



**CENTRAL**  
STATE UNIVERSITY

**John W. Garland**  
College of Engineering, Science,  
Technology, and Agriculture

July/August 2023

# CENTRAL STATE UNIVERSITY

Builds \$40 Million Research Facility

CSU-INTEL SUMMER  
INTERNSHIP FOR WOMEN  
AND UNDERREPRESENTED  
MINORITIES

# The Next Generation of Agriculture

**+** **PLUS**

The latest  
buzz on bees

## HONEYBEE INSEMINATION RESEARCH AT CENTRAL STATE UNIVERSITY

Impressive fruit and vegetable productions rely on honeybee pollination. Blueberries, avocados, watermelon, squash, and mangoes all need bees to exist and thrive.

To ensure the survival of honeybees and pollination for the agricultural ecosystem, Central State University (CSU) Honeybee Research Lab held a special, once-a-year event on Monday, June 12 through Thursday, June 15, to artificially inseminate queen honeybees in hopes that, with time, they will pollinate massively.

Representatives from the Kentucky Queen Breeders Association and Heartland Honeybee Breeders Cooperative were on the CSU campus to work with Hongmei Li-Byarlay, Ph.D., research assistant professor of entomology and project director for Pollinator Health and Honeybee Research, as part of regional efforts on honeybee breeding. For four days, they targeted 30 to 40 female honeybees for insemination.



Queen insemination



Capturing Drones in advance of insemination

“It is a process [where] we take some semen from male honeybees (drones) and inject it directly into the queens,” said Austin Carey, CSU bee technician. “This way we can better control their genetic line. In the wild, the queens go on mating flights, leaving the colony to go to specific locations where there are lots of drones from the hives in the area,” he added.

According to Carey, drones and queens mate while flying in the air, and when mating is complete, the queen then returns to her colony to live out the rest of her life. “In the wild, we do not know what drones she is mating with. This is just a way to make sure everything is controlled,” said Carey. “A controlled environment means a healthier bee population.”

Of the 115 leading crop species worldwide, more than 75 percent rely on or at least depend on pollination by bees, birds, and bats, while the remaining 28 leading crop species survive on wind and self-pollination, according to a scholarly article written for Proceedings of the Royal Society of Edinburgh Section B.

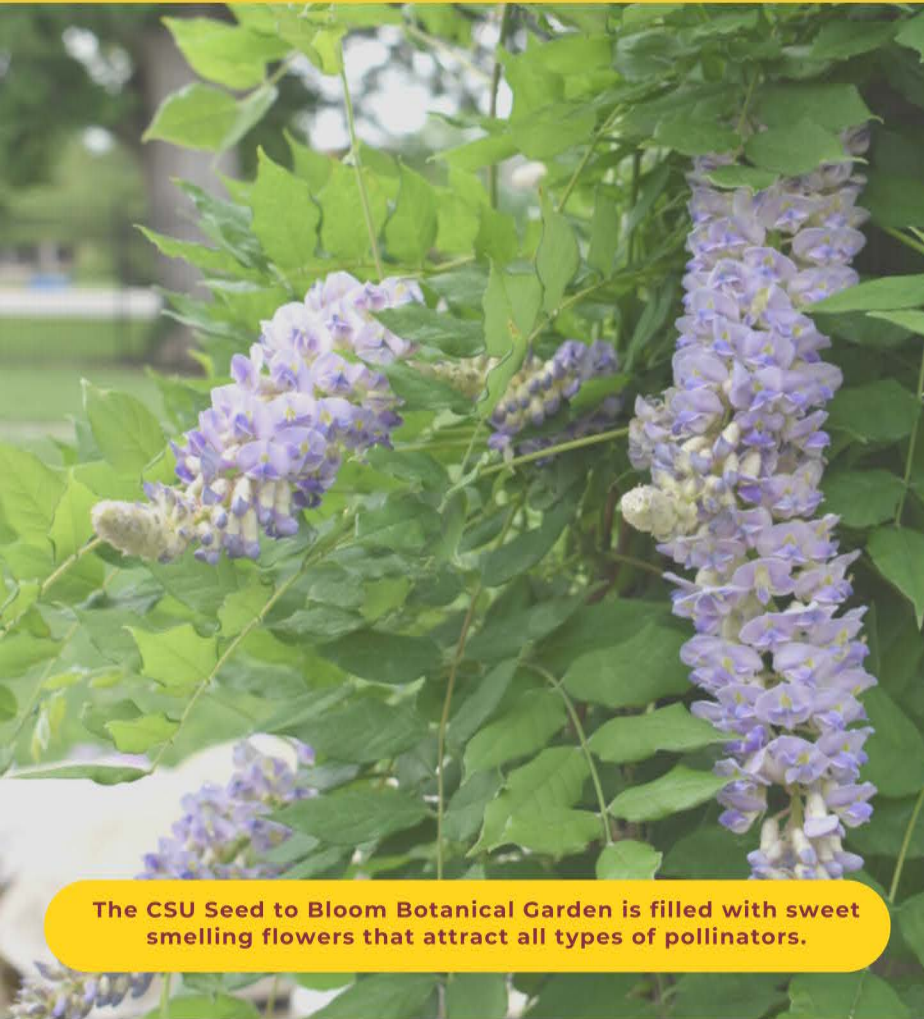
The lifespan of a queen honeybee is between two and five years, and during that time, she mates only once. Honeybee, *Apis mellifera* (L), is a widely studied social insect and considered “the most important pollinator in a variety of natural and agricultural ecosystems,” a group of scholars noted in a published article in Nature. Ohio currently ranks 5th among 39 states in the country for “best states for beekeeping,” according to Lawnlove.com.

