Learn more at neweconomy.asu.edu.

Researcher Mason Mahaffey works inside a research area with lasers at the MacroTechnology Works research facility in the ASU Research Park in Tempe, Arizona.



ASU professor helps discover breast cancer-diabetes link

Dorothy Sears, a professor of nutrition in the College of Health Solutions, was part of a team whose research may have discovered how cancer cells suppress the body's production of insulin, leading to a higher risk of diabetes for women who have had breast cancer. In the study, published in the journal *Nature Cell Biology*, Sears researches obesity and the risk for obesity-related diseases such as insulin resistance, diabetes, cardiovascular disease and cancer.



"We know that people with cancer have an increased risk of diabetes – that's been researched a lot," she says. "But what hasn't been researched was how does cancer increase the risk for diabetes? The key finding of this study was the mechanism by which the cancer is increasing the risk for diabetes and exactly how that happens."

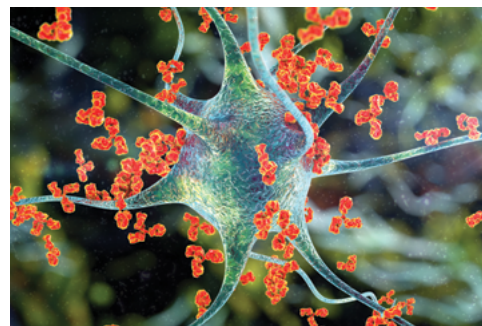
Learn more about research at the College of Health Solutions at chs.asu.edu/research.



Thousand Languages Project 'speaks to everyone'

When Alberto Ríos, director of ASU's Virginia G. Piper Center for Creative Writing, founded the Thousand Languages Project, he wanted to infuse life into an archive of Hayden's Ferry Review, a semi-annual international literary journal edited by students at ASU. Students participating in the project have translated works from the first two issues of Hayden's Ferry into a multitude of languages including Spanish, Turkish, Romanian, Greek, Mandarin Chinese, French and Urdu.

"It's a project that I think is all about inclusion," says Jacqueline Balderrama, a Mexican poet who is leading the project as the Virginia G. Piper fellow-in-residence, "inclusion in the way where language can bring us together."



Exploring our autoimmune system's recognition of self and non-self

Unless you are an identical twin, you probably aren't often mistaken for someone else. Likewise, our sense of self as distinct from other humans is deeply ingrained since childhood.

The immune system, however, faces far greater challenges in distinguishing self from non-self. Should this complex surveillance network fail to identify a foreign intruder, like a bacterium or virus, the result may be serious, unchecked disease.

Under certain circumstances, however, the immune system can become over-vigilant, identifying our own tissues as foreign and targeting them for destruction, resulting in autoimmune disease. Autoimmune responses are also associated with some cancers.

In a new study published in the journal *Cell Reports*, ASU researcher Dr. Joshua LaBaer and his colleagues explore components of the immune system known as autoantibodies. LaBaer is the executive director of ASU's Bidesign Institute and the director of the Bidesign Virginia G. Piper Center for Personalized Diagnostics.

While autoantibodies have been implicated as central players in a range of serious autoimmune diseases, the study observes that they are also found in healthy individuals. An improved awareness of the pervasiveness and role of autoantibodies in human health and disease may ultimately help in the design of better diagnostics and therapeutics against a range of illnesses.

EXCELLENCE AND INCLUSION

ASU named a Hispanic-Serving Institution by US Department of Education

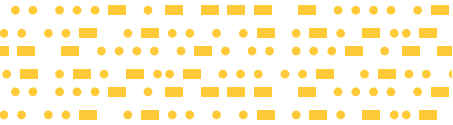
ASU has been named a Hispanic-Serving Institution by the U.S. Department of Education, a major milestone in its enterprisewide commitment to increase the diversity of its student body.

“This meaningful designation recognizes our ongoing institutional efforts to support the success of students who reflect the demographic diversity of our state and, looking to the future, the growing Hispanic community that will play a major role in the economic advancement and competitiveness of our nation,” says President Michael M. Crow.

To further expand educational access, ASU has joined the Alliance of Hispanic-Serving Research Universities, a partnership among 20 of the nation’s top research universities. The alliance aims to double the number of Hispanic doctoral students enrolled at alliance universities and increase by 20% the number of Hispanic professors by 2030.



Alyssa Patricia Salas waves to the stands at Hispanic Convocation.



Professor wins Pulitzer Prize for international reporting

Azmat Khan, a professor of practice in ASU's School of Politics and Global Studies and a mentor in the Center on the Future of War, was recently awarded a Pulitzer Prize for International



Azmat Khan

Reporting for her work on The New York Times series, "The Civilian Casualty Files," which, according to the Pulitzer committee, "exposed the vast civilian toll of U.S.-led airstrikes, challenging official accounts of

American military engagements in Iraq, Syria and Afghanistan." The investigation found that one in five of the coalition strikes identified resulted in a civilian death rate of more than 31 times higher than was acknowledged by the coalition.



Humanity on wheels

Last summer, ASU partnered with Tempe on "Jenny's Trailer" to provide space for people experiencing homelessness to cool off. The new mobile cooling center served as a collaborative project in partnership with Tempe's Homeless Outreach Prevention Effort and ASU's Healthy Urban Environments initiative, which designed the sustainable, solar-paneled trailer. Jenny's Trailer was named for ASU alumna Jenny Norton, a community advocate for people without homes.

CHARLIE LEIGHT/ASU

Physicist honored with Templeton prize, joining past recipients Mother Teresa and Dalai Lama

Frank Wilczek, a Nobel Prize-winning theoretical physicist, author and ASU Distinguished Professor, whose boundary-pushing investigations into the fundamental laws of nature have transformed our understanding of the forces that govern our universe, was announced as the winner of the 2022 Templeton Prize.

One of the world's largest annual individual awards, the Templeton Prize has been awarded since 1973 to honor those who harness the power of the sciences to explore



Frank Wilczek

the deepest questions of the universe and humankind's place and purpose within it. Wilczek joins a list of 51 past prize recipients, including Mother Teresa, the Dalai Lama and Archbishop Desmond Tutu.

Frank Wilczek "is one of those rare and wonderful individuals who bring together a

keen, creative intellect and an appreciation for transcendent beauty," says Heather Templeton Dill, president of the John Templeton Foundation. "Like Isaac Newton and Albert Einstein, he is a natural philosopher who unites a curiosity about the behavior of nature with a playful and profound philosophical mind."

Wilczek's achievements in physics, which include establishing the theoretical description of one of the four fundamental forces in nature and proposing a leading explanation for dark matter, put him in the first rank of scientists. As a public intellectual, his lectures and writings have illuminated the philosophical implications of his ideas.

A blurred background image of an office environment. In the foreground, a black office chair is visible. In the background, a woman with long brown hair is seated at a desk, and a man with a beard and a black cap is also working at a desk. The office has blue walls and various papers and posters are pinned to them.

BREATHE

Stop venting – it doesn't work

Many of us think venting will make us feel better, but academic papers and clinical work with patients show it doesn't. In fact, it often makes things worse. As one researcher put it, "Venting anger is like using gasoline to put out a fire." You can think of our brain circuitry like hiking trails. The ones that get a lot of traffic get smoother and wider, with brush stomped down and pushed back. The more we vent, the more likely we are to vent in the future. Instead, when overwhelmed by negative emotion, try "square breathing," four breaths in and four breaths out, in order to take your body out of fight-or-flight mode. Psychologists call techniques like this "psychological distancing," and studies show that they're an effective way to defuse upsetting emotions like anger. When calm descends, try to identify the root of your frustration by asking yourself, "Why am I so upset about this?" Ultimately, anger is like smoke. You have to get at what's feeding the fire.

– This **State of Mind** series is a partnership of **Slate** and **ASU** that offers a practical look at our mental health system — and how to make it better.



Advance your career

After sitting with your emotions, move forward by problem-solving, scheduling a future time to discuss underlying issues or using any number of other healthy coping mechanisms.

Networking success

How to make the most of opportunities to connect.

20

How to build trust with a new boss

Use these 3 savvy tips to succeed.

22



**Nicholet
Deschine
Parkhurst,**

PhD student
in justice
studies. Tribal
affiliation:
Húnkpapña
and Diné.

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Your networking success

Here's how to make the most
of opportunities to connect

As an undergraduate, I thought I knew what networking entailed. I attended career fairs and placed my name on lists to receive information about upcoming jobs. At graduate school fairs, I grabbed pamphlets. I was doing what I had understood networking to be: attend fairs, hand out business cards and collect information on future opportunities. My efforts at these fairs never panned out as I mostly ended up with a pile of business cards and pamphlets but no meaningful connections.

In reflection, I never actually learned how to network. Professional networking is basically using the connections in our networks to gain or share a benefit, such as a job lead. Networks are the various people we have connections with, usually along a common interest. We are members of multiple networks, such as our groups of high school friends or work colleagues. Our connections

Take advantage of these university resources

AIS 440:
Cultural Professionalism
for undergraduate
students

GRD 791:
Preparing Future Faculty
and Scholars for master's
and doctoral students

**ASU Career
and Professional
Development Services**
career.asu.edu
[alumni.asu.edu/
services/alumni-career-
and-professional-
development-services](https://alumni.asu.edu/services/alumni-career-and-professional-development-services)

with those in these networks vary from close relationships, like mentors or colleagues, to distant relationships like a peer from high school we don't interact with regularly. Networking events are opportunities to expand our network or join a new one when we meet people and make meaningful connections.

