

# BAE Update

Department of Biosystems and Agricultural Engineering  
2023 Newsletter | Volume 75



DEPARTMENT OF  
**BIOSYSTEMS AND  
AGRICULTURAL ENGINEERING**

## A Message from Dr. Chinn

### 2024 Arrived!

As winter fades and spring begins, we share this volume of the “BAE Update” to highlight some of the many activities and accomplishments of our BAE family at Oklahoma State University in 2023.

We continued to recruit new faculty talent into the department in support of our research, Extension and teaching responsibilities, strengthening our water resources expertise. We successfully hired Dr. Sumon Datta, an assistant professor in irrigation engineering, who started in July 2023, and is introduced as one of our new faces in this newsletter. We also had a successful search for our Water Management Assistant Professor and Extension Specialist position that will help address needs in risk assessment of hydrological extremes and drought vulnerability.

Those BAE holds dear reached transition points in their lives. Dr. Dani Bellmer, professor and Buchanan chair, was appointed assistant dean for academic programs in the Ferguson College of Agriculture in July 2023. We celebrated 22 years of treasured service when Ms. Jana Moore retired in September 2023. You can read more about Jana’s years of loving influence in this communication. Most recently, in February 2024, we honored the 24 year OSU BAE career of Dr. Paul Weckler, as Paul took hold of the relaxing pleasures of retirement.

The major renovations to the south side of the BAE Laboratory are nearly complete and have afforded us a new modular space that is well designed to enhance our abilities to deliver experiential learning opportunities. We have started instructing courses and educational sessions in the space and are pleased with its improved function and effectiveness. We provide some perspectives on the changes we made to the BAE lab in this update, and we look forward to sharing this space with more of you in the future!

The New Frontiers Agricultural Hall is nearing completion and will house classrooms, administrative offices, faculty, staff and graduate student offices and several laboratories. We are scheduled to move to New Frontiers this summer. Our move comes with mixed emotions as we reflect on the fond memories made in Agricultural Hall, and look forward to creating new experiences with our colleagues in the Division of Agricultural Sciences and Natural Resources in New Frontiers.

The department has enjoyed interacting with our undergraduates, graduate students, alumni and friends at our different events throughout the year. We are grateful for the time and input our BAE Advisory Committee provides to help improve the direction and position of the department, and appreciate the continued generosity of our alumni and friends who support our programs and students with monetary gifts and their time. We are thrilled when we have the chance to spend time with BAE Pokes in work and play, and are excited for more of those moments in the future.

Our students, alumni, faculty and staff continue to engage in research excellence and impactful scholarship, making meaningful contributions to education, service and technological advancements within our communities. Please enjoy reading about some of these outstanding individuals and their work in the pages that follow.

As we honor the memories and fellowship from the past year, I hope that 2024 has been good to you so far, and the time ahead is filled with good health, fortune and joy.

Sincerely,



Mari S. Chinn  
Head, Department of Biosystems & Agricultural Engineering  
Oklahoma State University



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## Upcoming Events *Spring 2024*

**ASABE Oklahoma Section Meeting  
Stillwater, Okla.**  
Friday, March 8, 2024

**Cowboy Motorsports Lawn Mower  
Clinic**  
Saturday April 6, 2024

**ASABE Student Awards Banquet**  
Saturday April 13, 2024

**Senior Design Presentations  
and Showcase**  
Thursday May 2, 2024

**BAE Advisory Committee Meeting**  
Friday May 3, 2024

**Graduate Commencement**  
Friday May 10, 2024

**Undergraduate Commencement**  
Saturday May 11, 2024

**ASABE Annual International Meeting  
Anaheim, Calif.**  
July 28-31, 2024

*Front Cover: A year in review! A look at a year in the life of the faculty, staff and students of BAE. Cover art by Dakota Keith*

*Back Cover: A morning walk on OSU's snowy campus. Photo taken by Dr. Scott Frazier*

**\$93K** in BAE scholarship dollars were awarded to 48 students.

AST enrollment has increased by **68%**

Faculty are working on **7** new USDA-NIFA projects.

**42%** of enrolled students received scholarships

Nearly **50%** of students enrolled in biosystems engineering are female.



### Sumon Datta

Dr. Sumon Datta joined the BAE department in June 2023 as an Assistant Professor and Irrigation Engineer.

He comes from a 5th-generation farming family in a densely populated country in Asia, Bangladesh. He received his bachelor's and master's degrees in Agricultural and Biosystems Engineering and received his Ph.D. in Biosystems Engineering from Oklahoma State University in 2020. Then, he spent two years at OSU as a postdoctoral fellow, and after joined the faculty at the University of Maine in 2022, before returning to BAE at OSU.

Dr. Datta teaches courses in the Biosystems Engineering and Agricultural Systems Technology programs in the area of agricultural water management.

Dr. Datta's research focuses on reducing the suboptimal application of irrigation water by employing sensors and models under irrigated conditions. Dr. Datta's future research will evaluate data-driven approaches for irrigation scheduling, particularly machine learning algorithms.



### Dakota Keith

Dakota Keith joined BAE this past September, as the new Undergraduate Academic Program Coordinator, where she assists in advising functions, scholarship processes, student recruitment and outreach, and donor and alumni relations.

Dakota was raised and still resides in Perry, Oklahoma. She received her B.S. in Agricultural Communications and Animal Science (double major) from Oklahoma State University in 2015.

Post-graduation, Dakota traveled the state working in marketing and as event staff for several horse associations during their shows. She also served as a marketing consultant at Stillwater News Press for two years creating advertising campaigns for several Stillwater businesses. In 2018,

Dakota started a nearly six-year career at OSU's College of Engineering, Architecture and Technology (CEAT) on the Marketing and Communications team.

Dakota has enjoyed her transition to BAE where she experiences something a little different every day, and uses both her background in the Ferguson College of Agriculture and CEAT.

## Coming Together In Celebration



**Jana Moore's Retirement Party**  
*September 2023*



**Cara Cowan Watts Hall of Fame Induction Reception**  
*October 2023*



**Dr. Paul Weckler's Retirement Party**  
*February 2024*

Years of Love and Loyalty



Jana has been a staple of BAE for 22 years. Photos from left to right: Jana Moore, Jana with Pistol Pete, Dr. Danielle Bellmer (left) and Jana, and Jana receiving an award from student Jacob Hamburger, for her support of BAE students. Departmental Photos

**Jana Moore** has been a staple of the Department of Biosystems and Agricultural Engineering (BAE) since 2001. Considered the “BAE Mom,” by the students, and one of the first people that alumni of the department would want to see when returning to campus, Moore’s occupational superpowers included compassion, attention to the finer details and her get-it-done attitude!

In Sept. 2023, Moore retired after serving the department for 22 years, leaving a lasting legacy of love and loyalty in her wake and prompting her former colleagues and students to celebrate her storied career.

“There are several things that set Jana apart,” said Dr. Mari Chinn.

Chinn talked about Jana’s care, eye for detail and her value of quality work.

“Jana demonstrated a high level of care and nurturing instincts,” Chinn said. “Whether it was a student, staff or faculty member or a project, she wanted to make sure it was taken care of well. She valued the significance of fine details and accuracy, and it elevated the overall impact and quality of the finished project. She was also compassionate and always took the time to think about other people’s perspectives. She was certainly a high achiever!”

The kindness and supportive nature that Jana demonstrated made her approachable and the students felt comfortable opening up to her.

“Jana’s door was always open to us as students,” said Staci Cuccio, project manager at Meshek & Associates, LLC and a BAE alumna (‘13 B.S.). “It always felt like Jana loved us like we were her own children, which is why she was known as our BAE mom.”

Initially hired by former BAE department head and emeritus faculty, Dr. Ron Elliott, Moore began

working at the front desk in BAE. The opportunity to move into the role of Undergraduate Academic Program Coordinator, where she would get to work more closely with BAE academic advisors and students came shortly after.

“I felt like the job would be the perfect fit for me,” Moore said.

The rest is history.

Jana welcomed the challenge of learning all of the academic requirements for each of the major concentration areas in BAE and embraced engaging with the students in a variety of ways from providing support in navigating through a large university system to providing emotional support when needed.

“Without a doubt, students were the best part of my job,” Moore said. “In my opinion BAE students are the best group of students on campus!”

Moore said that she has so many fond memories of her time getting to know the students.

“Each student was unique,” Moore said. “And it was truly a privilege getting to share four, and sometimes more, years of their life. Students added a richness of warm and fuzzy feelings in my heart!”

The impact that Moore had on students also met them with richness and warmth.

“My fondest memories of Jana were hanging out in her office, which was always a hot place to be during the semesters,” said Jodi Prouty, assistant director of OSU’s New Product Development Center and a BAE alumna (‘17 B.S.). “I spent a lot of time laughing and crying, which Jana helped me through, in there.”

Prouty credits Moore as one of her reasons that she became a biosystems engineering student.

“Jana was one of the reasons that I started my degree in biosystems [engineering],” Prouty said. “I was going to go into mechanical [engineering] until I toured the biosystems department and met Jana. She



Jana pictured with various groups of students from her years serving as the department's Undergraduate Academic Program Coordinator. *Departmental Photos*

made me feel at home and like this was the place for me.”

Moore had that effect on others as well.

“She kept me in the department,” said Mary Elizabeth Mach, vice president and western region director for Garver and BAE alumna (‘06 B.S.).

“She listened to us, she encouraged us, she fought for us, she became our friend,” Cuccio added. “I am thankful I got to experience college with Jana alongside me. She is the best!”

Outside of being foundational support for the students, another thing that Moore gets a lot of credit for is the laughter that she provided.

“My fondest memory of Jana is hearing her cackling laugh on any given day,” Mach said. “You could hear her laugh down the hall, and you could hear her coming if she was laughing. She was quick to dole out something funny or laugh when you did something funny!”

“There was always lots of laughter,” Moore said.