To learn more about ongoing honeybee research at Central State University, contact Dr. Hongmei Li-Byarlay at 937-376-6424.



**6**

**COVER: Central State University John W. Garland College of Engineering, Science, Technology, and Agriculture (JWGCESTA) receives part of a \$10 million grant to grow the next generation of agricultural professionals**



The CSU Seed to Bloom Botanical Garden is filled with sweet smelling flowers that attract all types of pollinators.

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**Have a question, comment, or revision? [Want to suggest an article or share news?](#)**

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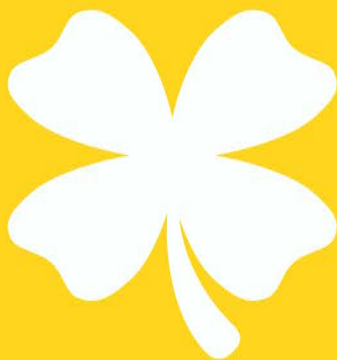
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United States Department of Agriculture  
National Institute of Food and Agriculture



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# DISCOVERY DAY

**"Youth learn important life skills at CSU Extension annual 4-H Discovery Day Camp."**

Crystal Duckett

The camp, one of several CSU camps held this summer, introduced over 25 diverse youth to lifelong skills in the areas of health and wellness, science, technology, engineering, agriculture, math (STEAM), and nutrition.

Shaun Hamilton, president of the International Jump Rope Union (IJRU), shared his experiences as an international jump rope champion and helped campers understand the benefits of jump roping, not only as an outlet for physical activity but as a practical means of exploring the world through participation on a jump rope team.

"Participants were engaged in experiential engineering and environmental science activities and had the opportunity to work with other students on group projects designed to promote peer collaboration," said Prosper Doamekpor, Central State Extension 4-H program leader. "These experiences prepare them with concrete skills they can use throughout their life."

Students also explored the importance of making smart food choices and how poor food choices can negatively impact health. Central State Researcher Pratibha Gupta, Ph.D., led healthy eating and activities workshops and taught participants key roles of vitamins, minerals, and movement. "The camp made nutrition fun by adopting a hands-on approach through activities like Kids in the Kitchen," said 4-H leader Jodi Black. "Students acquired essential food preparation skills while enjoying snacks they prepared, such as charcuterie boards."

Through this hands-on approach, students learned that good nutrition can be fun, and that is a crucial part of addressing the challenge of unhealthy food consumption in youth," said Donna Kuykendall, coordinator of Expanded Food Nutrition Education Program, who worked with the camp to implement Kids in the Kitchen.

# CAMP



Background photo: EFNEP educator Donna Kuykendall teaching students measuring skills.  
Photo 2: Shaun Hamilton gets students excited about jump rope. Photos by Crystal Duckett

AGRICULTURE

# The Next Generation

*Central State University is a partner institution on a \$10 million award from the U.S. Department of Agriculture National Institute of Food and Agriculture to recruit, educate, train, and retain the next generation of diverse food and agriculture professionals.*



## Central State University named partner institution on \$10 million agriculture award

by Cyril Ibe and Kate Louthain

Central State University is a partner institution on a \$10 million award from the U.S. Department of Agriculture National Institute of Food and Agriculture to recruit, educate, train, and retain the next generation of diverse food and agriculture professionals.

The *From Learning to Leading: Cultivating the Next Generation of Diverse Food and Agriculture Professionals*, (NEXTGEN) award was given to Central State University, Lincoln University, Texas A&M University, and Missouri University of Science and Technology.

"The goal is to train our undergraduate students to become the essential workforce for the future of agriculture in the United States," said Hongmei Li-Byarlay, Ph.D. and CSU's principal investigator (PI) for the project. Dr. Li-Byarlay also serves as research associate professor of entomology at CSU, and project director for Pollinator Health, Agricultural Research Development Program. "The grant will provide a lot of training opportunities and research internships for students to explore a variety of topics in agriculture, especially in soil science, entomology, and life science."