This different perspective definitely changed how I approach and think of networking. Networking is about making a connection with another person, having an authentic conversation and building a relationship. These connections may, in time, lead to mentors and access to future resources. Networking is also about knowing your value in a relationship and what you have to offer to strengthen an organization or a cause. With this outlook, networking no longer happens solely at networking events but rather in our everyday academic and professional lives. Whether you're giving a poster research





Sun Devil Jayvion Chee presents his research proposal during a poster symposium for the course AIS: 440 Culture Professionalism.

presentation to an audience, sharing feedback with a peer or asking questions in a webinar, each interaction is an opportunity to build authentic and meaningful relationships that could be beneficial in the future. ■



Amanda Michelle presents her “Zuni Written Language Curriculum” research proposal poster at the poster symposium for the course AIS: 440 Culture Professionalism at Tempe Mission Palms.

9 tips for building relationships at networking events

Preparation beforehand

Have a game plan.

Focus on who you'd like to meet and why. Do your research to see which businesses and organizations you have an interest in meeting.

Practice delivering your elevator pitch.

This is a statement, usually less than a minute, that shares who you are and what you do. Describe what you have studied or researched, relevant work experience or prior internships and your goals. Differentiate yourself from others – describe what value you bring to the table.

Bring a buddy.

If you're nervous about meeting new people, a buddy can help you feel more comfortable and confident. But remember: Your goal is to meet new people, so don't stand by the water cooler only talking to your buddy.

During the event

Reciprocate the conversation.

Ask what others do. Try to guide the conversation to your benefit by asking questions. Even conversations about commonalities and similar interests build connections.

Make connections with peers.

Meeting peers in your industry could be mutually beneficial for future collaborations or even to share resources and information about other opportunities.

Practice politely leaving conversations.

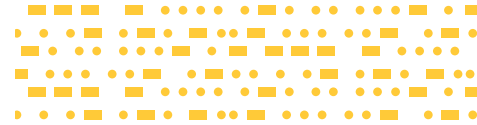
Conversations should be respectful and polite. In case you're in a conversation that misses the mark, practice strategies to politely exit the conversation.

After the event

Make notes about the contacts you've made and who you want to follow up with.

Follow-up communication is important soon after a networking event, especially if you asked a person if you could stay in contact with them or if you told someone you would email them your resume.

Remember that building professional relationships takes time.



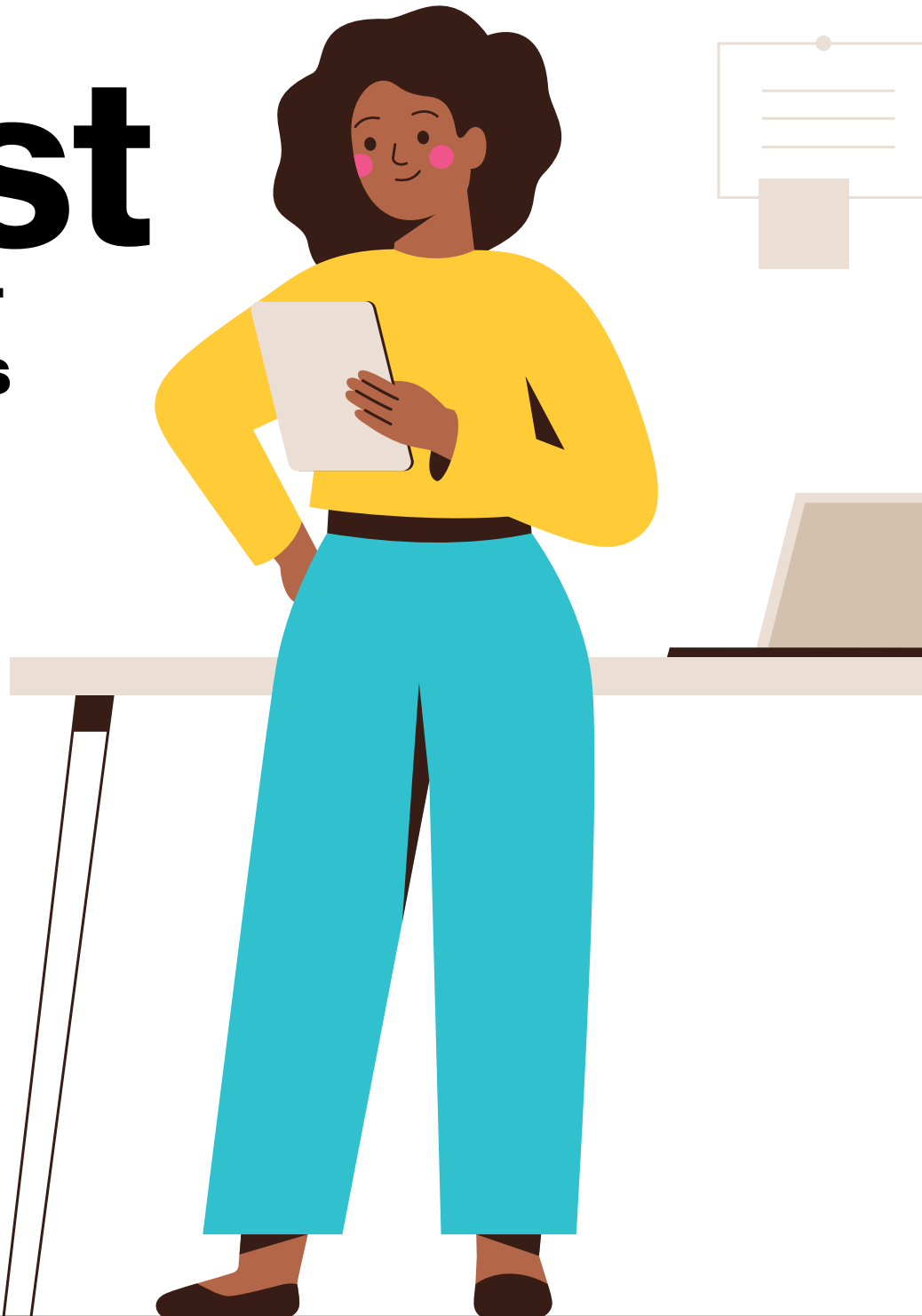
How to build trust with your new boss

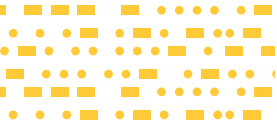
You've got a new job. Use these 3 savvy tips to succeed.



May Busch

The former COO of Morgan Stanley Europe is now an executive coach, speaker, advisor, author and executive-in-residence in ASU's Office of the President. maybusch.com/asuthrive





If you want to create bigger and better career opportunities, it's crucial to forge a good working relationship with your boss,

especially when you're starting a new role.

So, how do you establish good rapport with your boss while getting up to speed in a new job?

A strong working relationship depends upon building trust, and here are three strategies for doing just that:

1. Create good contracting upfront

Make sure you understand the task or project you've been asked to do. These questions can help you outline the task:

- What does success look like?
- What standard of excellence are we shooting for?
- What's the timeline?
- Are there milestones?

The answers will give you the awareness to negotiate for more time or resources if you need them, and it will also prevent you from doing too much and wasting time.

Additionally, knowing your project timeline and milestones

gives you a helpful framework for updating your boss on what's going on – which leads to the second trust-building strategy.

2. Create operational transparency

Operational transparency is about making your progress, and potentially your process, visible to your boss as you go. This could look like giving progress updates to your boss as you complete each milestone, which will help your boss understand and appreciate the value you're delivering. It can also help your new boss trust that you're going to get your job done.

But giving a progress update does not mean sharing all the details. Share the amount that will make your boss feel able to trust you – and no more.

Now, on to the third strategy.

3. Create moments of delight for your new boss

This is about surprising your boss in a positive way. For maximum effect, use this technique sparingly; if you do it all the time, it will become

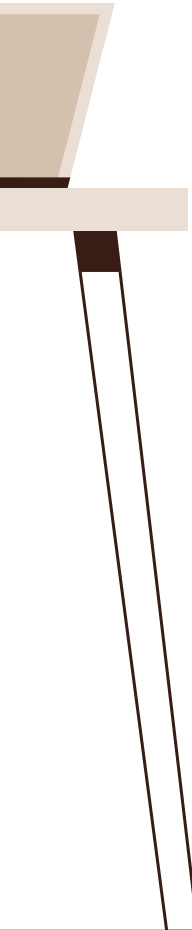
expected instead of surprising.

One way to do this might be to show extra creativity or finish something way before the deadline. Or you may look to take care of something that your boss doesn't like to do, so that when they say, "Oh no, now we've got to do X," you can say, "It's already done!"

Creating moments of delight makes you memorable and showcases your unique abilities. And better yet, it can turn your boss into your raving fan.

Building trust is worth the effort

When it comes to your relationship with your new boss, their trust in you is essential. It's what can make the difference between stagnating in your career and achieving the success you deserve. ■



More resources
 Submit a career question to May Busch and watch video responses to recent questions.
maybusch.com/askmay



From left, Oro Valentin Perez, Katherine Barnes, Jesslyn Moore and Sean Sedique work through biochemistry lab experiments together.