Moore said that one of the most rewarding parts of her job was when former students would call or visit her after they had graduated.

“I especially loved the times when students would call or drop by after graduation, sometimes with a spouse or children in tow,” Moore said. “It was exciting to hear how things were going on in both their career and their family life!”

“My job provided me an opportunity to make lifelong friends!” Moore said.

As much passion as Jana had for the students in BAE, in retirement she has really enjoyed spending more time with her four grandchildren, and “no more alarm clocks!”

However, Moore hasn’t completely hung up her hat yet! Chinn keeps her busy serving as an external member on the BAE alumni and donor relations committee, the perfect role for someone who has had such a significant impact on many of the department’s alumni.

“I appreciate how thoughtful, thorough and organized Jana is,” Chinn said. “And I love that Jana isn’t afraid to share her opinion, because that is what

helps move a department forward and makes her perfect for her role on this alumni and donor relations committee.”

Moore has also been serving as a significant mentor to her replacement, Dakota Keith, who started with the department in Sept. 2023.

“It has been such a blessing having Jana available to advise me in this role, and teach me how she supported BAE’s students,” Keith said. “I am thankful she is willing to volunteer so much of her time to answer my never-ending questions. I think that just further demonstrates what an absolutely special person she is. She truly, deeply cares.”

In reflection, all of Moore’s superpowers can really be attributed to genuine goodness.

“All of her traits, her care and fun-loving personality; her nurturing instincts; her attention to detail; her planning; her follow through, in a space where you have responsibility to students and their futures, and responsibility for public outreach for the department, while having to respond to the different personalities of faculty, staff and students, really come together to create this perfect combination for success and lasting impact,” Chinn said.

*Story by Dakota Keith*



Top three photos: Jana with various classes of BAE seniors. Bottom Photo: From left to right, Dr. Paul Weckler, Dr. Mari Chinn, Jana Moore, Dr. Danielle Bellmer, Dr. Ron Elliott and Dr. Kevin Moore attend OSU’s 2022 Staff Advisory Council’s Distinguished Service Award banquet where Jana was honored for her service to OSU and the BAE department. *Departmental Photo*

## Oklahoma researchers studying new ways to clean water



Dr. Kiranmayi Mangalgiri Photo courtesy of OSU Agriculture

Oklahoma State University researchers are studying the potential process of cleaning wastewater for commercial and residential use.

Most water that people use in their daily living comes from rivers, groundwater or lakes, said Kiranmayi Mangalgiri, assistant professor in the OSU Department of Biosystems and Agricultural Engineering. It is sent to a drinking water treatment plant and then used in residential homes and industrial facilities. Afterward, it goes to a wastewater treatment plant, which cleans the water and returns it to a river, ocean or other outlet.

“It is a very linear way of using water,” Mangalgiri said. “Water is scarcer nowadays, and our population is growing, so we need to find ways to supplement existing water supplies. One way we can do that is by cleaning up the wastewater we are using to the extent that it makes a better water source for drinking.”

Mangalgiri is teaming up with Tim Hubin, professor of chemistry and physics at Southwestern Oklahoma State University, who developed tetra azamacrocyclic catalysts for cleaning out contaminants in water.

A ligand is an organic molecule that binds a metal ion to form a metal-ligand complex. Hubin’s catalysts are iron and manganese complexes with

ligands that have certain properties that allow its metal ion to perform a specific task, such as the modification of organic molecules. These ligands provide stability, allowing the catalysts to not decompose in water, a condition that typically causes similar iron and manganese complexes to fall apart. These metal catalysts activate oxygen or hydrogen peroxide to modify organic molecules.

“We would like to ultimately see an inexpensive solid-state catalyst material that could be packed into a cartridge that would become part of a water purification process,” Hubin said. “The catalyst would be able to remove contaminants to a greater extent than current technologies provide.”

Most treatments for removing contaminants from water – i.e., microfiltration, reverse osmosis, advanced oxidation – use a lot of energy.

“One of our research questions is, ‘Are there energy-efficient processes that can be used?’ That’s where the catalysts come in,” Mangalgiri said. “When we add the catalysts to the water, they degrade contaminants in water, and they regenerate to start the cycle again.”

In a preliminary study during the summer of 2023, Mangalgiri and Hubin’s team tested four catalysts against four types of antibiotic contaminants in three types of water.

They discovered that some catalysts were more effective than others, with one catalyst outperforming the others.

The next steps are to:

- Understand what is happening to the catalysts and why some operate better than others.
- Test the catalysts with other types of contaminants.
- Further investigate how much chlorine helps with the process.

“We are trying to discover which catalyst will be most reliable in a real system while also being cost-effective. We want to know what aspect of wastewater most affects its treatability,” Mangalgiri said. “For example, if the alkalinity of the water is what affects these systems the most, that can help us decide what level of alkalinity is appropriate for this type of treatment system.”

She said the process could eventually be applied to water for agricultural use. Mangalgiri’s team hopes to eventually partner with city water and wastewater utility departments in Oklahoma for the next phase of the project.

“Our goal is to set up a pilot scale system with

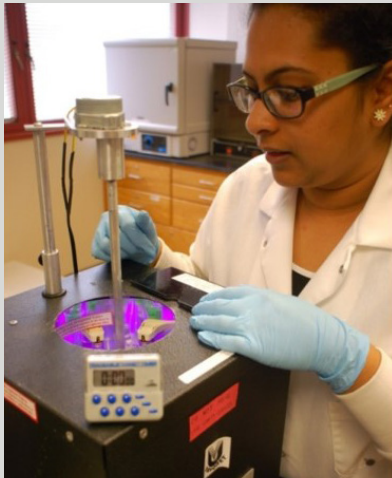


a 50-liter or larger water system. That will help us take this to full scale,” she said. “But before we get there, we need to understand how these systems work in real conditions.”

*Announcement by OSU Ag Research*



Mangalgiri is working on a team that hopes to eventually partner with city water and wastewater utility departments on the next phase of their water purification research. Photo courtesy of OSU Ag Research



Mangalgiri is a member of the One Health research team that is studying antimicrobial resistance in the ecology of extensive cattle production. Photo courtesy of Dr. Kiranmayi Mangalgiri

## New OSU One Health grant program spurs research collaboration

From working with fellow investigators to participation with the general public, research flourishes when people come together.

OSU is prioritizing collaboration with a new grant program focusing on One Health.

“Oklahoma State implemented a strategy in 2022 that focuses our research strengths on the intersection of society’s greatest needs. One Health — enhancing human and animal health — is one of those areas,” OSU President Kayse Shrum said. “This grant program will enable OSU to examine the feasibility of different concepts and assemble transdisciplinary teams to create transformational change in the lives of Oklahomans and beyond.”

The new program — funded collaboratively by the Office of the Vice President for Research, the College of Veterinary Medicine and the OSU Center for Health Sciences — has awarded seven research teams funding to pursue various research topics.

“If the pandemic taught us anything, it’s that human and animal health are intrinsically linked in a myriad of ways,” said Dr. Johnny

Stephens, president of OSU Center for Health Sciences. “We know the health of people around the world depends on expert research on these intersections, and this grant program will serve to accelerate those efforts and make an impact for decades to come.”

Although originally not part of the plan, additional funding has now been provided by the Ferguson College of Agriculture, the College of Arts and Sciences, the College of Engineering Architecture and Technology, and the College of Education and Human Sciences.

“I would like to thank the deans of other OSU colleges for their support of the One Health Collaborative Seed Grant Program,” said Dr. Carlos Risco, dean of the College of Veterinary Medicine. “The research teams funded represent a cross-disciplinary approach in which team members combine their strength and experience in a single research endeavor. This approach will accelerate scientific discovery in One Health for the betterment of society.”

The projects chosen have 23 collaborating faculty researchers spanning 11 different disciplines/ departments from six colleges.

“One Health research is a prime example of an OSU priority only addressed by transcending disciplinary boundaries. Each of the teams we’re funding under the One Health Collaborative Seed Grant Program is comprised of researchers from 3-5 different disciplines, all working together toward a common goal,” said Dr. Kenneth Sewell, OSU vice president for research. “We are convinced it will pay off — first with groundbreaking findings from these initial projects, and then with more multidisciplinary collaborations to advance our One Health priority for years to come.”

BAE’s Dr. Kiranmayi Mangalgiri is a member of the One Health research team that is studying antimicrobial resistance in the ecology of extensive cattle production.

*Story by Harrison Hill*

## Leading with Culture and Tradition



James Lee (left) a BAE student studying in the environment and natural resources option is crowned 2023 Mr. Asian OSU. Photo by Garrett Kirksey

BAE students, undergraduate **James Lee** and graduate student Navdeep Saasan, have taken representing the department, OSU and themselves to a whole new level.

This past Spring Lee, who is a junior studying to be a biosystems engineer in the environment and natural resources option, was crowned Mr. Asian OSU. The mission of the Miss and Mr. Asian OSU pageant is to further develop the leadership, confidence and creativity of students. Student contestants were scored through private interview, platform presentation, cultural and evening wear, talent and their answer to an extemporaneous question, by judges from various units within the university.

Students begin preparing for the pageant nearly four months before the pageant date.

“We begin pageant preparation in November and have practices each week leading up to the pageant,” said Lee, who was crowned in early April 2023. “During preparation we practice walking, posing, answering various extemporaneous questions and our group introduction dance.”

A large responsibility of an individual selected to represent the Asian American Student Organization as Mr. Asian OSU, is presenting a platform that addresses a societal issue.

Lee’s passion and platform while serving as Mr. Asian OSU is water equity.

“The platform portion was one thing that really appealed to me when I was making my decision to run,” Lee said. “As a biosystems engineering major, my degree teaches me about water and what I can do to ensure all have access to clean water. Through my platform, I hope to educate students and locals about what they can do to protect their water and how they can take little steps to ensure all have access to clean water.”