The four institutions will work on their award-winning project, titled HBCU-HSI-RIU Consortium: A Synergistic Paradigm for Training the Next Generation Agriculture Workforce for a Sustainable Future. Team members from partner institutions consist of research, education, and extension professionals to maximize the impact on minority populations from grades K-12 to graduate school.

**“The NEXTGEN project presents an exciting opportunity for Central State to increase its impact on the next generation of agricultural workers by supporting increased minority participation and knowledge attainment. The \$2.5 million [CSU’s award amount] grant will also help recruit outstanding students for the agricultural workforce,” said Dr. Li-Byarlay.**

“For the people of Ohio, this award is important. Our university is building a workforce for agriculture...and Ohio is predominantly an agricultural state. We need to train the citizens of Ohio to do research, study, and extend scientific knowledge on agriculture to the farmers. That is the main intent of this project,” said Sharath Krishna, Ph.D., co-PI and professor of biology and agricultural and life sciences at CSU.

The other CSU co-PIs are Drs. (Ph.D's) Sakthi Kumaran Subburayalu and Prosper Doamekpor — each of whom has a wealth of knowledge and expertise in agriculture and minority workforce development. “I think it is very critical that we focus on training underrepresented minority students in these sciences that are very important to solve problems in food and agriculture, and allied sciences,” said Dr. Subburayalu.

“Central State’s major project goal is to establish an inter-institutional collaborative graduate program that emphasizes soil sciences and entomology,” said Morakinyo Kuti, Ph.D., interim Dean of the John W. Garland College of Engineering, Science, Technology, and Agriculture and director of the Land-Grant program at CSU.

“This initiative complements Central State’s existing programs in sustainable agriculture, water resources management, environmental engineering, and experiential learning where undergraduate students currently conduct research in soil conservation, integrated pest management, pollinator health, horticulture, and other relevant topics.”

A key component of the program is working with Lincoln University, which will assist CSU with development and implementation of master’s and doctoral degree programs within the next few years.

In addition to the new graduate program, the project will support courses on precision agriculture and drone application, yearly geospatial information science activities, a summer workshop on regenerative agriculture, professional learning and scholarships, youth programming, and other related initiatives across the four consortium institutions.

“We are excited about working with the experts at Lincoln University to start these graduate programs in entomology, soil sciences, and agricultural life sciences,” said Krishna. “This is a key step in recruiting, educating, training, and retaining the next generation in agriculture. For more information email [hli-byarlay@centralstate.edu](mailto:hli-byarlay@centralstate.edu).



CSU Research Assistant Professor of Entomology Hongmei Li-Byarlay, Ph.D., works with students in a bee lab while Sharath Krishna, Ph.D., CSU professor of biology and agricultural and life sciences, looks on.



Listen  
on Soundcloud





A group of diverse students and a man are standing on a staircase. The students are of various ethnicities and are dressed in casual to semi-formal attire. The man in the foreground is wearing glasses and a blue sweater. The background shows the metal railings of the staircase and a modern building interior.

**Central State**

**University led Intel**

**summer internship**

**for women and**

**underrepresented**

**minorities**

Lena Fields-Arnold

Central State University team: Drs. Mohammadreza Hadizadeh, Mahmoud A. Abdallah, Abayomi Ajayi-Majebi, Mubbashar Khan. Wright State University team: Drs. Subhashini Ganapathy, Fathi H.M. Amsaad, Travis E. Doom, Ahsan Mian, Ren Saiyu, Thomas Wischgoll. Intel Interns: Aleyedeen Abdallah, Eva Arnold, Lily Braswell, Mye'sha Burnett, Sharnelle Coicous, Padma D. Doppalapudi, Dana Dyer, Jada Dyer, Keithrelle Ferguson, Jeannie Fritz, Vandeleezza Hepburn, Charles Hill, Jonathan Katampe, Shaun'tel Martin, Jordan Olguin, Courtney Staley, Imani Thompson (absent), Jaydon White, Deven Williams, Derrick Wilson (absent).



**John W. Garland**  
College of Engineering, Science,  
Technology, and Agriculture



The Central State University (CSU) John W. Garland College of Engineering, Science, Technology, and Agriculture (JWGCESTA) welcomed 20 students to the CSU-led Intel Summer Internship for Women and Underrepresented Minorities being held at the Wright State University Campus from June 5 to July 28. This eight-week, intensive internship aims to prepare students with skills and understanding of electronic hardware design, fabrication, and security.

The program, sponsored by Intel, is designed to train students for future jobs in Intel's upcoming Ohio chip factory, projected to be operational in 2025. The curriculum includes five courses that involve daily lectures and extensive hands-on lab practice. After a rigorous application process, from an extremely competitive pool of applicants, 20 promising students were selected from Central State University, Wright State University, Stark State College, Sinclair Community College, and local high schools.