EXCELLENT PREPARATION

Online students come to campus in hands-on summer labs

Over the summer, ASU's School of Molecular Sciences provided in-person instruction to a record number of 540 enrolled online students who took laboratory courses in organic chemistry, biochemistry and analytical chemistry in a specially designed, condensed and immersive format. These courses give students the hands-on experience with laboratory equipment and procedures they need for their careers.

"We started these labs in 2018 with two courses and around 50 students, but we knew even then that the challenge would be whether we could successfully scale the programs," says Ian Gould, a School of Molecular Sciences professor and associate dean of the school's online and digital innovation.

See inside the lab at [youtube.com/c/asuchemistry](https://www.youtube.com/c/asuchemistry).





Create opportunities

**Reverse-
engineered**
TEDI-London
is redesigning
engineering
education.
26



By deconstructing and documenting details of existing products, students develop understanding of some of the most fundamental aspects of engineering.

ASU IN LONDON

TEDI-London is redesigning engineering learning by making it more inviting, more inclusive and better able to generate relevant solutions

Story by GARY WERNER

Photos by CHRIS O'DONOVAN

Reverse-



engineered

Imagine a new way of teaching engineering that brings in more people – learners who never thought they would have the opportunity to pursue an engineering degree – and that designs learning around hands-on, project-based approaches, around learning by doing. That's what a new program does, with the help of ASU.

A creative and nontraditional approach to engineering education began in fall 2021 when The Engineering & Design Institute in London, or TEDI-London, launched its project-based degree program in global design engineering. It's now going strong into its second year. TEDI-London is an initiative of the PLuS Alliance, a partnership that combines the resources of ASU, King's College London and UNSW Sydney to solve an array of pressing global challenges.

"One of those challenges is the acute need for more diverse engineering talent in the workforce," says Ann McKenna, the vice dean of strategic advancement for the Ira A. Fulton Schools of Engineering at ASU. "Addressing that lack of talent requires more than expanding the capacity of current educational

"Addressing that lack of talent ... also means tackling a persistent gap in engineering, so we have designed TEDI-London to help expand perceptions of who should be an engineer."

— ANN MCKENNA,
VICE DEAN, IRA A.
FULTON SCHOOLS
OF ENGINEERING

systems. It also means tackling a persistent gap in engineering, so we have designed TEDI-London to help expand perceptions of who should be an engineer."

Designing instruction based on learner feedback

TEDI-London's first cohort of 24 undergraduate students is almost equally male and female, which is a significant contrast with typical engineering programs in which women represent less than a quarter of students. The cohort also includes many students without extensive secondary school math and science credentials.

In the U.K., students often must choose their postsecondary education focus as early as the first or second year of high school — and then prepare extensively for admittance tests called A-Levels. Part of the way TEDI-London has been designed is to help U.K. and international students who didn't make those early decisions still gain the opportunity to move into an engineering career.

"We conducted focus groups with potential students who are not from traditional STEM backgrounds, and we asked what would excite them about involvement in engineering," McKenna says.

After those discussions, ASU and TEDI-London developed curriculum that supports real-world impact. "We found that they really want to know they can make a practical difference, meaning that their work will be important to the lives of others. So, the new program is conceptualized around societal impact, as opposed to just developing technology."

This orientation means TEDI-London's educational content is organized by functional themes such as smart cities and user-centered design rather than according to disciplinary categories such as





The TEDI-London campus includes makerspaces with 3D printers, along with small and large prototyping equipment.

chemical or mechanical engineering. Other key elements are meant to develop professional competencies related to social responsibility, commercial acumen and ecological sustainability.

“We are not discarding math, science and other traditional aspects of engineering. This is an accredited degree program, so it needs to cover those fundamentals,” McKenna says. “However, the student narrative is about broader aptitude, personal attitude and overall ability.

TEDI-London’s focus goes to tackling societal challenges such as environmental sustainability and health care provision. These cultural considerations can make engineering education more inviting, more inclusive and better able to generate more globally relevant solutions.”

It’s an innovative approach, and it took significant support from ASU’s Fulton Schools and PLS Alliance peers in London and Sydney to develop the curriculum.

Testing the operation of the new TEDI-London curriculum involved short-term summer school sessions with students from the three PLS Alliance institutions in 2019, 2020 and 2021. The initial round revealed how to best structure support for learners within an atypical, globally oriented curriculum. By the final round, students were piloting the actual systems used by the degree program that launched in September 2021.

Students found success with this project-based approach. For instance, Sofia Colaco, a mechanical engineering student from Portugal, feels that the project-based approach of starting with a question

“Industry relationships are important from the start. The co-creation of curriculum will enhance graduate employability and can solve problems.”

— JUDY RAPER,
DEAN AND CEO,
TEDI-LONDON

first is key, as it made her think more deeply about knowledge and learning.

“If someone just tells you something, you will often forget it the next day. Whereas if they ask a question first, you think about it more,” Colaco says. “Then, if they give you the answer, you’re a lot more likely to memorize it. Project-based learning builds your curiosity — you’re the one trying to get to an answer and come up with the quickest or most creative way to do so.”

Other students appreciate the collaboration inherent in TEDI-London’s approach. “One of the key benefits is that you are placed with different people with a lot of different skills,” says Zemzem Sonmez, who has a non-engineering background and holds a master’s degree in chemistry. “When tackling a project together you are pulling resources from people with very different talents, and you then gain those skills from working that way.”

This prepares students for tackling today’s complex problems as a team and how many

organizations work on tasks in the real world.

Helping bring engineering education to the wider world

McKenna says ASU’s experience with digital content delivery for online engineering degrees represented a key source of assets for the development of the TEDI-London curriculum. Trevor Thornton, a professor of electrical engineering in the Fulton Schools and an early collaborator with TEDI-London leadership, for example, helped to adapt current undergraduate course material from the School of



TEDI-London Dean and CEO Judy Raper (right) working on a hands-on project with a student.



Electrical, Computer and Energy Engineering, part of the Fulton Schools, for different modules.

Fulton Schools faculty members also supported workshops to determine how and when to introduce specific core concepts of engineering science, and how projects should be paced for teams of students to effectively apply their course experience together and progress through the curriculum.

The benefits of this innovative work extend beyond the new institute in the U.K. McKenna says Fulton Schools leaders are evaluating how insights gained from

creating TEDI-London can inform development of ASU's newest engineering school, the School of Manufacturing Systems and Networks, as well as the reimagining of The Polytechnic School.

"Additionally, we now have a model for a fully adaptable and transportable engineering degree program, so we could launch others," McKenna says. "It's TEDI-London today, but it may be TEDI in another location tomorrow. There is a lot of opportunity to accelerate ASU's engineering expertise across multiple global academic partnerships." ■

Collaborating with industry to transform education

Industry experts from construction, cybersecurity, transport, tech manufacturing, electronic engineering and design joined TEDI-London academics for an innovative workshop on engineering education. The workshop explored what skills engineering graduates will need to solve 21st-century problems.

Co-designing the curriculum with industry is a key element of the institute's proposition – ensuring the learning and teaching equips students with the skills and attributes industry seeks.

"Industry relationships are important from the start," says TEDI-London Dean and CEO Judy Raper. "The co-creation of curriculum will enhance graduate employability and can solve problems."

To get involved and find out more about TEDI-London as an industry partner, visit tedi-london.ac.uk/collaborate/industry.

5 ways to work effectively as a project team

by Danae Matthews, an engineering student who took part in the Net Carbon by 2050 summer school at TEDI-London. This involved students working together online across four different time zones.

1. Don't expect group organization to just 'happen'

It can be tricky, especially when working across groups. Actively encourage organization and discuss it with your group.

2. Expect conflict in your group

This is something I learned from one of my teammates, Wilson. Conflict is a sign of thinking differently and that is a great tool to harness in teamwork. Be respectful and understanding of your teammates' different views and turn that conflict into a strength.

3. Communication is key

Especially when you are working online and across time zones, things will change quickly and will likely change as you sleep. Make sure everyone in your group knows what is happening, including yourself.

4. Be confident about your ideas, but don't get too emotionally attached

Got an idea? Own that idea and sell it. But be prepared for your idea to be changed or not chosen. Don't be scared to iterate your design and actively collaborate with your group to change it.

5. Be prepared to not always be involved in live discussions

During the online summer school, for instance, and likely in corporations, time zone clashes can mean meetings happen as you sleep. You may not make it to every meeting. That doesn't mean you can't express your ideas in the discussion. You can always send your ideas to your group beforehand, but take the decisions they make without you in stride. Trust your group members. You are a team after all.



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SUN-POWERED

Renewables powerhouse

ASU has been at the forefront of the solar technology revolution since 1954. In addition to its research and academic programs, today, ASU's operational solar program extends across four campuses, the ASU Research Park and an off-campus utility scale solar farm in collaboration with Arizona Public Service in Red Rock, Arizona. The on-campus solar arrays have more than 22 MW of electrical power capacity, plus more than 1.5 MW equivalent of solar thermal capacity. Together, with APS' Red Rock facility, ASU's solar program produces roughly 53 MW, including solar thermal. The amount of electricity generated per year through the program is more than the annual electricity usage of 8,500 U.S. homes, according to the Environmental Protection Agency. On-campus solar arrays also reduce the university's reliance on fossil fuels and provide additional benefits like shaded parking, building heat-load reduction, and living labs for research and sustainability initiatives.