Lee has already hosted a presentation that demonstrated the different ways some cultures have to transport water so they can gain access to it, and he has had been a part of a published story in the Ferguson College of Agriculture’s Cowboy Journal magazine (Volume 26 | Number 1), highlighting the well water quality research that he is conducting under BAE’s Dr. Jeff Sadler. Lee also has plans to tour OSU’s water treatment facility so that he can educate others on where OSU’s water comes from and how it is processed.

Additionally, Lee wants to volunteer with Wishes for Water, a non-profit organization that was organized by a team of students that were in OSU’s President’s Leadership Council. Wishes for Water’s mission is to help provide sustainable and



After being selected as 2023 Mr. Asian OSU, James Lee receives his sash from 2022 Mr. Asian OSU. Photo by Garrett Kirksey



Navdeep Saasan, a graduate student working under BAE Associate Professor, Dr. Ali Mirchi, is crowned 2023 Miss International OSU after serving as Miss India OSU. Photo courtesy of the ISO Instagram page

clean sources of water in the Hurungwe School district of rural Zimbabwe in Africa.

At the pageant, Lee received awards for his academics as well as the interview portion of the pageant program.

“Applying for pageants builds your character,” Lee said. “It builds your leadership capabilities, and your confidence.”

“My goal as Mr. Asian OSU is to connect the Asian community internally and externally, and to show support to all people, and to educate people about love and acceptance, as it is the only way that we can defeat hate that might reside unintentionally or intentionally in some people’s hearts,” Lee said.

**Navdeep Saasan**, a graduate student who is almost in the third year of her doctoral program, took on the Mr. and Miss International OSU pageant after her reign as Miss India OSU this past year.

Saasan is working under BAE’s Dr. Ali Mirchi, on a research project that focuses on the potential of using regenerative agricultural practices in cotton production in the Southern Great Plains of the United States, to positively impact water availability and soil health.

The Mr. and Miss International pageant is hosted by the OSU International Student Organization (ISO), where the goal of the event is to present the diversity of different cultures and traditions that exist on campus.

“Mr. and Miss International is more than a glamorous showcase of talent,” Andrea Valentina Plata Martínez, President of ISO, said at the event.

“It is about responsibility, a commitment to represent and amplify the voices of more than 1,500 international students from 96 countries within the community at OSU.”

The responsibility of being Miss International OSU is something that Saasan doesn’t take lightly. She tries to be available to represent the international students attending OSU at many events that are hosted by ISO. She also participates in other ethnic student association events to represent them and learn their cultures.

“I feel like it is my responsibility, not only to take the crown of Miss India forward to show where I come from and to take all of the legacies and cultures that have come before me forward, but also to be cordial with others, and respect other religions, castes and countries,” Saasan said. “As Miss International, and as a person, there should be no biases, instead the focus should be on spreading positivity and happiness.”

The Mr. and Miss International OSU pageant includes a talent round and a question-and-answer round where contestants are judged based on their creativity and the representation of their culture, by a panel of judges representing various units across campus.

The talent round is where Saasan’s love of dance shined, as she demonstrated a traditional Indian wedding through a stunning and elegant song-and-dance routine.

“I have always loved to dance,” Saasan said. “I have always loved competitions and I practice very hard for them. I have always loved these kinds of platforms to showcase and display my culture, and I always want to represent my country. This was one of the things that I could do to represent my country and I am so happy that the Indian Student Association had faith in me and gave me the opportunity.”

The department is proud to be the academic home of students like Lee and Saasan, who are outstanding representatives of BAE and OSU.

*Story by Dakota Keith*



Navdeep Saasan, right, waves to the crowd after being crowned Miss International OSU. Photo courtesy of the ISO Instagram page

## Distinction by Diligence



The Ferguson College of Agriculture recognizes the Louis and Betty Gardner Outstanding Senior each year. The 2023 award recipient was Rio Bonham. Photo by Aly Francis

An outstanding senior is someone who sets the standard. However, **Rio Bonham** of Madill, Oklahoma, has gone above and beyond the standard for the Ferguson College of Agriculture.

“I cannot say I fully understood what I was signing up for when I chose biosystems engineering as my major,” Bonham said. “I only knew I was intrigued by the dynamics at the interface of agricultural production and natural resource conservation and had the goal of being a top researcher.”

Bonham’s positive attitude along with strong agricultural passion earned him the distinction of being the 2023 Louis and Betty Gardner Outstanding Senior for the Ferguson College of Agriculture.

“It was easy to sort him to a top group because he not only got involved, but also he found his home,” said Deb VanOverbeke, assistant dean of the Ferguson College of Agriculture.

Bonham said his college success did not come easily.

“Going into freshman year, being nonchalant and ambitious was how I approached things,” Bonham said. “I could join every club, devote little time to class work, and solve the world’s worst water problems at 18 years old, right? Wrong. Very wrong.”

He continued to face hardships through complex courses and curriculum, he said. Bonham felt disappointed after he was not accepted into the Wentz Research Scholar Program in his sophomore year, he said.

He thought about taking a break from research for a year; however, the support from faculty and staff in the Ferguson College of Agriculture allowed him to persevere, Bonham said.

“Even working through difficult class work

brought me closer to peers in the same classes,” Bonham said. “It helped me get to know professors, which allowed me to continue to pursue new experiences, attend a study-abroad course, perform research, and be involved in clubs.”

The math, science and physics general education classes began to apply when he developed an interest in water research, Bonham said. The design hydrology class in biosystems and agricultural engineering is where all the tough lower-division courses started to mean something, Bonham said.

“It is definitely where everything came together and confirmed I was on the right track with what I want to do,” Bonham said.

Scott Frazier, BAE associate professor, first became acquainted with Bonham in a survey class required for biosystems engineering freshman students and quickly recognized Bonham was top notch, Frazier said.

Frazier tasked Bonham with a high-level research project associated with a continuing grant to determine how to install and pull data from a piece of power monitoring equipment.

“It’s a bit much to ask an undergraduate student to do,” Frazier said. “I asked other faculty their thoughts on tasking Rio to do the project, and they said, ‘If anyone can do it as an undergraduate, Rio could.’”

After Bonham was assigned the task, he quickly completed the design portion. Frazier and Bonham tested the device in Guymon to ensure its success. To Frazier’s surprise, it worked the first time and resulted in retrieving usable data from the device, Frazier said.

“Being involved in research throughout college has definitely been something that helped keep me grounded to what I want to do moving forward,” Bonham said.

As he began advancing his skill set throughout upper-level classes, Bonham became self-sufficient and independent with different projects, he said.

“Research provides a way to take what you’re learning and make it apply in a way you can’t get outside of other experiences,” Bonham said.

Bonham took the BAE senior design project course as a capstone experience to do a real-world industry sponsored project, said Paul Weckler, BAE capstone professor. Bonham served as the team’s point leader, spearheaded the technical design process, and interacted with the client’s engineers at the Koch Industries’ fertilizer plant in Enid,



Rio Bonham (center) receives his Remington bronze sculpture for being named the 2023 Louis and Betty Gardner Outstanding Senior. He is pictured with, from left: Dr. Cynda Clary, Louis Gardner, Betty Gardner and Tom Coon, former vice president and dean for OSU Agriculture. Photo courtesy of OSU Agriculture

Oklahoma, Weckler said.

“He really has done some pretty remarkable and interesting computer programming and modeling for the team,” Weckler said. “He is very talented and confident in what he does.”

Bonham’s professionalism and communication between his fellow team members and their client allowed him to get upper management from Koch Industries in Wichita, Kansas, to travel to Stillwater, Oklahoma, to listen in on their final presentations, Weckler said.

Aside from research projects and academic achievements, Bonham has given back to OSU through community service, VanOverbeke said. Bonham developed curriculum for rural high school students interested in computer coding. He also was active in OSU Homecoming, Agriculture Future of America and FarmHouse Fraternity.

“That’s a part of what we try to get all students to do — to find where they belong, be engaged, and thrive — and Rio did that,” VanOverbeke said.

During the past four years at OSU, Bonham has been involved in many capacities in his academic department, the Ferguson College of Agriculture, the College of Engineering, Architecture and Technology, and the American Society of Agricultural and Biological Engineers.

“Taking stock of all that OSU gave to me, I made a conscious effort to pay forward all that was poured into my development,” Bonham said. “I have served as an ambassador for both my academic department and the Office of Scholar Development.”

One can look at anything Bonham has done in the last four years and will see it left a positive reflection on the OSU Ferguson College of Agriculture, said John Long, BAE associate professor and Bonham’s adviser.

Biosystems engineering is a challenging major, Long said, and the ability to maintain academics, extracurricular involvement, volunteer work, and work or other experiences is a testament to Bonham’s ability to balance all these things and still excel as a student.

As a high school senior, Bonham toured other

universities but realized he had every reason to attend OSU, he said. Every bit of his four years at OSU has been packed full of experiences and lessons, he said. Bonham said he is forever grateful to be selected as the 2023 Ferguson College of Agriculture Outstanding Senior.

“The family and the support system that characterizes the Ferguson College of Agriculture is second to none,” Bonham added.

Bonham has accepted an offer to attend the University of Florida following graduation to focus on a doctorate in hydrological modeling. Bonham said he will continue the educational journey he started and learned to love at OSU.

“I wish we could have kept him at OSU, but he is going to get a different perspective, viewpoint and environment,” Frazier said.

Professors, advisers and mentors describe Bonham as a professional and committed individual with drive to pursue opportunities while maintaining a positive attitude toward learning and bettering himself, the community and the university.

“When you look at what Rio has done and how he’s been involved since he stepped foot on campus, he’s taken a path where his goal was to not only be successful academically but also to grow personally and professionally,” VanOverbeke said.

Bonham believes his story shows how success does not come easy and comes with many transformative moments, he said.