"We are incredibly excited to kick off this internship program. This is an exceptional opportunity to contribute to diversity, equity, and inclusion in the semiconductor field," said Dr. Mohammadreza Hadizadeh, associate professor of Physics at CSU and CSU-Intel project director. "This initial step represents a significant stride towards training the future workforce with practical skills in the semiconductor industry."

*Jim Evers VP of Intel presents to Central State and Wright State Intel Summer Interns and shares future opportunities that will be available with Intel. Interns are also comprised of Stark State, Sinclair, and high school students around Ohio.*



According to Dr. Hadizadeh, the internship is made possible through the generous support of Intel, and in addition to the training, allows students to receive housing, a stipend, and opportunities for scholarships. "We are so grateful to Intel for their sponsorship of the Intel Semiconductor Education Program at CSU," stated Hadizadeh.

"We express appreciation to the Wright State University team for hosting and providing the ideal setting for this transformative educational experience, and to the CSU-Intel team comprised of Drs. Mahmoud A. Abdallah, Abayomi J. Ajayi-Majebi, Emdad Ahmed, Deng Cao, Mubbashar Altaf Khan, Morakinyo A.O. Kuti, and Arunasalam Rahunanthan, for their diligent efforts in coordinating this summer internship."

*"Of note is the considerable interest received from female and underrepresented student communities across various Ohio institutes. "This encouraging response is a strong indicator of the potential for future expansion in Semiconductor Education and Research at CSU and for skilled-workforce development in Ohio,"-Dr. Abayomi J. Ajayi-Majebi*



*Interns show off FPGA boards*



*CSU Department of Engineering Chair Mahmoud Abdallah demonstrates how to use the board.*

"Dr. Khan further stated that the internship program demonstrates the commitment of CSU and Intel toward achieving diversity in skilled workforce development in the semiconductor domain. "As we embark on the Intel-Sponsored Summer Internship, we look forward to the innovative and impactful contributions these interns, who choose to pursue a career with Intel, will bring to the semiconductor industry."

Under the active leadership of Dr. Hadizadeh within our semiconductor program, we're making considerable progress in establishing a semiconductor simulation lab and a microfabrication lab right here at CSU," added Dr. Abdallah. "By 2024, with Intel's sustained support, we anticipate being well-equipped to expand the program and host the internship on the CSU campus."



*Students participating in labs at Intel Summer Internship*

This effort represents how a public-private partnership can address societal concerns," said Dr. Kuti. "The partnership between public institutions of higher education and Intel addresses the national security and economic security concerns for the USA to produce semiconductors domestically through an inclusive and diversified workforce." To learn more about the Intel-Sponsored Summer Internship visit [intel.csu.github.io/](https://intel.csu.github.io/) or contact Dr. Mohammadreza Hadizadeh, at 937 376-6273 or [mhadizadeh@centralstate.edu](mailto:mhadizadeh@centralstate.edu).

# JWGCESTA NEWS

EXTENSION >

## EXTENSION RECEIVES \$100,000 FOR ADULT IMMUNIZATION EDUCATION



Central State University is one of 37 institutions selected to receive the Extension Collaborative on Immunization Teaching and Engagement (EXCITE) Implementation Phase funding.

The Extension Foundation, in cooperation with the Extension Committee on Organization and Policy (ECOP), through an Interagency Agreement with the USDA National Institute of Food and Agriculture (NIFA) and the Centers for Disease Control and Prevention (CDC) are funding the Cooperative Extension System to increase vaccine confidence among rural and other underserved communities.

The project is led by CSUE Family and Consumer Sciences (FCS) Health and Wellness Coordinator Dr. Anshiya Ramanitharan (pictured above.) "I am excited about receiving this third award for immunization education from the Centers for Disease Control and Prevention (CDC) and USDA National Institute of Food and Agriculture (USDA/NIFA) since I joined CSU in June 2020," said Dr. Ramanitharan.

"The total funding amount for this current award is \$100,000. To learn more email [aramanitharan@centralstate.edu](mailto:aramanitharan@centralstate.edu)

## CENTRAL STATE EXTENSION RECEIVES \$5,000 FROM THE NORTH CENTRAL REGIONAL CENTER FOR RURAL DEVELOPMENT

The CSU Extension, Community & Economic Development (CED) program recently received \$5000 in funding from the North Central Regional Center for Rural Development (NCRCRD) to establish a new Resilient Communities program in accordance with the 2022-2023 USDA NIFA Plan of Work.

The grant will be used to support the CSUE CED team as they become equipped to offer, the field-tested Hometown Collaborative Initiative (HCI) curriculum, which was developed and implemented with success by the Purdue University Cooperative Extension Service. The HCI program was designed for communities that are committed to building on their existing assets. It is available to cities, towns, and counties with a total population of 25,000 or less.

