

# Research expenditures ranking underscores ASU's dramatic growth in high-impact science

**University officially surpasses \$1 billion in research, leading to advances in dementia care, cancer detection, defense and AI**

By Joe Caspermeyer, ASU News  
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Arizona State University has surpassed \$1 billion in annual research funding for the first time, placing the university among the top 4% of research institutions nationwide, according to the latest National Science Foundation Higher Education Research and Development, or HERD, survey.

The milestone is a testament to ASU's success at transforming research dollars into tangible benefits for people — from improved health care to safer communities to more powerful computer chips and more.

"We have remained steadfast and determined in our goal to build a new model of a great American research university," ASU President Michael Crow said. "Surpassing \$1 billion in research expenditures underscores our unwavering commitment to be a new gold standard of service to the community, our state and our nation."

According to the new HERD survey, ASU's total research expenditures were \$1.003 billion. This marks an eightfold increase in research expenditures since Crow became ASU president in 2002.

The total, for fiscal year 2024, ranks ASU 37th overall, ahead of Michigan State University, Purdue and the University of Chicago, and No. 21 among public universities, ahead of Michigan State University, Indiana University and Rutgers.

ASU also ranked No. 5 among institutions without a medical school for fiscal year 2024, ahead of University of Colorado-Boulder, Purdue and Princeton. ASU's John Shufeldt School of Medicine and Medical Engineering recently [received preliminary accreditation](#), and its inaugural medical school class will begin in the summer of 2026.

## A top research university

ASU has risen through the ranks of global research universities by several leading indicators, including being ranked [No. 1 in innovation for the past 11 years](#) by U.S. News & World Report. ASU has also ranked [No. 1 in the U.S. for global impact toward the UN Sustainable Development Goals](#) for six years in a row by Times Higher Education.

In 2023, ASU's research achievements were further recognized when the university was [invited into the Association of American Universities](#), an organization representing the nation's top research universities.

The NSF's annual HERD survey collects research expenditure information from hundreds of institutions nationwide. Because the survey is a lagging indicator — a snapshot of research taken nearly a year and a half ago — the more recent actions in federal university funding are not reflected in this year's survey.

ASU receives funding for research from federal agencies, as well as state and local grants, businesses and other private organizations, often awarded over multiyear periods. Research expenditures — the actual amount of funding an institution spends each year — provides the most effective way to measure and compare the vitality of the American university research enterprise.

"ASU has a diverse funding portfolio, with support from federal agencies, industry partners, local governments and philanthropists who all have a vital interest in bringing ASU innovation to their communities and investing in ASU to benefit all Americans," said Sally C. Morton, executive vice president of ASU Knowledge Enterprise. "Our rapid growth and achieving the \$1 billion milestone reflects their confidence in our ability to deliver valuable results."

Among the top grant providers, ASU ranked 14th in National Science Foundation funding (ahead of Caltech, Georgia Tech, Penn State, Stanford and the University of Arizona), 10th in NASA expenditures (ahead of MIT, UCLA, the University of Michigan, Stanford University and Columbia University) and 10th in funding from state and local government (ahead of the University of Minnesota, UC Davis, Ohio State University and the University of Arizona).

## Leadership in key disciplines

ASU also achieved top 10 rankings for expenditures within many academic disciplines, including:

No. 1 in anthropology, ahead of the University of Michigan, the University of Arizona and Harvard.

No. 1 in non-science and engineering, ahead of the University of Pennsylvania, Harvard, the University of Wisconsin-Madison and the University of Arizona.

No. 2 in education, ahead of Vanderbilt, Stanford, Harvard and the University of Arizona.

No. 2 on visual and performing arts, ahead of the University of Georgia, the University of Arizona and UCLA.

No. 2 in business management and business administration, ahead of Harvard, UC Berkeley, Syracuse and the University of Arizona.

No. 4 in social sciences, ahead of USC, the University of Pennsylvania, the University of Chicago and the University of Arizona.