“My goals have shifted from just getting through the week to seeking a Ph.D. in a field of study I once thought was beyond my reach,” Bonham said. “I have watched myself grow from just another small-town kid to a capable researcher with a deep technical skillset and a broad world perspective.”

Bonham achieved success by learning from mistakes, working hard, and devoting time to help others, he said.

“After my experience, I now know this is what it means to be a Cowboy,” Bonham said.

Story by Alyssa Francis | Cowboy Journal (Volume 25 | Number 2)



Twenty students, including Rio Bonham, were recognized as Seniors of Distinction at the Ferguson College of Agriculture Scholarship and Awards Banquet. Photo courtesy of OSU Agriculture

## BAE Alumna, Cara Cowan Watts, is inducted into CEAT's Hall of Fame



Photo courtesy of Cara Cowan Watts

**Cara Cowan Watts** was born in Shawnee, Oklahoma, and grew up in Seminole, Oklahoma. She graduated from Seminole High School in 1992. After high school, Cowan Watts attended OSU where she obtained a Bachelor of Science in Mechanical Engineering in 1997. She obtained her Master of Science in Telecommunications Management from OSU-Tulsa in 2002.

Before returning to OSU for her doctorate, Cowan Watts worked at Hewlett-Packard in Colorado Springs in manufacturing and Williams Communications in Tulsa in telecommunications. She successfully defended her Ph.D. in Biosystems Engineering at OSU in the Fall of 2015.

Tulsa Pier Drilling was created in 1998 by Cowan Watts' husband, Doug Watts. TPD has been under her leadership since 2016. Cowan Watts, CEO and principal owner, oversees drilling services, which generally includes turn-key installation of slurry, cased and other vertical piers for new foundations on bridges, substations, transmission lines, large residential homes, commercial and industrial buildings, tie backs and other drilled holes.

She oversees a team of almost 18 full-time and part-time employees, a fleet of commercial trucks and drill rigs, bidding, legal negotiations, business development, marketing, safety, accounting and human resources needs for their privately owned small business.

For over 20 years, Cowan Watts has been the owner and contract consultant for Cherokee Star. She contracts with companies and organizations that include project management, communication planning, innovative education solutions, presentation development needs and much more, within Indian Country or tribes doing business with outside corporations.

Cowan Watts served as the elected tribal legislator for portions of Tulsa and Rogers counties in Oklahoma. She resided for three consecutive terms from 2003 to 2015, serving as the tribal council representative for Districts 13, 5 and 7. During her service, she initiated and amended legislation which furthered the interests of almost 320,000 Cherokee Nation citizens while serving approximately 30,000 constituents. She was also responsible for lobbying for new programs, additional monies, and policy changes.

"I love my community work and my public and political work in the Cherokee Nation and across Indian Country," Cowan Watts said. "I love to fish, hunt, hang out in the great outdoors as well as garden. I am still working to protect not only Cherokee Nation's water rights and water quality, but the State of Oklahoma's waters. I am really focused on traditional Cherokee plants such as identifying, gathering, and preparing Cherokee foods and first aid treatments."

Cowan Watts is a Louis Stokes National Science Foundation Fellow and former twice elected member of the American Indian Science and Engineering Society (AISES) Board of Directors. From 2017 to 2021, she served as president of the Oklahoma Professional Chapter. In 2018, she facilitated an agreement between OSU and AISES to bring the National American Indian Science and Engineering Fair (NAISEF) to the OSU-Stillwater campus and return the fair to a physical format after being virtual for almost a decade.

In 2020, she was awarded the highest AISES lifetime achievement award, the Ely S. Parker Award, to recognize those Indian leaders who most clearly embody AISES' mission and goals through their achievements and contributions to science, technology, engineering, and math.

"For me, OSU AISES was a life changer,"



BAE Alumna, Cara Cowan Watts (center) visits with Interim CEAT Dean Dr. John Veenstra (left) and BAE faculty Dr. Hasan Atiyeh at BAE's Hall of Fame reception event.  
Photo by Dakota Keith

Cowan Watts said. "I found my community with OSU AISES and National AISES. From the first local meetings on campus, to the region and to National meetings, I found my niche with other 'nerdy Native kids' in STEM, which helped provide the emotional, financial and peer support I needed to succeed in primarily a mainstream male environment. OSU engineering itself is typically diverse in student population compared to other engineering schools, but the faculty was not as diverse then as it is now with both women and Native peoples."

Cowan Watts has been a member of the Engineers' Society of Tulsa, Inc., the International Association of Foundation Drilling, the Tulsa Engineering Foundation, the Deep Foundations Institute, the American Society of Agricultural and Biological Engineers, the Oklahoma Professional Chapter of American Indian Science and Engineering Society, the Society of Women Engineers, Tau Beta Pi, Pi Tau Sigma and AISES.

Recently, Cowan Watts was invited to join the Strategic Advisory Board in CEAT. In addition, she was invited to join the National Academy of Engineering (NAE) Guidance Committee for Inclusive, Diverse and Equitable Engineering for All (IDEAA) from July 1, 2021, through June 30, 2022. Since 2019, she also served the Department of Biosystems and Agricultural Engineering on their advisory board including acting chair.

Cowan Watts stays involved in multiple community organizations, such as the Victory Cherokee Organization, Tulsa Cherokee Community Organization, Rogers County Cherokee Association, Cherokee Indian Women's Pocahontas Club, the Oklahoma Cattlewomen's Association and much more.

Cowan Watts credits her parents — Beverly Leerskov Cowan, a Cherokee Nation citizen, and Clarence "Curly" Cowan — as having the most influence in her life. As public school teachers in

K-12 and college for Oklahoma and Texas, she states that they set the tone for her public service, the importance of a strong education for all, and her inner moral compass. Her love for math comes from her dad and his constant need to challenge her and her brother.

"Many a paper napkin has been sacrificed to a good math problem over the years at Cowan meals," Cowan Watts said.

"... Embrace your time at college as an opportunity to dive into new skills, research, and learn to fail successfully. Success is born of failure, so get comfortable with failure. Failure is your friend because it means you are engaged, you care, and you want to learn from your mistakes."

Cowan Watts' passion includes educating, mentoring and encouraging youth in STEM. She has been married to Doug since 2005 and lives on their ranch in Justus, Oklahoma. She is an active co-owner and co-operator of the Sideways Cattle Company, focused on training American Quarter Horses in competitive team roping and steer roping, raising Corrientes cattle for local roping pens, as well as providing beef to the public through a yearling operation in partnership with cattle brokers.

In addition, she is serving her third elected term to the USDA Farm Service Agency Committee for Rogers and Tulsa counties to drive public policy and ensure the next generation of farmers and ranchers are able to feed America.

Story by Kristi Wheeler



Scan the QR Code to view Cara's Hall of Fame induction video!



BAE Alumna, Cara Cowan Watts (center) receives her Hall of Fame induction plaque from Interim CEAT Dean Dr. John Veenstra (left) and BAE Dept. Head Dr. Mari Chinn. Photo by CEAT Marketing and Communications

## Lieu's Legacy

A lot can happen in 91 years. Just ask **Lieu Smith**.

Born on Aug. 9, 1931, in Michigan City, Indiana, Smith moved to a wheat farm just 10 miles from Okeene, Oklahoma, and started school in a one-room country schoolhouse.

"It was the depths of the Great Depression, so life was tough," said Smith, a 1954 and 1957 graduate of Oklahoma A&M College. "I was on the farm in the Dust Bowl days."

When the area schools consolidated, Smith began attending a new school in Okeene.

"It was still a small school, but at least we had a different teacher for each class," Smith said. "There were not any specialized classes like chemistry or advanced mathematics back then like students get to take today."

Smith obtained his bachelor's degree in agricultural engineering in 1954. He spent his junior and senior years in the college's ROTC.

Upon graduation, he spent two years commissioned in the U.S. Army Corps of Engineers.

After his commission ended, Smith returned to OAMC to earn a master's degree in structural engineering, graduating in 1957.

"Going to Oklahoma State, which was then Oklahoma A&M, was a big challenge," Smith said, "so, it took me a while to get adjusted."

After graduation, Smith went to work for an engineering company in upstate New York. The firm began work on the U.S. interstate highway system.

"Construction was just getting started, and they were looking for structural engineers," Smith said. "So, I went to work designing grade crossings and highway bridges. The job got me started, but after a few years, I got tired of designing the same thing over and over again."

In 1961, Smith was called back to active duty during the Berlin Crisis.

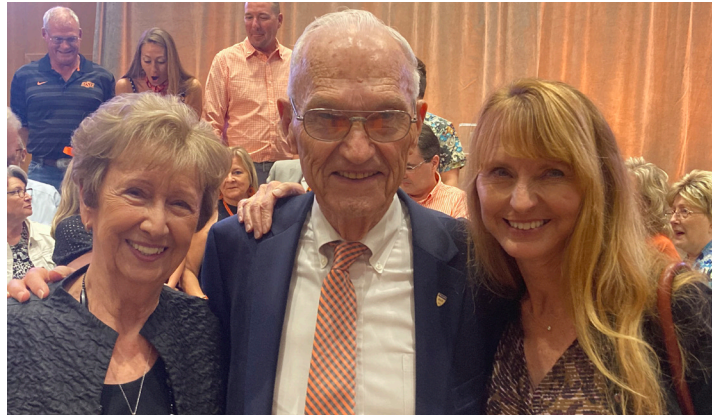
"I was stationed in Granite City, Illinois, at the engineering depot there," Smith said.

In 1962, Smith interviewed for Sverdrup Corp. in St. Louis, Missouri. "Sverdrup Corp. had just gotten a contract to do the preliminary work for what is now the Stennis Space Center," he said.

Sverdrup Corp. won the contract to do the final design of all the big rocket engine test stands. Extensive structural engineering was involved, Smith said, and the work later got him deeply involved in the NASA Space Program.