HCI is a long-term capacity-building initiative made up of three phases: foundation, building block, and pathway. Participating communities will recruit and engage a diverse mix of local people who are willing to explore new ways to strengthen their community and take an active role in launching HCI.

These HCI teams will carefully study and analyze data, research existing community plans, and collect the viewpoints of local residents. Based on the results of their research, they will develop community-based improvement projects. To learn more email [esmith2@centralstate.edu](mailto:esmith2@centralstate.edu) or [atwitty@centralstate.edu](mailto:atwitty@centralstate.edu).



CSUE CED Team Ambrose Moses, Amber Twitty, and Eric Smith.



**Ramanitharan Kandiah, Ph.D.**, was inducted as a board-certified American Academy of Water Resources Engineers (AAWRE) Diplomate (D.WRE) at the AAWRE 2023 Ceremony on May 22 in Henderson, Nevada. He was also inducted as an Environmental and Water Resources Institute Fellow (F. EWRI) at the EWRI at the World Environmental & Water Resources Congress 2023 Henderson, NV.



Central State University JWGCESTA Graduate and current CSU Adjunct Professor **Jasmine Walker** was featured on PBS show Engineering Your Future.

*The bottom R-photo shows the Louis Stokes Alliance for Minority Participation (LSAMP) students conducting survey measurements on the CSU campus, aided by CSU Lab Technician Adelyn Reeves.*



CSU Researcher **Hongmei Li-Byarlay** publication "Examining parent-of-origin effects on transcription and RNA methylation in mediating aggressive behavior in honeybees (*Apis mellifera*)" has been published online at BMC Genomics.

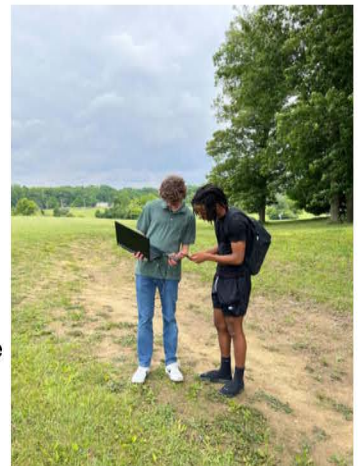
JWGCESTA students presented at the 2023 Center for Connected and Automated Transportation (CCAT) Global Symposium on Mobility Innovation April 5, in Ann Arbor, Michigan. The sixth annual Symposium was held on April 4-5, at Washtenaw Community College. **Jalen Smith** and **Kimberly Smith** of the CSU Environmental Engineering Program, Department of Water Resources Management were the winners in the category of "undergraduate entry-level" Student Poster Competition.



**Isabella Wynter Mitchell**, a computer major at CSU, is participating in a highly competitive summer internship at the Minority Science Engineering Improvement Program (MSEIP) and U.S. Air Force Research Laboratory (AFRL). The internship, which will provide her with practical work experience and elevate her career opportunities, is supported by the Improving Mathematics Instruction for STEAM Students (IMISS) grant. The internship runs from May-August.



High School senior, **Joseph Wright** and CSU sophomore in Water Resources Management **Please Halsell**, aid Dr. **Subramania I. Sritharan**, professor of Water Resources Management in research related to using cell phone GPS data for measuring small farm areas. Wright is also engaged in developing an Android-based app for measuring small areas under the guidance of Dr. Sritharan. The APP will assist small farmers in measuring fields up to 10 acres.



## NEWS EVENTS

➔ Homeschool and looking for something for your kids to do?



The Seed to Bloom Botanical Garden is open daily throughout the year. Participate in scheduled programs or simply take a stroll and enjoy the beautiful space and gardens, or rent it out for your next event. To learn more, contact [cthorn@centralstate.edu](mailto:cthorn@centralstate.edu)

#WEDOAG



So just what does it mean for Central State University to be an 1890 Land-Grant Institution? [Learn more by watching this informative video](#) on You Tube @CentralStateExtension



## IN THE NEWS-ONLINE

**Central State University** is a part of the Center for Connected and Automated Transportation consortium that has received a **\$15M** federal research grant.

- [Dayton Business Journal](#)

### Intel Internship

- [Central State Newsroom](#)
- [FGPGA Boards Donation](#)
- [Wright State Newsroom](#)

### Next GEN Award

- [WDTN](#)
- [Central State Newsroom](#)
- [Yahoo](#)

Central State University researchers are **Planet Superheroes**. Dr. Hongmei Li-Byarlay and her team are helping to save the world one bee at a time!

- [Fox News](#)

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# INSPIRATION IN SCIENCE: BRANDY E. PHIPPS, PH.D.

by Tiara Bullock

There are many journeys and pathways that lead to success. Dr. Brandy Phipps is a woman who took a winding path—spanning 20 years to find her place as a beloved associate professor in the Central State University Department of Agricultural and Life Sciences (DALs).