No. 5 in other engineering, ahead of the University of Michigan, MIT, Johns Hopkins and the University of Arizona.

No. 5 in geological and earth sciences, ahead of UC San Diego, Johns Hopkins, Caltech and the University of Arizona.

No. 5 in communications and communications technologies, ahead of Syracuse, Georgia State, Georgia Tech and the University of Arizona.

No. 5 in other social sciences, ahead of the University of Maryland, USC, Brown and the University of Arizona.

No. 6 in civil engineering, ahead of Purdue, Iowa State, Georgia Tech and the University of Arizona.

No. 6 in industrial and manufacturing engineering, ahead of Penn State, Purdue, Stanford and the University of Arizona.

No. 6 in political science and government, ahead of Rice, William & Mary and Vanderbilt.

No. 7 in other physical sciences, ahead of UC Berkeley, Harvard and the Rochester Institute of Technology.

No. 7 in social work, ahead of Florida State, USC, the University of Connecticut and the University of Chicago.

No. 9 in transdisciplinary, multidisciplinary and other sciences, ahead of MIT, Notre Dame and the University of Pittsburgh.

These rankings reflect ASU's ability to attract the best and brightest faculty in the nation, including six Nobel laureates, more than 200 American Association for the Advancement of Science Fellows and more than 300 Fulbright U.S. Scholars.

These exceptional faculty work side-by-side with students, who participate in all research across the university, including 3,695 students in paid research positions. The students gain valuable

hands-on experience to advance their careers and ultimately become the next generation of innovators.

This leads to more [high-impact science](#) reaching Arizonans and the nation than ever before.

Here are a few examples of how ASU is benefiting the community, the state and the nation:

## AI for better health

ASU researchers are using artificial intelligence to improve health care for people around the world. Their tools help doctors spot problems earlier, personalize treatment plans and spend more time with patients by reducing administrative work.

An ASU-led team developed an AI-based tool, HLA-Inception, that quickly [decodes how a person's immune system reacts to threats](#). Using this technology, the team discovered patterns that predict how people respond to cancer treatments. The technology could lead to more effective, personalized cancer therapies.

Another AI tool called Ark+ [helps doctors read chest X-rays more accurately](#). Trained on more than 700,000 global medical images and physician notes, the AI can detect diseases with better precision than existing tools. The ASU team behind Ark+ made it open-source so hospitals and scientists everywhere can use it — especially in underserved areas. It can also be applied to CT and MRI scans, speeding up diagnoses and reducing errors.

AI is also [improving dementia care](#). ASU researchers tested lighting that mimics natural daylight to help older adults sleep better and feel calmer. After the trial, residents slept nearly 90 minutes longer and showed fewer signs of depression and agitation. Building on this, the team launched a startup for an AI-powered lighting system that adjusts automatically to each person's needs, offering a more supportive environment for cognitive health and well-being.

## Protecting ocean life and livelihoods

Many forces threaten the livelihoods of fishing communities, including regulations designed to protect endangered species. An ASU research team is creating [fishing gear that supports the needs of the fishers while also protecting endangered ocean life](#).

The scientists made changes to traditional fishing nets so they catch target fish but prevent accidental bycatch that threatens wildlife and coastal economies. In field tests in Mexico's Sea of Cortez and in North Carolina, nets equipped with green LED lights reduced turtle and non-target captures by 63%.

The lights also help fishers by making nets easier to retrieve and disentangle — saving time and labor without reducing their catch. The team is refining a new generation of solar-powered lights that small-boat operators can afford, aiming for commercial availability within two to three years.

By working side-by-side with veteran fishers, the researchers ensure that conservation measures respect and support traditional livelihoods. The project offers a hopeful “win-win” — protecting vulnerable species, preserving important ecosystems and sustaining coastal communities that

depend on fishing.