"I became familiar with rockets," Smith said. "I was selected as a project manager for the same test stands in the space shuttle program."

As a project manager, Smith learned he was



BAE Distinguished Alumnus, Lieu Smith (center) celebrates being honored as an OSU's Distinguished Alumni with his wife (left) and daughter (right). Photo by Dr. Mari Chinn

talented at project organization. Getting a team together, solving problems throughout a project, executing and completing the projects on schedule and on budget are all critical for a project manager, he said.

"I was finally selected to be the program manager for the space shuttle complex at Vandenberg Air Force Base in California," Smith said. "This was probably the most complex job that I had ever been assigned to."

For the Vandenberg project, Smith directed 162 engineers and technicians. TIME magazine even featured the project, labeling it as "the most sophisticated military complex ever built."

"We submitted that project for an award and won first place in 1985," Smith said. "It was the Grand Conceptor Award for Excellence in Engineering from the American Consulting Engineers Council."

Because of the prestige surrounding this prize he won several awards for himself and his company.

In 1993, Smith retired from Sverdrup Corp. where he was serving as the vice president of advanced technology projects.

Looking back, Smith remembers those who helped him along the way, one of those people having been a school teacher in Okeene, he said. His freshman English teacher, Kathryn Lorene Whiteturkey, was a Cherokee Nation citizen.

"She was very kind to me," Smith said. "She encouraged me to continue my education."

This teacher inspired Smith to make a \$1.1 million gift decades later in the form of a scholarship to the Oklahoma State University College of Osteopathic Medicine-Cherokee Nation.

As Smith studied Oklahoma history growing up, he learned of various things the Native American



people experienced such as the Trail of Tears.

“When I read about the program OSU has to teach people to become doctors of osteopathic medicine, I decided this was a way I could help pay back the Native Americans,” he said.

The scholarship is meant to support two Native American female students who attend the OSUCOM–CN. The scholarship bears Whiteturkey’s name first to honor his former teacher, followed by his own.

Smith’s philanthropic efforts go beyond scholarships. Every Wednesday, Smith spends his time at the Loaves and Fishes Food Bank of the Ozarks in Berryville, Arkansas.

“I go down and volunteer,” Smith said. “Every Wednesday we get a shipment of government commodities or food that we purchase. I’ll be there to help receive that shipment, put them on the floor, and get them ready to hand out.”

Smith helped design the food bank and fund the project. Today, the food bank feeds about 600 to 700 families a month in Carroll County, Arkansas.

“Smith wasn’t a founder of the food bank, but he was one that really took it to another level,” said Jason Tennant, a member of the board of directors for the Loaves and Fishes Food Bank. “He’s a tireless worker for the food bank and has done a tremendous job.”

Smith always looks for ways to continue to improve on the food bank, Tennant said. He never slows down and is very passionate about

the food bank.

“Although the food bank would be there without him, it is so much more with him,” Tennant said. “In the 20 years or so that I’ve known him, I don’t know anyone in the area who doesn’t think the world of him.”

Others also attest to the character and drive Smith has as well as the positive impressions he leaves on them.

“He is a strong individual, very intelligent and extremely thoughtful,” said Mari Chinn, department head of the OSU Department of Biosystems and Agricultural Engineering. “He has a charismatic demeanor about him and even with all of his significant accomplishments is quite humble.”

Smith was selected to be a 2022 Biosystems and Agricultural Engineering Distinguished Alumnus for his professional contributions. He also was inducted into the OSU College of Engineering and Architectural Technology Hall of Fame as well as received the Lohmann Medal, one of CEAT’s highest technical honors.

“My investment is all just part of my giving back to society for all of the blessings and benefits I’ve had from a lot of good people who have helped me,” Smith said.

*Story by Michelle Noggle | Cowboy Journal (Volume 25 | Number 1)*



Lieu Smith (right) and his wife Eddie celebrate his selection as a BAE Distinguished Alumnus during a student meet-and-greet held on campus. Photo by Tyler Tassi

### Celebrating and Honoring Dr. Bill Barfield at ASABE AIM 2023



Annette Barfield and Bill Barfield dancing. *Departmental Photo*

The life and contributions of **Dr. Billy Barfield**, former BAE department head (1992–2000), were honored at a special session held at the ASABE Annual International Meeting (AIM) this past July in Omaha, Nebraska.

Oklahoma State University (OSU) BAE alumna, Dr. Sherry Hunt ('98 B.S. and '00 M.S.) hosted this wonderful event and gathered respected leaders in the biosystems engineering profession to share cherished memories of their friend, colleague and mentor. The audience was composed of many who experienced the lasting impact of Barfield over the years, including faculty and alumni from OSU and the University of Kentucky (UK), where Barfield also spent time as a faculty member, as well as fellow researchers and professionals from other universities, government agencies and industry.

Former international ASABE President, Otto Loewer shared a touching account of his experiences with his friend and UK colleague, exposing attendees to their international travels and Barfield's strong values of "generosity, ethical conduct, empathy, upbringing, appreciation and Christian beliefs," as well as his talents as a "deep thinker and visionary," and his loving relationship with his wife Annette.

The Barfield's family friend, Patty Smith, recounted the close connection between the Barfield family and her own family. Smith's parents, Tom (OSU BAE emeritus professor) and Jan Haan, became friends with the Barfields when they all lived in Lexington, Ky., the friendship continued when both families moved to Stillwater, Okla. The memories she shared regarding Barfield's influence

on her childhood, education and career evolution made it evident that he was mindful of her potential and influential in helping her find the best version of herself.

The great mentoring characteristics of Barfield were echoed by OSU BAE alumna Mary Elizabeth Mach ('06 B.S.), as she described the manner in which he empowered students to be great and created positive transformation in their lives. She shared multiple quotes from her interactions with him that fostered excellence and creativity, including "Ask hard questions, God won't mind," and "Use insights to solve technical as well as people problems," "These skills make you technically effective as well as a good leader," and "It's okay if you don't like something; don't be afraid to try something else." Mach went on to share that many of those who knew Barfield understood that he was a man who not only loved his work, but adored his wife, cherished his children and grandchildren, and offered wisdom, authenticity and empathy to others.

The scholarly and technical impact Barfield had on Hydrologic and Sedimentologic Modeling was presented by the University of Minnesota's Dr. Bruce Wilson and the visionary strengths of Dr. Barfield were well articulated by Sherry Hunt (USDA-ARS, ASABE International President-Elect 2024).

It was not uncommon for Barfield to plant 'idea seeds' that blossomed into meaningful activities and programs that have had a lasting impact on our stakeholders and communities. Hunt shared how his early visions of relevant water resource engineering expertise and institutions could collaborate to address challenges faced in water management and control structures.

His visionary capabilities in the conception of the OSU New Product Development Center (<https://ceat.okstate.edu/extension/npdc/>) and the initiation of the OSU Application Engineers Program (<https://extension.okstate.edu/programs/engineering-assistance/>) were also observed.

OSU BAE sends a special thank you to Hunt for organizing and hosting this very special session so that Barfield could be celebrated among professional colleagues. The department is grateful for Hunt's dedication to the profession and OSU BAE.

*Story by Dr. Mari Chinn*

## Oklahoma Mesonet Visionary Retires



Dr. Ron Elliott, BAE Emeritus faculty, retired from his position on the Oklahoma Mesonet Steering Committee after 30 years of service. Photo by Mitchell Alcala

In 2024, the Oklahoma Mesonet will celebrate the 30th anniversary of its commission date, and recently, it celebrated the career and service of one of its founders, **Dr. Ron Elliott**.

Elliott joined the Department of Biosystems and Agricultural Engineering (BAE) in 1981, serving as department head from 2001 to 2010. Shortly after his arrival to BAE, ideas began churning among Oklahoma State University (OSU) agricultural scientists about upgrading weather instruments to expand the use of weather data in agricultural applications.

“We learned, kind of fortuitously, that some folks in Norman, Oklahoma, known for their climate work, were interested in a statewide [weather monitoring] network as well,” Elliott said on the documentary ‘Dust to Floods: 25 Years of the Oklahoma Mesonet.’

We became aware of each other, and then in 1987, we put our heads together to prepare for what was to come, Elliott said of the developing partnership between OSU and the University of Oklahoma (OU) on the project.

“As early as 1985, Dr. Elliott was helping to organize symposiums to raise interest about how agro-meteorological systems could aid research and Extension at OSU,” said Dr. Chris Fiebrich, executive director of the Oklahoma Mesonet.

In December of 1990, with the gained support of Governor Henry Bellmon, the Governor’s Office funded the Oklahoma Mesonet Project.

By 1991 the first Mesonet towers were installed and by the end of 1993 there were 108 completely operational station sites, with the Mesonet network

being officially commissioned in Jan. of 1994.

Today, there are 120 Mesonet station sites, at least one station in each of Oklahoma’s 77 counties, and the system has been cited as the gold standard for statewide weather and climate networks by the National Research Council.

While the initial hopes of the Mesonet research stations were to provide weather data for agricultural applications and data to help implement a flood-warning system for Tulsa, Okla., the program has significantly exceeded expectations and is regularly used in the weather forecasting, education, emergency management, wild land fire management, energy, transportation and scientific research professions.

Every five minutes, each of the Mesonet’s 120 research stations sends more than 1,000 atmospheric and subterranean observations to the National Weather Center in Norman, Okla.

“Our network now exceeds 10 billion observations, and there is really nowhere else in the world with such a dense archive of weather data,” said Fiebrich.

“We’ve actually evolved now, with more than 30 years of research-quality data, to a climate network,” Elliott said. “Not just a weather network.”

The Oklahoma Mesonet is available to the public at no cost. The data is received every five minutes, 24 hours per day year-round, by the Oklahoma Climatological Survey, which operates the Oklahoma Mesonet, and is made available to the public only five to ten minutes from when the measurements were acquired, providing constant up-to-date information.