At the tender age of nine, young Brandy Phipps wanted to be a medical doctor and originally planned to spend her life treating illnesses; however, while attending the University of Florida as a Pre-Med student, Phipps decided to switch gears. She wanted to interpret data and use it to find the best patient treatment. She decided to pursue a master's in human nutrition foods and exercise, with a specialization in molecular cell biology and biotechnology from Virginia Tech.



*Dr. Phipps (r) receives a certificate of appreciation in June from a member of the Huber Heights Culture and Diversity Citizen Action Commission following her presentation on "Food Justice in Montgomery County."*

Around this time, biotechnology began flourishing and career opportunities began to expand. Phipps was learning at a time when scientists once thought advances such as cloning were impossible.

During her first semester at Virginia Tech, Dr. Phipps decided to work towards completing a Ph.D. in biomedical sciences" with a focus on nutrition and oncology. It was towards the end of her Ph.D. journey, that Dr. Phipps decided to teach.

"Teaching is the profession that teaches all the other professions," said Dr. Phipps. "Today's healthcare system is riddled with tales of systemic inequities, especially for Black, Indigenous, and people of color, and I wanted to not just treat patients but work toward positively changing the healthcare system as a whole."

This path included inspiring armies of young people to enter the STEM field. "I realized that I wanted to teach students to question the system, to problem-solve, to change it, enhance it, and make it better," said Phipps. So instead of going back to med school, she became a college professor.

At age 26, Dr. Phipps began her teaching career at Cedarville University as an assistant professor of Biology, where she taught various courses including Anatomy, Physiology, Biochemistry, and Nutrition for three years before deciding to start her own business and serve her community. During this time she held various board positions including serving as executive officer and board member for Tri-County Food Bank, board member for Project Women, a domestic violence shelter; and served as inaugural chair for the Clark County Local Food Council.

The time she spent away from academics – growing and learning - transformed her perspective on education and research and eventually paved the way for that same light to shine once again—back in academia.

She began adjuncting at Clark State College and by 2019 was offered a position at Central State University. She immediately began submitting grants and within three-and-a-half years garnered more than \$10 million in grants.

One notable project is the hemp-based research project known as SUSHI (Sustainable Use of Safe Hemp Ingredient) in partnership with five other institutions across the country. The SUSHI Project is investigating the use of hemp grain as a feed ingredient in aquaculture.

In addition, the project is partnered with a Tribal College – providing agricultural workforce training, scholarships, and start-up business funding for Native American individuals who want to enter the aquaponics sector. "The SUSHI project is transformational, and hits that intersection of, 'how' do we approach agriculture and food and nutrition in a way that also thinks about climate responsibility and historically disadvantaged populations? And how can this research be done in an affordable, equitable, and accessible manner?" said Dr. Phipps.

In July of 2022, Dr. Phipps was called to testify before Congress about hemp research. Through her testimony, she demonstrated how science can drive positive change in society.

"She's very open and easy to talk to.

***She cares about the students, the faculty, and the staff,***" said former mentee and newly hired Research Assistant Professor of Honeybee Genetics, Dr. Catherine Farrell.

Through her passion, Dr. Phipps has shown the different ways one can attain success. She inspires future generations of STEM students to stay on the journey and never give up on their dreams.



## NEWS EVENTS

### ➔ CSU Seed to Bloom Botanical Garden



#### Black Heritage Community Garden Project

May 18 through Sept. 14

#### CSU Speaker Series

June 2 through Sept. 22

All Speaker Series presentations are open to adults 18 years and older. For more information, or to make reservations, email [cthorn@centralstate.edu](mailto:cthorn@centralstate.edu)



### ➔ Mobile Food Market-Every 2nd Tuesday of the month.

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[centralstate.edu/events](http://centralstate.edu/events)



### ➔ Youth Eat Smart Move More

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Westwood Elementary School  
2805 Oakridge Dr.  
Dayton, Ohio



### ➔ Beginning Farmer Class Series

July 27 -September 30  
6-8 p.m.  
Melrose Acres  
1030 McCain Ave.  
Springfield, Ohio

➔ A variety of scholarships are available for students majoring in an agricultural or science program at Central State University. Eligible students could receive up to a full ride. Visit [centralstate.edu/academics/science](http://centralstate.edu/academics/science)

# **Professor DeBonne N. Wishart, Ph.D., participates in the School of Ice 2023 at Dartmouth's Thayer School of Engineering**



**CSU PROFESSOR  
AND RESEARCHER  
BREAKS THE ICE**





**On June 18-23, 2023, Dr. DeBonne N. Wishart (WRM) participated in the School of Ice (SOI) 2023 Advanced Professional Development Workshop offered by the U.S. Ice Drilling Program (IDP).**



The IDP is an NSF-funded organization providing oversight of US scientific drilling efforts at both poles in partnership with the American Meteorological Society (AMS). Dr. Wishart was one of two SOI 2016 (Denver, Colorado) alumni invited to participate in the 2023 School of Ice at Dartmouth's Thayer School of Engineering in Hanover, New Hampshire.