## Mapping the way to better futures

ASU students are using geographic data to help local communities. Since 2019, the ASU [YouthMappers](#) group has created open, accessible maps that promote more efficient responses to local and global challenges. The participants gain valuable hands-on experience in the process.

For example, YouthMappers' students built open-source maps that are helping researchers analyze the factors contributing to [heat-related deaths](#) in Mesa, Arizona.

Using this data, ASU researchers noticed a mobile home neighborhood was experiencing heat-related deaths but had no requests for utility assistance, which helps low-income households pay their summer utility bills. The researchers needed more data to better understand the problem. YouthMappers collaborated with the research team to create a detailed map of the area. The students' contributions have been foundational for ongoing work to address this life-or-death issue.

Another effort helped improve pedestrian safety. The shortest walking route may not always be the safest, particularly for parents with strollers, people with disabilities and kids walking home from school. YouthMappers charted more than 1,200 miles and 10,000 crosswalks in Phoenix and Tempe. Their efforts produced high-quality, accessible data on sidewalks and crosswalks to [improve pedestrian safety and mobility](#).

Detailed pedestrian maps also contribute to driver awareness, urban planning and tourism. But these maps are uncommon. YouthMappers helped give Phoenix one of the most comprehensive datasets available.

## National defense from space

A powerful processor built at ASU will improve space communications for national defense.

To protect the nation, the Department of Defense is boosting U.S. capabilities in space. That includes satellites to track missile threats, better communication and navigation services, guarding America's space-faring interests and being space combat-ready.

Underpinning all of these efforts is a critical need: the ability to communicate from the ground to satellites as well as talk between satellites. That's why DARPA funded an ASU project to create a chip that balances power efficiency with the ability to communicate across a wider range of frequencies.

The chip, called COCHON, improves laser-based communication, which is especially useful for relaying data in space. The technology will make it easier for government and commercial satellites to connect, putting more resources at our nation's disposal. COCHON will also ensure that today's satellites can talk to future ones. The research team is now testing a prototype.

Technologies created for defense applications frequently end up in everyday consumer products, and COCHON offers many practical uses outside its initial purpose. The chip could one day provide the embedded processing capabilities needed for a wide range of applications — from 6G

to flying cars, according to the lead researcher.

## Looking ahead

To address the challenges of a rapidly changing world and provide meaningful opportunities for students, ASU is pursuing new areas of research aligned with U.S. national priorities. Artificial intelligence continues to boost innovation by offering new insights and capabilities that help us solve problems faster. Creating ethical frameworks, protecting national security and finding new ways to put AI into action are priorities going forward.

ASU researchers are also exploring how food can function as medicine, using nutrition to prevent or manage diseases; how to ensure there is a robust supply of the critical minerals our industries depend on; and how quantum science can help us solve problems too complex for today's technologies.