“Everyone on the Mesonet team is proud of our



Dr. Ron Elliott stands with an Oklahoma Mesonet vehicle. Departmental Photo



Dr. Ron Elliott, with the Oklahoma Mesonet team at his retirement event during the Oklahoma Mesonet Steering Committee meeting in May 2023. Photo by Dr. Mari Chinn

service to Oklahomans,” Elliott said. “The Mesonet has truly made a difference with positive impacts in so many ways, in so many sectors of our society and at all levels whether that be individuals, groups, agencies, companies or schools.”

Elliott claims that it is the people on the Mesonet team and the partnership between the universities that have made the Oklahoma Mesonet so successful.

“Our people are top-notch in every way,” Elliott said. “You can’t read through a quarterly report of activities or review the progress over the past 30 years without being amazed at the work that has been done.”

“The way that folks at OSU and OU dreamed together and brought a world-class network into being, and then have jointly operated and enhanced it for 30 highly successful years, the whole is definitely greater than the sum of its parts,” Elliott said.

Since the late 1980s, Elliott has served as a driver of Mesonet activities at Oklahoma State University and has served as co-chair of the Mesonet steering committee for more than 30 years. In May of 2023, Elliott decided to retire from his position on the steering committee with OSU Professor in Plant and Soil Sciences, Dr. Tyson Ochsner, taking over the co-chair role.

“I think the Oklahoma Mesonet simply would not exist if it were not for Dr. Elliott,” Ochsner said, when asked to reflect on the type of impact Dr.

Elliott has had on the Mesonet program. “His understanding of the need for a high-quality statewide monitoring network and his commitment to building a lasting partnership with our colleagues at OU have provided the foundation on which the Oklahoma Mesonet has been built and maintained for over 30 years and we have appreciated the time he has devoted to the program.”

In 2002, Dr. Elliott was inducted as an American Society of Agricultural and Biological Engineers (ASABE) Fellow, the highest honor in ASABE and received the ASABE John Deere Gold Medal award in 2011 for his achievements in new concepts and science that have advanced the development of agriculture.

The Oklahoma Mesonet has also been honored with multiple awards, including the 2023 Team Leadership Oklahoma Online Excellence Award by the Oklahoma Council for Online Learning Excellence and the 2013 Larry R. Johnson Special Award, which recognizes an individual or group for extraordinary accomplishments which significantly contributed to operational meteorology. The Oklahoma Mesonet has also received numerous research awards and grants and hosts award-winning outreach programs such as OK-First, that provides Oklahoma’s public safety community with weather education and access to critical real-time weather data; OK-Fire, an operational weather-based support system for wildland fire managers in Oklahoma; and Ag

Weather, a weather based decision support tool for Oklahoma agriculture.

“All of the Mesonet’s success stories on the agriculture side can be directly attributed to the hard work, dedication and persistence of Dr. Elliott,” said Wes Lee, BAE assistant extension specialist and the agriculture program coordinator for the Oklahoma Mesonet system.

During his time as co-chair of the Mesonet Steering Committee Elliott has had an impact on more than 80 full-time staff and over 100 student employees at the Mesonet.

“His role in the Mesonet’s history stands out for its distinctiveness,” Fiebrich said. “He was not only an initial visionary for the Mesonet, but he also played a critical role in the planning, implementation and overseeing of its operations.”

Elliott’s reputation as a relationship builder is fitting and has been attributed to the success and growth of the Mesonet where he has left a lasting impression on the Oklahoma Mesonet team.

“He understood that the Mesonet is made up of people and he has always taken good care of those people,” said Gary McManus, state climatologist.

While Elliott has been “mostly retired” since his retirement from BAE in 2010, now that he has stepped away from his Mesonet duties, he plans to continue visiting his out-of-state grandchildren, attending live events, serving his church and occasionally helping BAE Professor and



Dr. Ron Elliott, center, with members of the Oklahoma Mesonet team. As early as 1985, Dr. Elliott was helping to organize symposiums to raise interest about how agro-meteorological system could aid research and extension at OSU.  
*Departmental Photo*

Department Head, Dr. Mari Chinn with alumni and donor relations.

“One thing on my to-do list is to write up some of the early Mesonet history that is in old files that I have hung on to,” Elliott said. “The Mesonet has been a labor of love for me, definitely a fun ride! I thank everyone on the team for making it that way, because I couldn’t ask for better colleagues.”

*Story by Dakota Keith*



Dr. Ron Elliott, back row, 5th from left, with Oklahoma Mesonet team members at the Dr. Ronald L. Elliott Mesonet station site dedication in Sept. 2015. *Photo courtesy of Dr. Chris Fiebrich*

### Renovate to Educate



An artistic photo of the BAE lab. Photo by Dr. Mari Chinn

On the corner of Cleveland and Hall of Fame sits a small brick building holding a mystery of what goes on inside its four walls.

These walls create the Biosystems and Agricultural Engineering Laboratory — home to the students focusing on agricultural technology, science and engineering.

The lab provides a space for students to not only begin developing their skill sets in their respective fields but also to create cutting-edge technology for businesses and other university departments.

These students will complete degrees in biosystems engineering and agricultural systems technology. They can choose options in biosystems engineering ranging from machine systems and agricultural engineering to environmental and natural resources.

For their entire college careers, BAE students work inside the laboratory, gaining hands-on experience with large machinery, sensors and instrumentation, biomaterials, and other related equipment.

“That parallels other classes they take in soil science and in engineering in material science,” said Paul Weckler, BAE professor.

However, no class is as hands-on as the senior year capstone class: Senior Engineering Design Project I and II, Weckler said.

“We start in August and work until May,” Weckler said.

Seniors have created projects ranging from robotic pigs to coffee roasters.

“We have a great shop with highly skilled and experienced technicians,” Weckler said. “We can build about one of anything.”

The laboratory is vital for conducting classes and research within BAE and for surrounding departments, Weckler said.

For more than 50 years, the lab has supported a range of projects as well as various teaching, OSU Extension and research activities.

The laboratory has been used mainly for research within the department with only a small teaching space, said John Long, BAE associate professor.

Now, the lab is being remodeled to support the new advances in technology and improve teaching abilities within the lab.

“There were no formal teaching areas,” Long said. “Everything was mainly a research space that would get used sometimes for labs.”

One of the main renovations being made is the relocation and modernization of the welding lab.

“The welding lab hasn’t been upgraded since the 1960s,” Weckler said.

The welding area on the north end of the lab will share space with the large equipment machinery area of the lab.

“The welding lab is good for teaching basic welding skills, but it’s not flexible and takes up a lot of usable floor space,” Weckler said.

The new welding laboratory will be located on the south end of the building. This new space will provide students with updated welding and ventilation equipment on wheels, which will allow it

to be portable.

The BAE laboratory is also a vital source for conducting classes for agricultural education students, who take four classes taught in the BAE research laboratory.

“Every one of these classes has a very hands-on lab experience,” said Nathan Smith, agricultural education instructor and coordinator of student teacher placement.

Along with conducting classes within BAE, Smith serves as an instructor in the OSU Department of Agricultural Education, Communications and Leadership, working closely with the BAE faculty and staff.

“Having that new welding space is going to be really neat for our students because they’re going to be able to use some cutting-edge technology and just have a new, updated and fresh space,” Smith said.

The lecture space is also being upgraded, giving students in agricultural education a cleaner, more accessible learning environment, he said.

The renovations will include new multimedia

assets needed for classroom support, like TVs, video cameras and computers, Long said.

This upgraded lecture space will allow for an easier transition from the lecture portion of classes to the hands-on lab portion, Long added.

“It’s nice for the students to come out and have the beginning of lab session if we need to discuss what will be going on, complete any type of paperwork or set up for lab,” Smith added.

With the renovations and improvements of multiple locations in the building, the possibilities for students are endless, Smith said.

“The building renovations are really going to be a breath of fresh air for the students and for me,” Smith said.

*Story by Mickinzi Ferguson | Cowboy Journal (Volume 26 | Number 1)*

**The Biosystems and Agricultural Engineering (BAE) Laboratory was dedicated in 1997, and has effectively served BAE’s faculty, professional partners and students in engineering research advancement and technology development activities.**

**With the creation of the ENDEAVOR lab in 2018 to provide student-centered learning spaces in engineering (<https://ceat.okstate.edu/labs/endeavor/>) and the nearing completion of the modern designed New Frontiers Agricultural Hall (<https://agriculture.okstate.edu/about/new-frontiers/>), the department took advantage of the opportunity to enhance and expand our teaching spaces at the BAE lab.**

**We defined new areas with modular functionality that will support the varied instructional needs of our biosystems engineering and agricultural systems technology degree programs and our innovative teaching methods. The renovation features rooms with combined capacities to deliver lectures with state-of-the-art instructional technology, and provides working labs for experiential learning activities. There is senior design maker space for fabrication and collaborative learning. We are excited to have these new spaces as part of our arsenal to continue providing quality educational programming.**

**-Dr. Mari Chinn, BAE Professor and Department Head**



Top Photo: Newly renovated BAE Lab room 129. Bottom Photo: New welding lab. Photos by Dr. Mari Chinn



Panaramic photo of the new instructional space from the main entry by Dr. Mari Chinn. | Background photo by Mickinzi Ferguson

# Senior Design 2023-2024

Our capstone senior design course and projects are tailored to provide our seniors with opportunities to define engineering solutions to challenges facing agricultural and biological systems. BAE Professor, Dr. Paul Weckler, taught his final semester of senior design in Fall 2023, in partnership with BAE Assistant Professor, Dr. Kevin Moore. Dr. Weckler has done an outstanding job mentoring students on 125 different real world projects and fostering relationships with external clientele over his 24 years of service to OSU.

With Dr. Weckler's retirement in Feb. 2024, Dr. Moore has taken over BAE's Senior Design program, and we have no doubt that he will continue to lead senior design capstone with excellence. Below is a list of our 2023-2024 Senior Design teams and client sponsorships.