On Wednesday, June 21, 2023, Dr. Wishart made history when she and her colleagues signed their names on the first "School of Ice" buoy to be deployed in August by Dartmouth to measure the sea ice depth and temperature profiles of the Arctic Sea Ice. Wishart hiked a 520-foot-high glacial esker by the Connecticut River while analyzing evidence of Hanover's Last Ice Age during a field trip on the northern outskirts of the Dartmouth campus.

The SOI program is designed to expand the professors' knowledge of the role of proxy records in our current understanding of Earth's climate, with a special focus on the important role of ice-core data. Training for the professors placed them in roles as research scientists, engineers, and ice core drillers and included lectures and hands-on experiential activities such as chemical, physical, biological, structural, and engineering related to ice cores and polar research.

Activities also included learning about Antarctica's physiography and maps; ice core science (physiochemistry, isotopes, and gases); paleoclimate reconstruction; ice sheet dynamics and modeling; the development of a proxy model for sulfate measurement in ice cores; and engineering an ice core drill model by faculty from Dartmouth Engineering, the University of Wisconsin-Madison, and the School of Ice.

The highlight of the program was a visit to the Cold Regions Research Engineering Laboratory (CRREL) to observe arched cellulose reinforced Ice Bridge (ACRIB) technology, ice core crystallography, ice 3D printing, cryogeophysics, permafrost microbiology, and environmental remediation.

At the National Ice Core Laboratory in Lakewood, Colorado, the 2016 cohorts (faculty) observed stable isotopes in air and ice at the University of Colorado-Boulder Institute of Arctic and Alpine Research (INSTAAR) labs to gain a deeper understanding of Earth systems and participated in Lockheed Martin's logistics and survival training for national research on the Polar Regions.

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ON RESEARCH FACILITY

IN THE SPOTLIGHT

Forging ahead in its efforts to accomplish the 1890 Land-Grant mission of food and agriculture research in Ohio—the University recently broke ground on a state-of-the-art 40,000 square foot facility.

The facility is designed to advance research capabilities, address key critical issues that demand scientific innovation, and create a strong framework for the future growth of the John W. Garland College of Engineering, Science, Technology, and Agriculture (JWGCESTA).

The building design will allow stakeholders to see science on display, be sustainable, and preserve the agricultural viability of the research plots by minimizing runoff pollutants.

Construction began in July and is expected to be completed by June 2024. To learn more visit us online at [CentralState.edu](http://CentralState.edu)

# Central State University became a land-grant institution in 2014, but what does that mean?

## Essentially it means – we do Ag!

Through liberal and practical application of research, teaching, extension, and military science, Central State University joins other 1862 and 1890 legacy institutions. Central State University helps ensure that our country's agriculture is sustained and protected.

### Land-Grant History

There are three types of land-grant institutions – 1862s, 1890s, and 1994's. Through the Morrill Act of 1862 and 1890, states were given land for establishing one college in each state. This opened the doors to higher education opportunities for all Americans and established vocational education at the college level.

The Hatch Act of 1887 provided funds to establish agriculture stations for research. Results are shared with the public and used to inform people about applications to improve agricultural science.

The Smith-Lever Act of 1914 established cooperative extension work at the federal, state, and local levels and serves as a conduit to disseminate research through practical and useful information on subjects relating to agriculture, home economics, and rural energy. There are extension offices in all counties across the United States.

### History of Central State University Becoming an 1890 Land-Grant Institution

Central State University is Ohio's only public historically Black university (HBCU) and one of a few HBCUs in the Midwest. It is one of the 13 state-assisted universities in the Ohio University System. Central State's historic mission is the education of African Americans; however, the institution, in accordance with its founding charter, has always been open to all qualified students, regardless of race.

Central State originally sought land-grant status in 1890 when the federal government designated the first set of HBCUs as land-grant colleges. Known as the second Morrill Act, the 1890 legislation appropriated \$25,000 per annum for the further support of colleges established under the earlier law. Under the second Morrill Act, special provision was made for the nation's Black public colleges, which were not included in the Morrill Act of 1862, but were involved in mechanical and agricultural studies.

The Ohio Senate passed legislation in 1892 that would have given Central State the funding; however, the Ohio House, at the urging of former president and OSU Trustee Rutherford B. Hayes, reversed course and gave the funds to OSU instead.

In June of 2012, 120 years later, Ohio representatives introduced a similar resolution in the Ohio Senate to give Central State its long-awaited land-grant status. On January 29, 2014, Central State was finally designated as a land-grant institution and was awarded resources to enable increases to teaching and research capacity in areas of science, technology, engineering, agriculture, and mathematics.