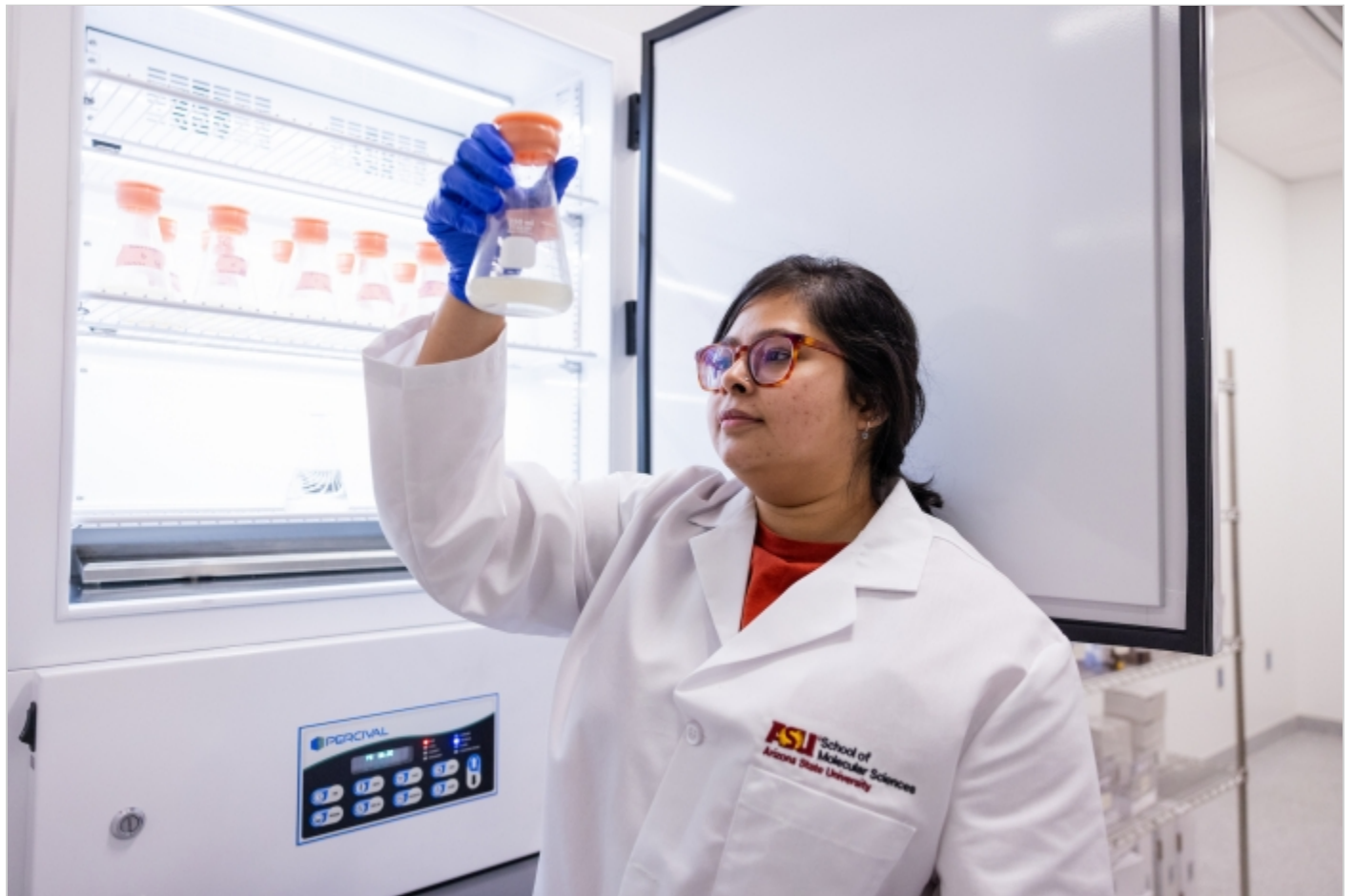
"As technologies evolve and new challenges emerge, ASU researchers continually adapt their work to align with what matters most to our communities and our nation," Morton said. "Research is essential to the thriving future we envision and the goals we all share. Guided by our charter, ASU will continue to create solutions that touch people's everyday lives."

*Diane Boudreau, Joe Caspermeyer, Monique Clement, Skip Derra and Mikala Kass contributed to this article.*

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*This story originally appeared on [ASU News](#).*

## Main image



Biochemistry PhD student Saborni Chowdhury looks at samples in an incubator at a coral research lab in the Rob and Melani Walton Center for Planetary Health in Tempe. Photo by Samantha Chow/Arizona State University

**Text image(s)**



# FY 2024 HERD rankings

## Total research expenditures among institutions without a medical school

5

Ahead of:  
CU Boulder  
Purdue University  
NC State  
Princeton University

## Public institutions

21

Ahead of:  
Michigan State  
UC Irvine  
Indiana University  
Rutgers

## Total research expenditures

37

Ahead of:  
Michigan State  
Purdue University  
University of Chicago  
CU Boulder