BAE seniors present their first semester of work on their senior design capstone projects. Photos by Dakota Keith

## 2023-2024 Projects, Clients and Sponsors

### Redesign of the sump tanks for an aquaponics system and development of a design for a fish nursery

Harvest Land, Osage Nation  
Pawhuska, OK

### Evaluate options for reusing effluent water to move towards a zero-discharge facility

Koch Fertilizer  
Enid, OK

### Design and construction of a small-scale air blast pecan cleaner

Robert "Rocky" Harrington  
Stillwater, OK

### Design and construction of a 'smart' composting toilet

Dr. Jason Vogel, Oklahoma Water Survey/OU  
Oklahoma City, OK

### Design and construction of a modular, field deployable, crop monitoring tower

Dr. Tyson Ochsner, OSU Plant and Soil Sciences  
Stillwater, OK

## Project Teams

Sam Mason  
Shelby McMahan  
Henry Warren

Erycka Pretorius  
Mason Settle  
Grace Beiergrahslein

Garrett Seger  
Stephen Fuhrmann  
Gavin McCullough

Alan Liu  
Kailey O'Connor  
Cecilia Jimenez

Katie Miller  
Colton Ingmire  
Emily Hurst



We would like to recognize and congratulate our spring, summer and fall graduates.

### B.S., Agricultural Systems Technology B.S., Biosystems Engineering

Alan Davis-AST  
Michael Bird-AST  
Kellen Smith-AST

Rio Bonham-BE  
Addison Duling-BE  
Emily Ea-BE  
Callahan Figgs-BE  
Garrison Hall-BE  
Kennerly Holloway-BE  
Brooke Holt-BE  
Kimalee Lawrence-BE  
Kelly Lewis-BE  
Brit Luna-BE  
Zachary Marshall-BE  
Taos McIntyre-BE  
Antonio Murillo-BE  
Cooper Price-BE  
Grace Rembold-BE  
Benjamin Seaman-BE  
Seth Stone-BE

### M.S., Biosystems Engineering

**Calvin Wynn**  
*Paper Title:* Design and Development of  
an Economic Texturometer  
*Advisor:* Dr. Tim Bowser



2023 Graduate Student Angelika Ouedraogo is hooded by her research advisor Dr. Ajay Kumar. Photo pulled from footage of the Spring 2023 Graduate Commencement Ceremony. Footage courtesy of OSU.



2023 Senior Biosystems Engineering Class. Photo by Tyler Tassi

### Ph.D, Biosystems Engineering

**Angelika Ouedraogo**  
*Paper Title:* Advanced Waste  
Classification using Machine Learning and  
Impact Analysis of MSW Disposal Methods on  
the Environment and Human Health  
*Advisor:* Dr. Ajay Kumar

**Chengqian Huang**  
*Paper Title:* Vapor Deposition of Polymer  
Coatings for Biological and Environmental  
Applications  
*Advisor:* Dr. Yu 'Jessie' Mao

**Mengfan Zhu**  
*Paper Title:* Surface Wettability Control by Vapor  
Deposited Nanocoatings for Water Harvesting  
*Advisor:* Dr. Yu 'Jessie' Mao

**Venkata Vuma Rahul Thunuguntla**  
*Paper Title:* Enhancing C1 Gas  
Fermentation Efficiency for C2-C6 Product  
Formation using Novel Acetogens: A  
Comparative Analysis of Medium Formulations,  
Biochar Application, Inoculum Preparation, and  
Bioreactor Strategies  
*Advisor:* Dr. Hasan Atiyeh

*"A great accomplishment shouldn't be the end of the road, just the starting point for the next leap forward"*—Harvey Mackay

# Student Organization's Updates

## Graduate Student Association (GSA)

President: Kasra Khodkar

Advisor: Dr. Kiranmayi Mangalgi

One of the standout events of the year was our **Halloween celebration**, which brought students together for a fun time and also stimulated creativity and team spirit through a costume contest with prizes. This event provided a much-needed break from academic pursuits and allowed students to connect in a relaxed and enjoyable setting. We hosted a **welcome lunch for new graduate students**, aiming to integrate them into our community. This event offered an opportunity for new students to meet their peers, learn about BAEGSA, and understand the resources available to them, ensuring a smooth transition into their graduate studies. A highlight of our academic activities was the **mini-conference** we organized, that was designed as a platform for students presenting at the 2023 American Society of Agricultural and Biological Engineers (ASABE) Annual International Meeting (AIM) to practice their presentations. This event was instrumental in helping students refine their communication skills, receive constructive feedback and gain confidence in their ability to present complex research in a concise and engaging manner. BAEGSA proudly co-sponsored a **3-minute presentation contest** at the ASABE Oklahoma section meeting, which challenged students to succinctly communicate their research findings. This contest promoted the development of effective communication skills critical for academic and professional success. Recognizing the importance of physical well-being in academic performance and mental health, BAEGSA organized **monthly wellness days** at the OSU Colvin Recreation Center. These events encouraged students to engage in various sports activities, fostering a sense of community and promoting a healthy lifestyle among our members.



BAEGSA students participate in a monthly wellness day with BAE faculty and staff. Photo courtesy of Kasra Khodkar



Left: Diana Perry (left), Oklahoma USDA-NRCS State Conservation Engineer and 2000 BAE graduate was inducted into Alpha Epsilon as an honorary member based on her leadership and professional accomplishments. BAE Associate Professor and Alpha Epsilon Advisor, Dr. Douglas Hamilton (right) oversees the induction. Photo by Dakota Keith

## Alpha Epsilon

President: Erycka Pretorius

Advisor: Dr. Douglas Hamilton

Alpha Epsilon is the honor society for agricultural, food, and biological engineering, which recognizes upper-division undergraduates, graduate students and engineering professionals displaying outstanding scholarly and professional achievement, character and leadership. The Alpha Epsilon leadership team changed the timing of its induction ceremony from spring to fall, so that graduating students will have a longer time to participate in society activities. We, therefore, inducted two sets of initiates in 2023: four in February 2023 and eleven in November 2023. Looking ahead, we will continue to initiate members in the fall. Alpha Epsilon activities aim to promote the professional

development of all biosystems engineering students. In spring 2024, we kicked off a major fund-raising activity and are selling OSU Biosystems and Agricultural Engineering labeled padfolios so that students will have a place to display their professional credentials during job fairs and professional meetings. We are also making plans to hold an application forum, inviting participants from industry, government and academia to describe the processes of hiring and advancement in different fields. If you would like to participate contact BAE at [baeinfo@okstate.edu](mailto:baeinfo@okstate.edu).

## Cowboy Waterworks

President: Gavin McCullough

Advisor: Dr. Ali Mirchi

After taking home first place at the national ASABE Fountain Wars competition in July 2022 in Houston, Texas, the Cowboy Waterworks team took a breather in 2023. However, they are currently gearing up for the 2024 Fountain Wars competition, which will be held in at the ASABE annual international meeting in Anaheim, California in July.



The 2022 Cowboy Waterworks team with their first place fountain design. Photo by Dr. Mari Chinn

**Cowboy Motorsports**  
Director: Gavin McCullough  
Advisor: Dr. John Long

The 2023–2024 Cowboy Motorsports Team (CMS) is actively working on finishing our tractor build for this summer’s competition in Peoria, Illinois. We have seven members signed up to go to competition this May. The addition of Agricultural Systems Technology students to the department has helped improve our club membership and involvement.

We are working on finishing the wiring of the tractor and painting it, as well as finishing the required reports for competition. Additionally, we are finishing the rebuild of the CMS pulling sled so that we can utilize it for field day demonstrations and for competition testing.

This year’s tractor features CMS’ fifth iteration of our electromechanical drivetrain. We went from having a four-wheel drive tractor, driven by two small electric motors with Sevcon motor controllers, to a two-wheel drive tractor with one big electric motor with a Curtis motor controller. This is the first two-wheel drive tractor that we have had in many years. The main reason behind this design change was the removal of the sand trap in the durability course at the competition.

As always, alumni and faculty are welcome to stop by the BAE Lab and see the team’s progress throughout the year. If you would like to learn more about this year’s CMS team, or if you would like to provide technical or financial assistance, please don’t hesitate to contact the club advisor, Dr. John Long, at [john.long@okstate.edu](mailto:john.long@okstate.edu). If you would like to keep up with the team on social media, follow us on Instagram [@cowboy\\_motorsports](https://www.instagram.com/cowboy_motorsports). We are excited to see what we can do at the competition this year.



BAE student and CMS team member, Ethan Stone, drives the 1/4 scale tractor in the OSU Homecoming Parade. Photo by Dr. Mari Chinn



ASABE members at the Senior Send-Off in Couch Park in Stillwater. Photo by Dr. Mari Chinn

**ASABE Student Branch**  
President: Gavin McCullough  
Advisor: Dr. Kevin Moore and Dr. Robert ‘Scott’ Frazier

The ASABE student branch at Oklahoma State University had a very eventful year. The addition of Agricultural Systems Technology students has increased our membership and involvement.

Southeast student rally was held at the University of Florida. We had six members make the trip. We got to tour the university’s classrooms, research labs and participated in local industry tours. On the last day, we got to relax and float the Ichetucknee spring-fed river at Ichetucknee Springs State Park, where we saw an alligator and a manatee.

We had a great banquet last year with a record attendance of 215 people. We also had a successful silent auction fundraiser for the second year.

One of the industry tours that we attended this year was a combined event with Kansas State University at the AGCO Corporation plant in Hesston, Kansas. We took 15 students to Kansas and had a society event and lunch with engineers, BAE alumni and KSU students, followed by a tour of the plant and engineering offices.

Some of our industry guest speakers at our local ASABE meetings in Stillwater have included representatives from Koch Industries, The Bama Companies, Inc., Ditch Witch, CP&Y, Inc. and Blue River Technology.