To learn more, visit: [bit.ly/1890LandGrant](http://bit.ly/1890LandGrant)

WE DO AG!

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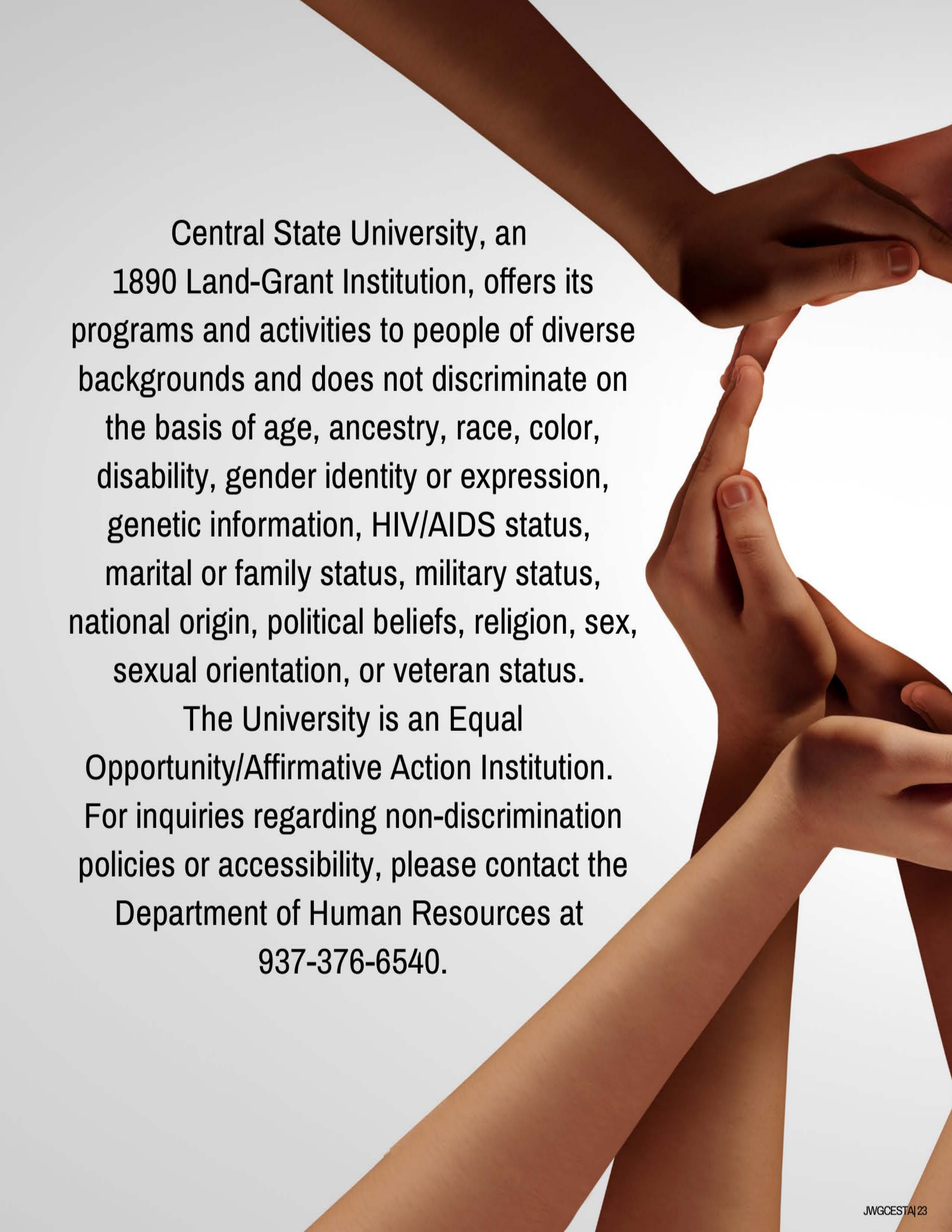
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**CENTRAL**  
STATE UNIVERSITY

**John W. Garland**  
College of Engineering, Science,  
Technology, and Agriculture



Central State University, an 1890 Land-Grant Institution, offers its programs and activities to people of diverse backgrounds and does not discriminate on the basis of age, ancestry, race, color, disability, gender identity or expression, genetic information, HIV/AIDS status, marital or family status, military status, national origin, political beliefs, religion, sex, sexual orientation, or veteran status.

The University is an Equal Opportunity/Affirmative Action Institution. For inquiries regarding non-discrimination policies or accessibility, please contact the Department of Human Resources at 937-376-6540.



**CENTRAL**  
STATE UNIVERSITY

**1890 Land-Grant Institution**

Photo – Seed to Bloom Botanical Garden water feature.