## NASA-funded expenditures

10<sup>th</sup>

Ahead of:  
MIT  
UCLA  
University of Michigan  
Stanford University

## State and local government funding

10<sup>th</sup>

Ahead of:  
University of Minnesota  
UC Davis  
Ohio State University  
University of Arizona

## NSF-funded expenditures

14<sup>th</sup>

Ahead of:  
Caltech  
Georgia Tech  
Penn State  
Stanford University

## Anthropology

1<sup>st</sup>

Ahead of:  
University of Michigan  
University of Arizona  
Harvard University  
Duke University

## Non-science and engineering

1<sup>st</sup>

Ahead of:  
University of Pennsylvania  
Harvard University  
University of Wisconsin-Madison  
University of Arizona

## Business management and Business administration

2<sup>nd</sup>

Ahead of:  
Harvard University  
UC Berkeley  
Syracuse University  
University of Arizona

## Education

2<sup>nd</sup>

Ahead of:  
Vanderbilt University  
Stanford University  
Harvard University  
University of Arizona

## Visual and performing arts

2<sup>nd</sup>

Ahead of:  
University of Georgia  
University of Arizona  
UCLA  
Florida State University

## Social sciences

4<sup>th</sup>

Ahead of:  
USC  
University of Pennsylvania  
University of Chicago  
University of Arizona

## Communications and communications technologies

5<sup>th</sup>

Ahead of:  
Syracuse University  
Georgia State University  
Georgia Tech  
University of Arizona

## Geological and earth sciences

5<sup>th</sup>

Ahead of:  
UC San Diego  
Johns Hopkins University  
Caltech  
University of Arizona

## Other engineering

5<sup>th</sup>

Ahead of:  
University of Michigan  
MIT  
Johns Hopkins University  
University of Arizona

## Other social sciences

5<sup>th</sup>

Ahead of:  
University of Maryland  
USC  
Brown University  
University of Arizona

## Civil engineering

6<sup>th</sup>

Ahead of:  
Purdue University  
Iowa State University  
Georgia Tech  
University of Arizona

## Industrial and manufacturing engineering

6<sup>th</sup>

Ahead of:  
Penn State  
Purdue University  
Stanford University  
University of Arizona

## Political science and government

6<sup>th</sup>

Ahead of:  
Indiana University  
Rice University  
William & Mary  
Vanderbilt University

## Other physical sciences

7<sup>th</sup>

Ahead of:  
UC Berkeley  
Harvard University  
Rochester Institute of Technology  
Case Western Reserve University