More than three-quarters of ASU's annual electric consumption is sourced from renewable sources, avoiding about 100,000 metric tons of carbon dioxide equivalent greenhouse gas output – more than the annual emissions of 20,000 passenger vehicles, according to the EPA. This is one of the reasons why Sierra magazine ranks ASU as the No. 1 most environmentally friendly university in North America.

Learn more at cfo.asu.edu/solar.



Collaborate for change

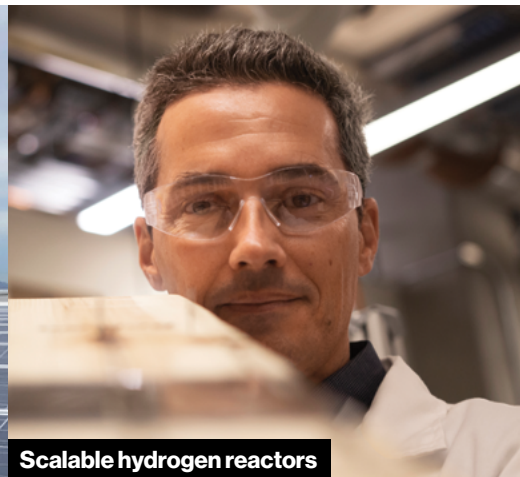
Going carbon neutral

A path to decarbonization to benefit all Arizonans.

36



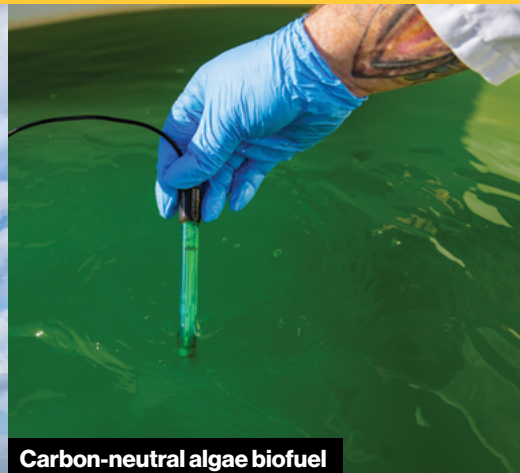
Highly efficient solar electricity



Scalable hydrogen reactors



Going carbon



Carbon-neutral algae biofuel



A critical part of the energy transition is bringing everyone along, and that vision drives technology development, such as improvements to solar panels, microalgae grown from the sun for a biofuel and clean hydrogen.

neutral

**A path to decarbonization
to benefit all Arizonans**

Story by DANIEL OBERHAUS, '15 BA



As the sunniest city in the U.S., Phoenix has long been at the forefront of the solar revolution. Today, more than 190,000 solar installations, many of them in the Valley, provide nearly 10% of the state's electricity. The energy from these solar panels coupled with the electricity from nuclear, hydropower and wind installations generate more than 50% of Arizona's electricity.

This is promising, and for Arizonans, furthering this clean-energy transition in partnership with numerous stakeholders

presents a historic opportunity to remake the economy in a way that benefits everyone, including businesses, residents, rural areas and the most vulnerable communities.

"There's virtually no disagreement in Arizona that we need to decarbonize," says Gary Dirks, senior director of the Julie Ann Wrigley Global Futures Laboratory. "The issue is how to go about doing it. As we're making this transformation toward renewable energy and phasing out fossil fuels, we have to get it right."

Building an energy supergroup

Dirks directs LightWorks, a multidisciplinary effort within the Global Futures Laboratory to solve energy challenges. He helps orchestrate programs at ASU that bring together researchers across multiple disciplines including the social sciences, policymakers, business leaders and community leaders to address pressing climate issues. These collaborations, Dirks says, are absolutely key.

“This energy transformation is going to take deep relationship building,” Dirks says. “We also need to be more purposeful about including all sectors and disciplines, especially social scientists who can help think about how we can evolve our political and societal will to change policies and our behavior. This framework is crucial for creating a successful transition.”

He points to the urgent need for an “us” mindset in order to make the transition to a carbon-neutral economy equitable, to bring along people who are most vulnerable to energy shortages, and to bring along those whose jobs will change during the transition.

That’s why LightWorks “assembles teams that can approach these problems and challenges in a more comprehensive way than they are frequently addressed,” Dirks says. This includes emphasizing policy and social justice.

For instance, Dirks says, “We cannot leave people behind as we transform the energy system. We need to be especially attentive to communities hard hit by plant closures, and rural and Indigenous communities.”

“We need to be especially attentive to communities hard hit by plant closures, and rural and Indigenous communities.”

— GARY DIRKS, SENIOR DIRECTOR,
ASU GLOBAL FUTURES
LABORATORY

It also requires creating strategically designed technologies to overcome some of the biggest challenges with current renewable energies. Those technology challenges are among other key areas of LightWorks’ focus.

Solving energy gaps

Clean hydrogen is a promising solution to two of renewable energy’s challenges. Those challenges are that solar power is naturally intermittent — and currently available storage technologies such as batteries are ill-equipped to store energy at large scales for more than a few hours. A second challenge is that achieving deep decarbonization will require an alternative source of fuel to displace the natural gas and oil that power many vehicles and industrial processes. Batteries will get better, but we need the hydrogen option in our toolkit, Dirks says.

Hydrogen is the most abundant element in the universe and a fuel source that produces no carbon emissions. While the clean hydrogen economy has been promised for decades, it has failed to materialize due to

several technological and economic hurdles. But Ellen B. Stechel, the co-director of LightWorks, a senior global futures scientist and a professor of practice in the School of Molecular Sciences, believes hydrogen’s time has come.

Stechel is the director of the recently established Center for an Arizona Carbon-Neutral Economy, a coalition founded by Arizona Public Service, Salt River Project, Tucson Electric Power, Southwest Gas, ASU, The University of Arizona and Northern Arizona University. AzCaNE, which is housed within the Global Futures Laboratory, is joined by the Arizona Commerce Authority and many other stakeholders, including businesses and cities, and is in conversation with tribal communities.

“Our goal is to reach a carbon-neutral economy, but since there will be support from the Infrastructure Investment and Jobs Act, our first focus is clean hydrogen,” Stechel says.

Stechel’s vision for the future is one where Arizona produces more than enough clean hydrogen to meet its own needs, which would shift the state’s energy balance and turn it into a net energy exporter. This revolutionary shift would simultaneously decrease the state’s carbon emissions, foster technological innovation and save nearly \$1 billion annually that Arizona spends importing fossil fuels from other states. While this vision would have seemed outlandish only a few years ago, the work of Stechel and her collaborators at AzCaNE is bolstered by the U.S. Department of Energy’s \$8 billion initiative to



Ivan Ermanoski, research professor at LightWorks, has created the Labrynth reactor, which uses solar energy to separate hydrogen out of water. Hydrogen can be used as a clean-burning fuel to help phase out fossil fuel use.

Clean hydrogen technology

While hydrogen can provide long-term, safe storage of energy, the idea is to reduce the cost of producing clean hydrogen to such an extent it can be readily used to replace fossil fuels in current processes and many we haven't even thought about, says Ivan Ermanoski, a research professor at LightWorks and the School of Sustainability.

Examples where hydrogen could replace fossil fuels, decreasing greenhouse gas emissions and decreasing fossil fuels usage, include:

- The chemical industry, cement and steel production, copper mining and refining.
- Ocean shipping, which currently runs on dirty fuel.
- Long-distance, heavy transportation.
- Perhaps air travel, which uses lots of fossil fuels per person either directly or to make sustainable aviation fuel.
- Many other uses as the cost of producing clean hydrogen goes down.

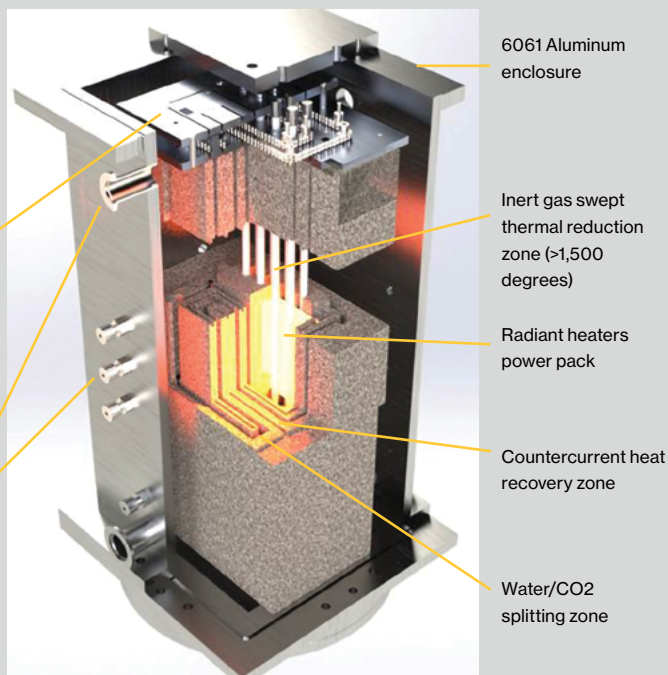
At scale, the use of hydrogen would be an entirely sustainable cycle of using the sun and other clean energy resources to make hydrogen from water, then using the hydrogen as fuel, which then turns back into water to repeat the process.