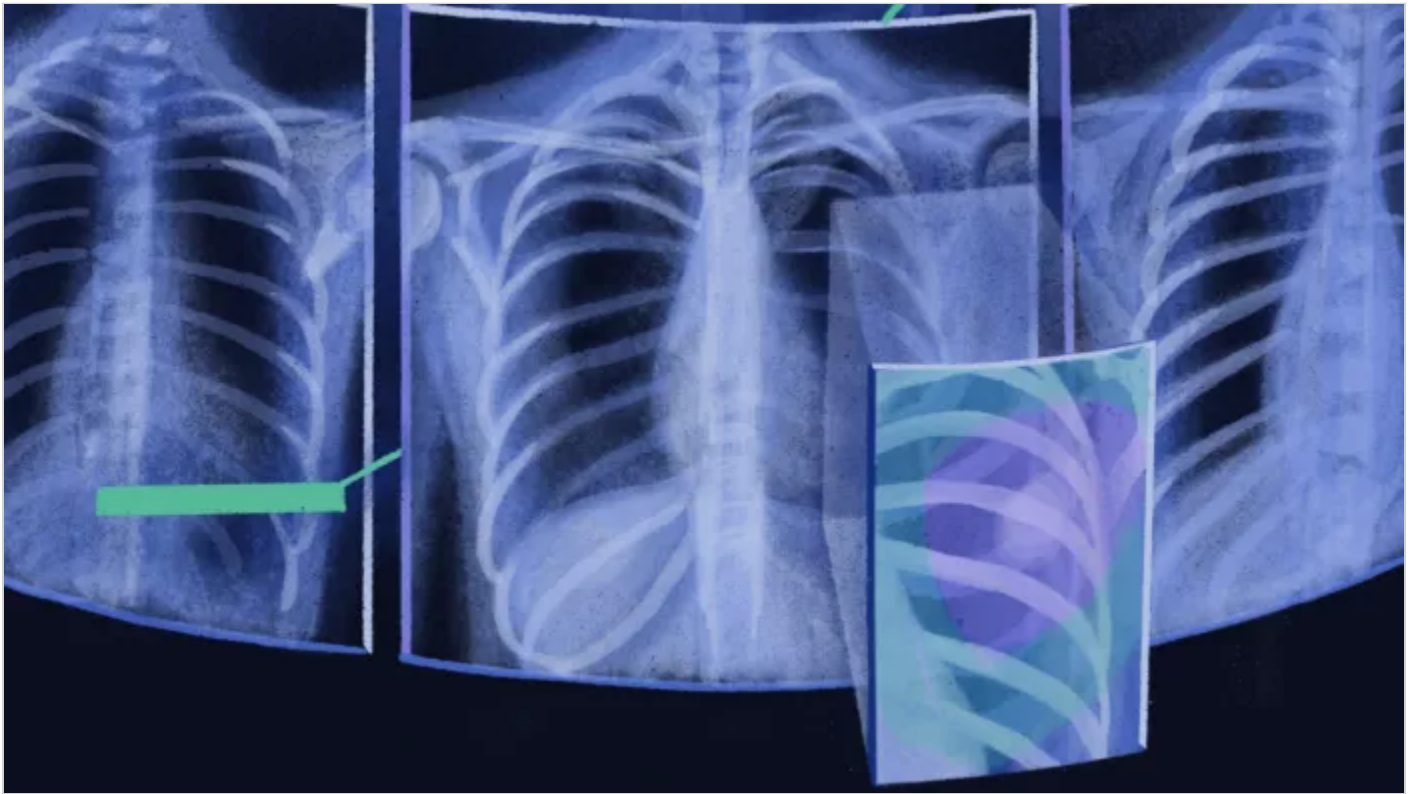
## Social work

7<sup>th</sup>

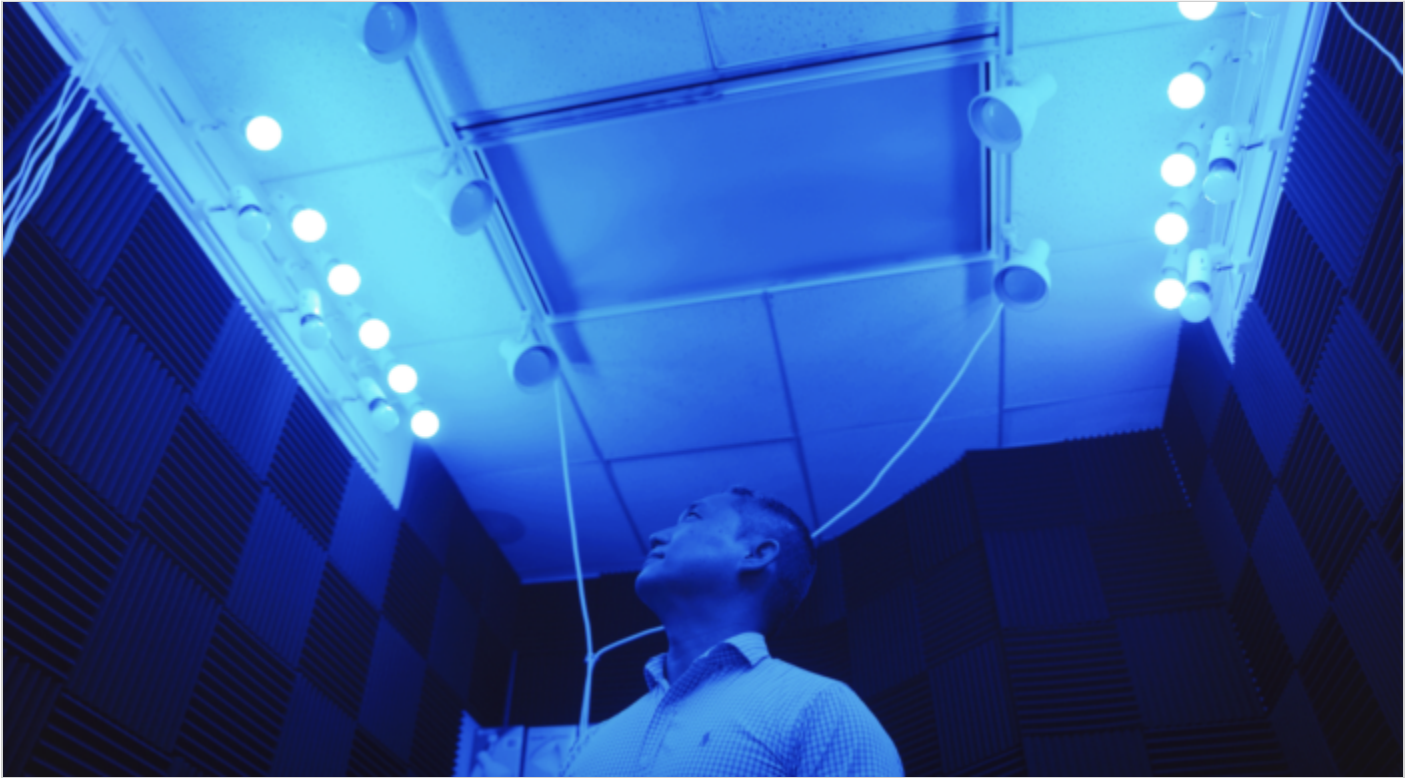
Ahead of:  
Florida State  
USC  
University of Connecticut  
University of Chicago



[View full size.](#)



Chest X-rays are the most common type of X-ray used in medicine — used to diagnose lung problems, heart issues, broken ribs and even certain gut conditions. But sometimes they can be hard to interpret, or doctors may miss diagnosing rare conditions and emerging diseases, as was seen in the first year of the COVID-19 pandemic. A new ASU AI tool called Ark+ has the potential to help. Image courtesy of Lan Julia P. Liang and Jianming Liang



Jason Yeom, who was until recently an assistant professor in The Design School at Arizona State University, adjusts lighting in a lab on the Tempe campus. Yeom, along with Nina Sharp, an assistant professor in The Design School, published a study recently that showed how biodynamic lighting conditions added sleep time to adults with dementia. Photo by EJ Hernandez/ASU News



Retired fisherman Eddie Willis, owner of Mr. Big Seafood, looks out his boat off the coast of Harkers Island in North Carolina on July 30. Photo by Samantha Chow/Arizona State University



Patricia Solís, executive director of the Knowledge Exchange for Resilience, explains the data on a map of Maricopa County denoting the total number of residential homes (in white) with the number of households receiving utility payment assistance.





ASU's YouthMappers chapter partnered with Meta and OpenStreetMap to chart more than 1,200 miles of Phoenix and Tempe to create a detailed pedestrian map that provides open-source data about the cities' sidewalks and crosswalks — including those areas that lack them. Photo by Charlie Leight/ASU News



The Space-Based Adaptive Communications Node is the first phase of an initiative that will connect low Earth-orbit satellites with each other and their Earth-bound operators. The project builds on the ASU research of filtering signals to reduce interference. Image courtesy of DARPA