Labyrinth reactor

Cutout view of the many layers of the reactor

Redox active metal oxide motion mechanism

Power temperature measurement and gases inputs/ outputs



establish a network of regional clean hydrogen hubs across the country. If Stechel gets her way, one of those hydrogen hubs will be based in Arizona or established through a partnership with a neighboring state.

“When you don’t have renewable power, you have to get energy from somewhere else, and right now, that’s almost always coal or natural gas. The promise here is that hydrogen will have more uses in the future as a long-term energy storage solution.”

— IVAN ERMANOSKI, RESEARCH PROFESSOR, LIGHTWORKS

“These kinds of transitions aren’t easy,” Stechel says. “Arizona is a leader in the way we’re starting to pull everybody together behind this cause because unprecedented levels of cooperation will be necessary to succeed.”

A major part of AzCaNE’s work is collaborating with researchers, utilities and other stakeholders to find ways to dramatically lower the cost of hydrogen production to make it cost competitive with fossil fuels. For Stechel, this means creating future-forward technologies that scale. One of the more notable examples of this kind



Ivan Ermanoski and Natalie Figueroa, an engineering and physics student, are excited about helping make clean hydrogen a reality. When hydrogen is burned as a fuel, it becomes water.



5 ways to help with the energy transition

- **Continue your education** about the climate crisis and energy transition. Take free courses through asu4you.asu.edu like Sustainable Earth and read the ASU report “Pathways to a Carbon-Neutral Arizona Economy.”
- **Get familiar with how energy decisions are made in your community.** Advocate for the energy transition in your homeowner association, your company, your city, your circles and community organizations, and with politicians. Vote for what is important to you on energy.
- **Weatherize your home** to lower your energy use. Learn more at energy.gov/energysaver/weatherize.
- **Consider rooftop or community solar.** Visit your utility’s website to learn more.
- **If you’re looking to upgrade your vehicle, run the numbers on an electric car.** It’s being adopted by many Phoenix residents, who own 42,000 electric vehicles, often powered by rooftop solar or Phoenix’s 570 public EV charging stations, according to a 2021 report by AZ Big Media.

of technology is being developed by Ivan Ermanoski, a research professor at LightWorks and the School of Sustainability, and a senior global futures scientist, in a highly collaborative project for which Stechel serves as the principal investigator.

Today, the U.S. produces an enormous amount of hydrogen, but nearly all of this hydrogen is created by using high-temperature steam to separate it from natural gas, and much of it is then used in refining fossil fuels. To break this cycle,

“Our goal is to propel this technology out of the lab and power the world.”

— ZHENGSHAN YU, ASSISTANT RESEARCH PROFESSOR, THE SCHOOL OF ELECTRICAL, COMPUTER AND ENERGY ENGINEERING

Ermanoski and his colleagues have built a reactor that can use heat from the sun — collected, for example, by arrays of mirrors that concentrate sunlight onto a small area — to produce clean hydrogen.

A grant from the U.S. Department of Energy is sponsoring the development of Ermanoski’s functioning tabletop thermochemical hydrogen reactor, and it points to a future where a large-scale version of the device could be used to produce hydrogen that can provide Arizona residents and others in the U.S. with a clean and reliable source of energy on demand.

“When you don’t have renewable power, you have to get energy from somewhere else, and right now, that’s almost always coal or natural gas. The promise here is that hydrogen will have more uses in the future as a long-term energy storage solution,” Ermanoski says, “as well as to power numerous processes instead of fossil fuels.”

Better solar cells

The work being done at ASU on hydrogen technologies will play a vital role in the energy transition. Yet, although the costs of solar photovoltaics energy production fell by 82% from 2010 to 2019, there is still more innovation needed to make solar power technologies even cheaper and more efficient.

A pioneer in improving solar energy conversion efficiency is Zhengshan Yu, an assistant research professor in the School of Electrical, Computer and Energy Engineering and founder of the startup Beyond Silicon. Yu’s work focuses on improving conventional solar silicon panels by adding other semiconductor materials. Today’s silicon panels make up about 95% of the market and are about 20% efficient. So far, Yu and his team have created solar cells that are 28.6% efficient by using perovskite — which consists of materials that use the same crystal structure as calcium titanium oxide — on top of the silicon, which enables more efficient use of different colors of light, Yu says.

The company won \$200,000 in the DOE Perovskite Startup Prize to commercialize these new, innovative perovskite/silicon tandem solar cells that can eventually be manufactured



Zhengshan Yu's team has improved solar panel efficiency from 20% to 28.6% by adding other semiconductor materials on top of the silicon.

in the United States.

"Our goal is to propel this technology out of the lab and power the world," Yu says.

Another leader in boosting solar efficiency and reducing costs is Arthur Onno, an assistant research professor in the School of Electrical, Computer and Energy Engineering. He is working on a DOE-funded project that could revolutionize solar panels by using cadmium telluride, which proves significantly cheaper than silicon panels. Still, because of their lower efficiency, these "CadTel" panels only represent about 5% of the global market.

If more efficient, CadTel panels could capture a larger market share and significantly drive down the

cost of solar energy. However, while researchers have known that CadTel has a relatively high theoretical efficiency, achieving this in practice has been challenging. A big hurdle is that solar cell manufacturers and researchers lacked a robust way to conduct tests of CadTel solar cells, which are around 50 times thinner than silicon cells.

"If you look at the basic physics, CadTel should be more efficient," Onno says. "We just haven't understood how to unlock the material's potential."

To overcome this problem, Onno and his colleagues developed a new type of solar cell probe that uses lasers rather than electricity to explore the performance of



CadTel cells to tease out causes of inefficiency. Over the past year, the ASU researchers have delivered a handful of these devices to two U.S. solar manufacturers, which have begun using them in their industrial



Scaling the use of the sun to grow microalgae for a biofuel could help fill in energy gaps.

labs to work on improving CadTel solar panel efficiency.

“From the feedback we’ve received, our tools have been heavily used by the manufacturers,” Onno says.

Microalgae with a big impact

Another approach to deep decarbonization is underway in the most unlikely of places – the city of Mesa’s wastewater treatment plant. For the past year, Bruce Rittmann, director of the Biodesign Swette Center for Environmental Biotechnology and a distinguished global futures scientist, has led a research project at Mesa’s wastewater plant focused on finding more effective ways to feed carbon dioxide to microalgae. These photosynthetic microorganisms thrive on CO2 and sunlight, and when they’re harvested, they can be cooked down into a carbon-neutral biofuel comparable to natural gas.

Treating wastewater in “anaerobic

“If treatment plants harvest the methane and turn it into electricity, they can become energy neutral, and Arizona could produce enough methane to become an energy exporter.”

— BRUCE RITTMANN,
REGENTS PROFESSOR OF
ENVIRONMENTAL ENGINEERING

digesters” generates a substantial amount of greenhouse gas emissions in the form of CO2 and methane, which Rittmann realized could be harnessed to grow large amounts of microalgae. This process would, in effect, use microalgae to turn sunlight into a sustainable biofuel, but this requires the ability to separate

the CO2 and methane efficiently. To solve this problem, Rittmann and his team developed a material made of tiny hollow fibers that can be placed in nearby pools to selectively deliver CO2 to microalgae growing in the ponds and capture a relatively pure source of methane to be used in a variety of industrial processes.

“If treatment plants harvest the methane and turn it into electricity, they can become energy neutral, and Arizona could produce enough methane to become an energy exporter,” Rittmann says. “This would have a huge impact on treatment plants, cities in Arizona, and the world.”

Decarbonization for a healthier planet

In addition to these technologies and while working on the social and behavioral aspects of the transition, ASU is developing and scaling other technological solutions toward a carbon-neutral economy, including carbon capture, water conservation, better battery storage, more resilient electrical grids, ways of approaching agriculture that improve soil and lower carbon emissions – and many more. The goal is to build a carbon-neutral economy that benefits all Arizonans.

“We have to come together with an inclusive mindset, not an us vs. them approach, to pave the path toward the economy and planet we all want to see,” Dirks says. ■

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WOW FACTOR

Seeing deep into space

The James Webb Space Telescope is the largest, most powerful and complex space telescope ever built – and the photos now being transmitted back to Earth as of this past July are “jaw-droppingly stunning,” says Professor Rogier Windhorst of the School of Earth and Space Exploration, an interdisciplinary scientist for Webb. It shows space back in time and in detail like never before. Windhorst and other ASU scientists and grad students, along with researchers from NASA and other universities, helped build the telescope and get it launched in December 2021.

See more [webb.nasa.gov](https://www.webb.nasa.gov)

The dimmer star at the center of this scene has been sending out rings of gas and dust for thousands of years in all directions, and NASA's James Webb Space Telescope has revealed for the first time that this star is cloaked in dust.



Expand your horizons

**Science as
a way to
connect
and heal**

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**Curating
art to
inspire joy**

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In her new memoir, ASU scientist Lindy Elkins-Tanton explores finding meaning through the wonders of the universe around us

Story by SCOTT BORDOW

Science as a way to heal and connect

ASU Regents Professor Lindy Elkins-Tanton discussing a future in space with an undergraduate student. Go to lindyelkinstanton.com to learn about her book published by William Morrow, an imprint of HarperCollins Publishers.

Lindy Elkins-Tanton, a Regents Professor in the School of Earth and Space Exploration and vice president of ASU's Interplanetary Initiative, celebrated a book launch this past summer of her memoir, "A Portrait of the Scientist as a Young Woman." It is the story of science as a place of healing, as a way of building a life philosophy – finding meaning through the wonders of the world and the universe around us.

We talked with Elkins-Tanton about the book and why she believes science can lead to healing and wonder.

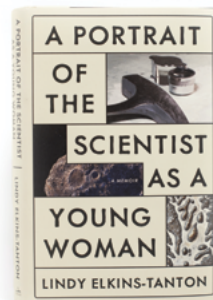
Question: Why did you decide to write the book? It's not as if you had a lot of extra time on your

hands while you're leading a NASA mission.

Answer: What I'm really hoping is that people who read the book feel a connection. I think that so many people are contemplating or have been along career paths like mine and encountered challenges like what I have, whether that's gender, age, nationality or whatever. So, for me, it's this motivation to try to connect with people, and I just hope that people say, "You know, I feel that, too."

Q: When did you decide to take on the book, and how did you find time to write it?

A: It must have been three years ago, we were contemplating writing a book





Professor Lindy Elkins-Tanton, center, talks with doctoral students John Cristoph, Kevin Tranh and Samuel Corville Ratatur on the Tempe campus.

about exploration and putting in the unusual stories of exploration as opposed to the ones that we normally kind of get used to, like the heroes of the Golden Age and all that. And talking about the kinds of lessons that you take from exploration. I presented the idea to the agent I'm now working with, and she said, "Well, that's really interesting, but I'm not totally in love with that book concept. But, Lindy, I love the parts of your story in there. What would you think about writing a memoir instead?" And that was just so exciting that somebody thought it would make a good story. So, no matter what came next, it was kind of irresistible to give it a try, and frankly, writing it was just a pleasure.

"I've really been able to do some dream projects and work on some dream subjects."

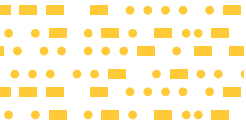
— LINDY ELKINS-TANTON

Q: You write about some very personal things, including your father's anger and drinking, your brother being killed by a drunk driver, being raped as a child and your ensuing bouts of depression and anxiety. Why did you decide to not only write about those things, but go into the detail you did?

A: Part of it is, it's just cathartic for me. But part of it is, I think,

these are very common stories. I think everyone has experienced things like this. And I'm hoping that other people will hear that here's one way somebody dealt with this and compare and contrast with their own process. Also, I have been really blessed with some lovely things happening on the job front. I've really been able to do some dream projects and work on some dream subjects. I think it's possible that there's still the notion that people who get to do those things have had a special entitled pathway. I'm sure it must be true sometimes, but my suspicion is that's not true, that everyone has had things in their lives they've had to overcome.

Q: Is it your hope in writing about your childhood trauma that it might help others deal with



whatever they're going through?

A: Yes, but I try not to say it that way because it sounds condescending, like "I did this thing and maybe now you can do it." Because I think everyone is overcoming their challenges in their own way. But, yes, seeing how someone else did it can be instructive. Maybe it helps someone feel less alone. Maybe it's the feeling one gets when they read a story that feels familiar, and it's a connection to humankind.

Q: I'm curious about how you see trauma shaping who you are today.

A: I think what I wrote about a little bit is that when I'm faced with something that I can't stand the thought of, I'm immediately just like, "How am I going to get past this? This is unacceptable. I'm going to find the next step." Because being in that situation and feeling trapped by the wrong outcome, I just have this visceral rejection of that. Is that caused by what happened to me in my childhood? I don't know. I feel emotionally like it's connected, but I don't know. I definitely have a strong feeling that everybody has so much more in common than they have different. That comes, I think, along with my idea that I don't really like setting up people as heroes or as special. The things that happened in my childhood or in my family — you don't know that other people have had these same experiences, but I just suspect a lot of people have.

Q: There's a part of your book that details a conversation you had with a friend. He had a difficult childhood as well and told you he became interested

in astronomy because it made him realize there was something bigger out there. Did that sense of a bigger world than your childhood lead you to science in any way?

A: Not in that way. The thing that pulled me into science, other than just my general interest in the natural world and understanding what's around me, was that sense of comfort of the geological timescale and that the world has been around for so long, and we are just this tiny flash and what actually happens to us in the every day, in this moment, literally doesn't matter. I know for some people that's terrifying and horrible, and for other people, that's incredibly comforting. For me, it was very comforting. That lifelong journey of trying to get your arms around it and understand it is really beautiful.

Q: Beautiful in what way?

A: I think it's beautiful because we humans do tend to get rooted in the here and now. (ASU President) Michael Crow and I had this conversation in which we were talking about people and how we're all standing out in our yards, looking down at our dusty boots. If instead we would look up and out and understand what a tiny part in the whole universe we have and how united we really are on the Earth, that would be very inspiring.

Q: You wrote about finding out you had ovarian cancer in 2014 while your team was in the middle of writing its first Psyche proposal. Was there a point during that time when you said to yourself, "How am I going to be able to deal with both of these things?"

"... everybody has so much more in common than they have different. That comes, I think, along with my idea that I don't really like setting up people as heroes or as special."

— LINDY ELKINS-TANTON

A: I did feel like at times I was not succeeding at both, but it really was not possible to give up on either one. What happened was, I had such great support from people around me. Especially from ASU. I was brand new at ASU. Why would anybody trust or want to support me? But people were amazing and made it possible for me to focus only on the things that I absolutely had to do on my own. And just support for all the other things during that relatively limited number of months when I was really knocked out by chemotherapy.

Q: Final question: What is the message you hope readers get from this book?

A: I hope that in some little way, maybe it could undo some of the fear and guilt narratives that we're all living in the world right now. And give us all the feeling that I have, that people are smart and capable and we're going to make progress. I think that would be the nicest thing that people could get. ■



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DOWNTOWN PHOENIX

Exhibit communicates scientific research to community through art

Dyadic communication. Synaptogenesis. Repetitive behavior modification – lines of scientific inquiry that are all being studied on the 30-acre medical education and research campus known as the Phoenix Bioscience Core. To most of us, such concepts can seem vague at best and completely foreign at worst, when in reality they each refer to research having to do with cancer, traumatic brain injury and dementia – concepts that are not only easy to grasp but that have likely touched many of our lives.

In the Artist + Researcher Exhibition, nine pairs of local artists and researchers from all three of the state's public universities collaborated on visual art pieces that communicate some of the groundbreaking research taking place on the PBC every day in a way that makes it accessible to all.

To see the show details and other upcoming events, go to phoenixbiosciencecore.com/events.

Susan Beiner, a professor in ASU's School of Art and a ceramics artist, collaborated with David Coon, associate dean at the Edson College of Nursing and Health Innovation, who researches interventions that focus on culturally diverse groups of midlife and older adults facing chronic illnesses. "Lost Memory in Matter" features a conglomeration of small objects representing thoughts, memories and ideas stored in one's brain, all cast in a variety of green hues, the last color dementia patients lose the ability to see.

Curating art to inspire joy





Dhyandra Lawson, '21 MA in art history, is assistant curator at the Los Angeles County Museum of Art.

ASU IN LOS ANGELES

ASU grad Dhyandra Lawson leveled up and is planning an exhibition at the world-renowned Los Angeles County Museum of Art exploring connections across the Black diaspora

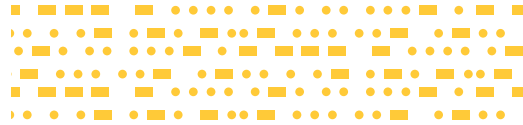
Story by MAKEDA EASTER
Photos by STEPHEN DENTON

Nearly 15 years ago, Dhyandra Lawson, '21 MA in art history, got her start at the Los Angeles County Museum of Art. Then newly graduated from Occidental College in LA, where she studied art history and visual art, Lawson was in need of a job and eager to get a foot in the door at the museum. So she worked in the museum box office. She took her temporary role seriously, treating every day as something of an interview and an opportunity to make connections with art professionals. Eventually, a full-time position opened on the museum's development team, where she worked for four years.

Lawson was up for a promotion in fundraising when she made the leap to the photography department's curatorial team in 2012. The transition was a rare opportunity. "At that time, it was hard because they weren't really hiring people in entry-level positions in curatorial who didn't have graduate degrees," Lawson says.

Working at the largest art museum in the western United States, she had unfettered access to LACMA's encyclopedic collection of more than 147,000 paintings, sculptures, photographs and other art spanning continents and centuries. As a curatorial assistant, Lawson collaborated with museum curators, managing, researching and caring for LACMA's collection of art and helping plan exhibitions.

It wasn't long before Lawson found disparities in the collection and began working to help broaden the artists represented. Today, Lawson is planning a new exhibition as an assistant curator, a promotion she received after graduating from the ASU-LACMA Master's Fellowship in Art History, which provides emerging museum professionals research support,



mentorship from experts and a graduate degree.

As an assistant curator instead of a curator assistant, Lawson's work focuses primarily on research and writing, and more leadership and ownership in exhibition-making and growing the collection.

Art that conveys what it means to be alive

Lawson's area of expertise is in photography and video art after 1970. The museum's photography collection ranges from the medium's beginning in the 19th century to

present day, focusing primarily on practitioners in the U.S. and Europe. Although the museum has expanded its representation of Latino makers and Black artists in recent years, "like most photography departments, the founding collections have been artists who are of European descent or white Americans," Lawson says.

"I noticed right away a bias in the way that the collection had been compiled over the years, and that's spanning legacies of curators and collection building," she says.

At LACMA, Lawson's day often began with a stroll through galleries

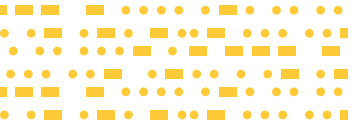
dedicated to African and ancient Egyptian art. Looking back, her walk to her office was also something of a metaphor, of "how I saw myself in the museum," Lawson says.

She thought about what it meant to be a Black woman living in LA. She thought about the Black diaspora, a community of people around the world who have moved or been forcibly displaced from their ancestral homeland.

"It's a way of thinking about migration histories, a way of thinking about the effect of the trans-Atlantic slave trade and the consequences,



The Los Angeles County Museum of Art, where Lawson works as an assistant curator, is the largest art museum in the western United States, with more than 147,000 works in its permanent collections.



the legacy of that trade, but it's also been adopted by political thinkers as a way to express Black solidarity," she says.

These experiences planted the seeds for her exhibition, titled "Imagining Black Diasporas: 21st Century Art and Poetics." Set to open at LACMA on Nov. 12, 2023, and run through March 24, 2024, the expansive exhibition including photography, painting, installation, sculpture and time-based media will be focused on the aesthetic connections among living contemporary artists across the Black diaspora. In addition, Lawson is working on the 104-page catalog that will be published for the show.

The show will center stunning works by artists from the U.S., and across Africa, Europe, the Caribbean and Canada. Sandra Brewster is one such artist who will be included in the show. Based in Toronto, the visual artist explores identity and representation, highlighting the Black experience in Canada. Another, Susana Pilar Delahante Matienzo, is a Cuban visual artist whose work in photography, video and performance often responds to the history of violence against women.

While many art exhibitions centering the Black diaspora focus on slavery, migration or trade, Lawson's exhibition explores ways artists respond to their life experiences, both the difficult and joyful moments, ultimately bringing a sense of empowerment to both the artists and their works.

"I haven't seen a show that's taken a fundamentally aesthetic approach or understanding that



aesthetics are conveying what it means to be alive," Lawson says. "People tend to reduce aesthetics down to what things look like, but I think the way artists arrange things or rearrange things aesthetically tells us for them what it means to be alive. And that's super important for Black peoples around the world whose stories have been historically marginalized."

Opening doors

Lawson's exhibition expands upon her research as a student in the ASU-LACMA Master's Fellowship in Art History. Lawson was part of the inaugural class that began in 2018, taking coursework while continuing to work full time at the museum. For Lawson, the fellowship presented an opportunity to dive deeper into LACMA's collection, expand her knowledge in her specialty area, develop the methodology to eventually plan her exhibition and earn a graduate degree — a key factor in her becoming a curator.

The ASU-LACMA fellowship helped Lawson navigate the

"Now that I'm formally a curator, every exhibition is an opportunity to share something with the public and to make a statement, or to hopefully inspire some magic, some joy, to highlight something that isn't widely being published or talked about."

— DHYANDRA LAWSON,
'21 MA IN ART HISTORY

two biggest barriers to graduate education: cost and time, she says.

Raised in Phoenix and Scottsdale, Lawson grew up immersed in art. She loved to draw, and her mother, a high school teacher, taught herself darkroom printing. "Wherever we were living, she'd always set up a few trays of chemistry in the bathroom and laundry room," Lawson says.

"I was wealthy in support, which honestly is really profound," Lawson says. "And I'm super lucky and grateful to have had someone who supported my interest in art, because a lot of families don't think that that's a legitimate career path."

Deep knowledge to share

Lawson experienced several transformative moments during the three-year fellowship. One was in a course taught by Angélica



Afanador-Pujol, an associate professor of art history and museum studies, and program director at the time of launch. In the class, “(Mis)representing Justice: Art, Law and Censorship,”



Lawson tested an idea that became a chapter in her thesis and an exhibition theme. She wrote a paper tracing the aesthetic connections between contemporary LA artist Mark Bradford and Sammy Baloji, a photographer from the Democratic Republic of Congo who now works in Europe.

It was an aha! moment – identifying speech and silence as particularly powerful and poignant for Black peoples. “The stakes of when to speak and when not to are really high. Looking at artists’ work across the diaspora, many were portraying people who had been killed or lived out a dangerous reality,” she says.

Lawson’s thought process in seeing these connections impressed Afanador-Pujol, as does Lawson’s relationship building. “She often talks to the artists and cultivates these relationships to bring these works to the forefront,” Afanador-Pujol says. “The fact that she is at LACMA, she is able to put these works in the center stage of the art world, which hasn’t always been the case.”

While developing her thesis, Lawson also worked closely with Olga Viso, a renowned curator and scholar who serves as the senior advisor for global partnerships in the arts at ASU’s Herberger Institute for Design and the Arts. “It was clear that as her thesis was being developed, that it would be a terrific exhibition,” Viso says.

After graduating, Lawson presented her proposal to LACMA’s curatorial advisory group before the show was formally added to the museum’s calendar. Lawson’s

exhibition will help shape, broaden and diversify LACMA’s collection.

“I’m proud that LACMA recognized the strength of her voice and has given her an opportunity to put that research to action really quickly,” Viso says. “That’s going to be a huge contribution.”

Cultivating relationships with artists

While working on the exhibition, Lawson does artist studio visits, researches venues for possible collaborations, plans the visual layout of the show and identifies artworks that would be meaningful inclusions in the museum’s permanent collection.

“Right now, I’m in the process of making acquisitions, either through fundraising events or through the support of individuals,” Lawson says.

Viso describes Lawson’s curatorial work as “potent and clear” and says, “I’m just so thrilled to see her rise within the field because I think she’s really going to be an important voice.”

As she continues to plan, Lawson is brimming with ideas for future exhibitions. Most importantly, Lawson wants to continue her work expanding LACMA’s representation of art practices, and find even more connections across time periods, places and cultures.

“Now that I’m formally a curator, every exhibition is an opportunity to share something with the public and to make a statement, to hopefully inspire some magic, some joy, to highlight something that isn’t widely being published or talked about,” she says. ■

5 artists to know

According to Los Angeles County Museum of Art assistant curator Dhyandra Lawson, here are five artists to check out:

- Sammy Baloji, Democratic Republic of Congo (pictured).
- Mark Bradford, Los Angeles.
- Sandra Brewster, Toronto.
- Susana Pilar Delahante Matienzo, Cuba.
- Grace Ndiritu, Britain and Kenya.

Upcoming exhibitions

Take a look at upcoming exhibitions and sign up for email notifications to include Lawson’s exhibition which will be on view Nov. 12, 2023 to March 24, 2024 in LACMA’s Broad Contemporary Art Building. Go to lacma.org.

ASU alumna creates resource to find Black-owned galleries

While working in Washington, D.C., April Hobby was surrounded by impressive museum art galleries like the Smithsonian Institution and the National Gallery of Art. She wanted to see what else was out there – especially Black-owned art galleries – but wasn't sure where to start. Now, she's helping others find these galleries. While at ASU in the Herberger Institute's School of Art, she had experience in art galleries on campus and saw behind-the-scenes setups of exhibitions. She moved to Maryland after graduation and in 2021 founded The Black Curation, a website that focuses on highlighting Black-owned art galleries and art experiences. Specifically, she created a map and directory of Black-owned art galleries worldwide.

See her map and list of resources at theblackcuration.com.

April Hobby graduated with an art history degree in 2014 and went on to pursue a Master of Education in higher and postsecondary education from ASU in 2016.



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Joe Lampe, an outfielder drafted onto the Cleveland Guardians, was on the Pac-12 All-Defensive Team after not posting an error in conference games for all of the 2021 year.

Play like a Sun Devil

THE MAJORS

Six Sun Devils selected in 2022 baseball draft

The 460th and 461st all-time selection for the Sun Devils in the Major League Draft history were Joe Lampe (3rd round to the Cleveland Guardians) and Sean McLain (5th round to the Los Angeles Dodgers). Four more Sun Devils came off the board in Nate Baez (Minnesota Twins), Kyle Luckham (Washington Nationals), Adam Tulloch (Cleveland Guardians) and Ethan Long (San Francisco Giants), bringing ASU's all-time tally of draft selections to 465, including secondary phase and January drafts throughout history. The six total selections were the most for the Sun Devils since 2015, when nine players were drafted.

Read more sports news at thesundevils.com.

First in Pac-12

Sun Devils beat Stanford in Academic Progress Rate.

62

Focus on health

Mayo Clinic is now the official medical provider of Sun Devil Athletics.

63

ASU alum breaks barrier as first female official scorer for Diamondbacks

When Kara Blackstone, '18 BS in parks and recreational management, hears the crack of the bat on a baseball, it's not a moment of fan excitement for her – it's a judgment call. Blackstone is an official scorer for Major League Baseball and the first female official scorer assigned to the Arizona Diamondbacks. The job requires deep knowledge and love of the game.

MLB created a “scorer university” program to train a new cohort of scorers last year, including Blackstone, who was among five women hired for this season. Before this, MLB recorded only four other women official scorers dating back to the 1800s.



“I make the tough calls,” says Kara Blackstone from the School of Community Resources and Development.

Huge academic win

Sun Devils, first in Pac-12, beat Stanford with Best Academic Progress Rate

ASU recorded a multiyear Academic Progress Rate average of 995 over a four-year period (2017-18 to 2020-21), which is an all-time ASU high and first in the Pac-12, the first time ever leading the conference. Since the 2015-16 academic year, ASU has averaged a 990-plus for each multi-year APR cohort that has been released.

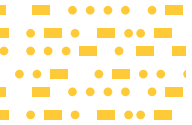
ASU's single-year overall APR score for 2020-21 is 994, which is the highest score in ASU history. The national multiyear APR score for all NCAA Division 1 programs is 984.

“When you look at the graph of consistent increasing performance in Academic Progress Rate, this is a culminating moment,” says Jean Boyd, deputy athletic director and one-time director of the Office of Student-Athlete Development.



“At the core of Sun Devil Athletics’ mission is the holistic development of our student-athletes. There is no more powerful statement about our commitment to this mission than achieving the top Academic Progress Rate in the Pac-12 conference.”

– RAY ANDERSON, VICE PRESIDENT FOR UNIVERSITY ATHLETICS



Ray Anderson congratulates Marco Salas, a former member of the Sun Devil Football team graduated from the Walter Cronkite School of Journalism and Mass Communication and Barrett, The Honors College in May.

Data visualization from ASU tech team helps academic coaches track athletes' performance in the classroom

ASU made headlines around the country when it topped Stanford to secure the top spot in the Pac-12 Conference for Academic Progress Rate. How did the Sun Devils do it?

One of the answers is a tool created by ASU's University Technology Office: a data dashboard that tracks a student-athlete's individual academic performance, from every course they are enrolled in to every assignment due. The dashboard displays an individual's Canvas activity time in a course, including the number of logins, number of clicks within a session, interactions with specific assignments and more. It then compares these metrics, including grades, against the class average to provide academic coaches and student-athletes with a performance baseline to compare activity.

By getting data almost daily, academic coaches are better positioned to provide proactive support.



Academic coach Jon Erwin (left) works with Cam Magee, a freshman who plays shortstop on the ASU baseball team.

Mayo Clinic and Sun Devil athletes work together on care, treatment and prevention

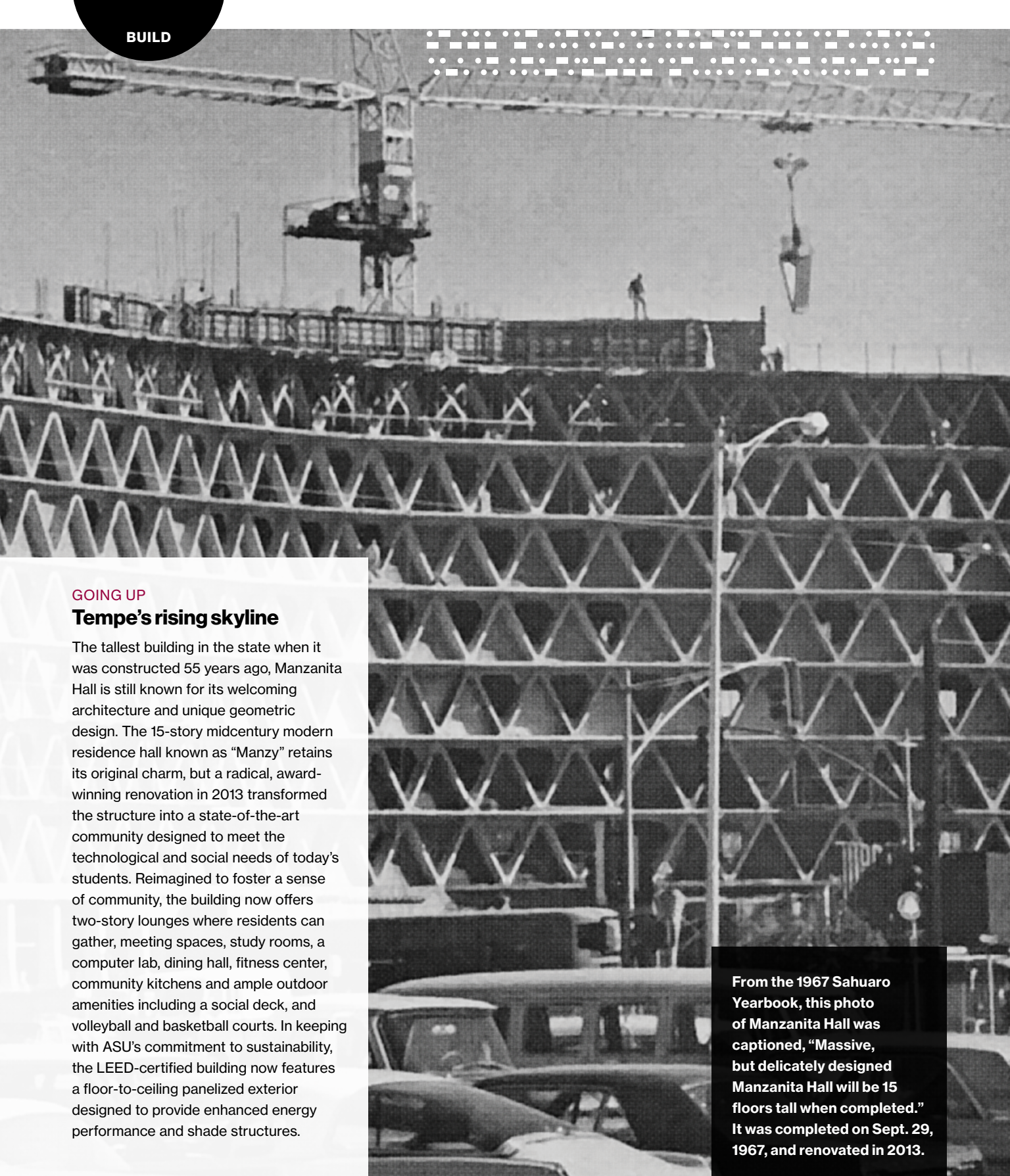
As the new official medical provider of Sun Devil Athletics, Mayo Clinic in Arizona is working closely with ASU student-athletes in all men's and women's collegiate sports. Mayo physicians are on the court, at the sideline, in the gym and on the field to be sure athletes get the care they need during play. They also support athletes with sports-centric primary care, assuring they are not sidelined by injuries or medical conditions that can be prevented or easily resolved.

"The plan is different for every athlete," says Dr. Matthew Anastasi, assistant professor in primary care sports medicine. "In all cases, though, we are making calculated assessments to maximize their power and minimize their risk of injury."

"We take pride in working with premier athletes we treat at ASU and also several of Arizona's professional sports teams," said Dr. Anikar Chhabra, division chair of sports medicine at Mayo Clinic in Arizona.

Chhabra adds, "I was a college athlete myself, as were many of my colleagues, so we understand the complexities in dealing with athletes. We strive to get our patients back to their sport whether they need imaging and acute care, primary sports medicine, surgery or physical therapy. We also offer innovative solutions like orthobiologics and other newer regenerative medicine therapies."

To learn more, visit sportsmedicine.mayoclinic.org.



GOING UP

Tempe's rising skyline

The tallest building in the state when it was constructed 55 years ago, Manzanita Hall is still known for its welcoming architecture and unique geometric design. The 15-story midcentury modern residence hall known as “Manzy” retains its original charm, but a radical, award-winning renovation in 2013 transformed the structure into a state-of-the-art community designed to meet the technological and social needs of today’s students. Reimagined to foster a sense of community, the building now offers two-story lounges where residents can gather, meeting spaces, study rooms, a computer lab, dining hall, fitness center, community kitchens and ample outdoor amenities including a social deck, and volleyball and basketball courts. In keeping with ASU’s commitment to sustainability, the LEED-certified building now features a floor-to-ceiling panelized exterior designed to provide enhanced energy performance and shade structures.

From the 1967 Sahuaro Yearbook, this photo of Manzanita Hall was captioned, “Massive, but delicately designed Manzanita Hall will be 15 floors tall when completed.” It was completed on Sept. 29, 1967, and renovated in 2013.



Hey. Are you up? Maybe we should talk?

—Earth

Our world is trying to tell us something.

To thrive in the future, we must rediscover our planet and our relationship with it. We need a vision for better that brings all the voices to the table and focuses on long-term opportunity. The conversation starts here.

globalfutures.asu.edu

ASU Julie Ann Wrigley
Global Futures Laboratory
Arizona State University

Reshaping our
relationship
with our world

Closing the microchip manufacturing gap

Arizona State University has been deeply connected to the semiconductor industry since the 1950s. Today, through research in the field, in partnership with private industry at facilities like MacroTechnology Works at ASU Research Park, ASU is accelerating to close the microchip manufacturing gap. ASU, together with industry partners, is advancing America's global competitiveness and building a new economy for Arizona.

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