We had a great year and look forward to finishing it with our trip to rally at North Carolina State University, taking a tour of Oklahoma’s NRCS-ARS, new officer elections, our 2024 banquet this year’s senior send-off picnic.

We would like to thank the department, faculty, local industries, and alumni for their help and support in making all of our events and meetings possible.

## Department Happenings

### New Faculty and Staff Appointments



Photo courtesy of OSU's  
Department of Brand Management

#### **Dr. Randy Taylor—Faculty Fellow**

Dr. Taylor was one of 10 appointed faculty fellows tasked with engaging OSU faculty, staff, academic and student leaders in thoughtful discussions as OSU's "We are Land-Grant" strategic initiatives are explored, developed and implemented. Dr. Taylor's strategic initiative of focus is elevating and amplifying extension. Taylor wants to beat the stigma that the Cooperative Extension Service is only agriculture and aspires to expand the expertise and resources available in other areas as well. To read more visit: <http://tinyurl.com/3evjarkm>



Photo courtesy of OSU Agriculture

#### **Dr. Dani Bellmer—Assistant Dean**

Dr. Bellmer was appointed to assistant dean of academic programs in the Ferguson College of Agriculture in July 2023. We appreciate Bellmer's leadership and the strengths that she brings to upper administration.



Photo courtesy of OSU's  
Department of  
Brand Management

#### **Dr. Carol Jones—Ombuds Officer**

The Office of the Ombuds officer was established in Oct. 2013 to promote a supportive learning and working environment at OSU, and offers all campuses within the OSU community a safe and confidential place to talk about campus-related problems. To read more visit: <http://tinyurl.com/3mu2xz7y>



Photo courtesy of CEAT Marketing  
and Communications

#### **Dr. John Veenstra—Interim Dean of CEAT**

Dr. John Veenstra was named interim dean designate for the OSU College of Engineering, Architecture and Technology in May 2023. He graciously returned to OSU after his retirement as BAE's department head in 2021. He effectively kept CEAT functioning. We are excited to welcome CEAT's new Dean, Dr. Hanchen Huang on April 1, 2024. To read more visit: <http://tinyurl.com/3k6xjcds>



Photo courtesy of OSU Agriculture

#### **Ms. Tamyra Fancher—Team Lead Accountant**

Fancher was made team lead for the Division of Agricultural Sciences and Natural Resources' new financial team structure. She will lead the New Frontiers second floor financial team, which will be known as BAMB (Biosystems and Agricultural Engineering, Agricultural Economics, Agriculture Education, Communication and Leadership and the Masters of International Program). We appreciate her taking on this significant responsibility while continuing to support BAE's financial wellness.

### BAE Recruitment Efforts in Full Stride



Dr. Scott Frazier



Dakota Keith



Dr. Yu 'Jessie' Mao

### Faculty and Staff in the News



Photo courtesy of OSU Agriculture

One in eight Americans get their drinking water from a private well, according to the Centers for Disease Control and Prevention, but privately owned wells are not regulated by federal or state governments. **Dr. Jeff Sadler** is working with a team of other research specialists to help at grant funded water well screening events. To read more visit: <http://tinyurl.com/yc33vd5p>



Photo courtesy of OU's Department of Civil and Environmental Science

**Dr. Paul Wecker**, participated in co-teaching the class 'Water Technologies from Emerging Regions' with BAE alumni and Professor in OU's School of Civil and Environmental Engineering Jason Vogel and OSU Associate Professor in Civil and Environmental Engineering, Dr. Greg Wilber. The class brings together students from both OSU and OU where they hear from various experts on the field of water technology and participate in field studies, with the hopes that many will go on to work in industry to bring solutions and clean water to communities around the world. To read more visit: <http://tinyurl.com/273ex6e8>



Photo courtesy of OSU Agriculture

Artificial intelligence has become a hot topic in recent months because of its ability to rapidly perform various complex tasks. **Dr. Ning Wang** is a co-principal investigator on a research study focusing on stress in feedlot cattle in collaboration with OSU's College of Arts and Sciences faculty. The research will use AI framework to continuously monitor data and derive insights for assessing stress levels in feedlot cattle by tracking the animal's behavior over time. To read more visit: <http://tinyurl.com/mtnxmyue>



Dr. Scott Frazier (right) talks with Fox25's Paul Stanley (left) about safety tips. Photo pulled from footage of the Fox25 interview. Footage courtesy of Fox25.

**Dr. Scott Frazier** shared his expertise in energy management and sustainability and met with Fox25 News to go over seasonal safety tips. To see more visit: <http://tinyurl.com/5n8rtp55>

You can also catch Dr. Frazier on SUNUP TV where he was featured in the following segments, Fire Places or Wood Stoves? (Nov. 18) and Is Your Home Ready for Winter? (Nov. 4)

## Department Happenings



Dr. Scott Frazier (right) is interviewed for SUNUP TV  
Photos pulled from footage of SUNUP interviews. Footage courtesy of SUNUP TV.



Dr. John Long (right) is interviewed for SUNUP



Wes Lee Photo by OSU Agriculture

Other BAE faculty and staff have also contributed to SUNUP TV segments in 2023.

**Dr. John Long** was featured in Winterizing Farm Equipment (Nov. 18), and **Wes Lee**, assistant extension specialist in BAE is featured each week during the weather report.

You can catch SUNUP TV on the Oklahoma Education Television Network (OETA) channel on Saturday mornings at 7:30 AM (CST) and on Sunday mornings at 6 AM (CST), or by visiting:  
Inside OSU: <http://tinyurl.com/5c8jruea>  
OETA: <http://tinyurl.com/at9ma6em>  
or YouTube: <https://www.youtube.com/user/SUNUPTV>



The frame of the Bison topiary. Photo by Phil Shockley



The completed bison topiary sits to the east of the Advanced Technology Research Center. It can be viewed from Hester Street. Photo by Dr. Mari Chinn

The BAE research shop team, consisting of lab manager **Joe Preston**, and instrument technicians **Mike Fleming** and **Nick Semtner**, contributed to a campus beautification project. They created the frame, horns, hooves and eyes for the new bison topiary located on OSU's campus. The bison is OSU's first year round topiary, as well as the first topiary in the new Native Plant Corridor display on campus. *To read more visit:* <http://tinyurl.com/yt5jyzax>

### 2023 CEAT Outstanding Student Award Recipients for BAE

The College of Engineering, Architecture and Technology recognizes graduating seniors and graduate students from each engineering discipline who have consistently been an example of academic excellence, outstanding leadership and highly sought after qualities.



**Rio Bonham**

2023-BAE Outstanding Senior Student



**Angelika Ouedraogo**

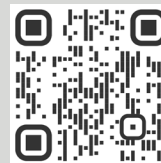
2023-BAE Outstanding Graduate Student

*Photos Courtesy of CEAT Marketing and Communications*

### BAE Alumnus, Lieu Smith ('54 B.S.) receives the OSU Alumni Association's Distinguished Alumni Award



BAE Distinguished Alumnus, Lieu Smith (third from right) with the rest of the 2023 OSU Distinguished Alumni Class. From left to right: Darton Zink, Ken Starks, Terry Stuart Forst, Lieu, Doug Cox and Guate Vik. Photo by Genesee Photo Systems



Scan the QR Code to view the 2023 OSU Distinguished Alumni Awards!

The Oklahoma State University Alumni Association honored six deserving alumni with 2023 Distinguished Alumni Awards at a ceremony on Sept. 15 in the ConocoPhillips OSU Alumni Center. The award recognizes Cowboy family members who have distinguished themselves through their field or profession and the betterment of their community. BAE Distinguished Alumnus, Lieu Smith, was honored.

Story by Jillian Remington | State Magazine

## BAE 2023 Advisory Committee

*The advisory committee offers feedback and advice to the department head and faculty to help enhance programs and operations in teaching, research and extension. The committee has members from different areas of expertise, institutions and affiliations representing our BAE profession.*



Top Row, from Left to Right: Steven Fowler, David Campbell, Travis Tsunemori, Brandon Claborn  
Bottom Row, from Left to Right: Mari Chinn, Randy Roark, Sydney Levine, Jake Holloway  
Not pictured: Elizabeth Casey DeFreese, Greg Hambrick, Jared Kinder, Laura Merriman, Cara Cowan Watts *Photo by Dakota Keith*

### 2023 BAE Advisory Committee Members

<b>David Campbell</b> Senior Manager, Engineering Ditch Witch	<b>Travis Tsunemori</b> Research and Development Manager Kubota Tractor Corporation	<b>Jared Kinder</b> Senior Project Engineer AGCO Corporation
<b>Brandon Claborn</b> Chief Executive Officer Meshek & Associates	<b>Cara Cowan Watts</b> Chief Executive Officer and Majority Owner, Tulsa Pier Drilling, LLC Owner of Cherokee Star DBA	<b>Sydney Levine</b> Global Retrofit and Aftermarket Manager Zeco, Inc.
<b>Elizabeth Casey DeFreese</b> Senior Manager, Microbe Research Fermentation Technology Novozymes North America, Inc.	<b>Greg Hambrick</b> Safety and Loss Control Instructor Oklahoma Association of Electric Cooperatives	<b>Laura Merriman</b> Department Manager, Houston Water Region Burns & McDonnell
<b>Steven Fowler</b> Professor/Engineering Coordinator Rose State College	<b>Jake Holloway</b> Director of Market Product Development Enovation Controls	<b>Randy Roark</b> Vice-President of Engineering and Development Bama Companies, Inc.

*If you are interested in participating in the BAE Advisory Committee, please contact Dr. Mari Chinn  
[mari.chinn@okstate.edu](mailto:mari.chinn@okstate.edu) • 405-744-5431*



# Friends of Biosystems & Agricultural Engineering



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The Department of Biosystems and Agricultural Engineering (BAE) depends upon the generous gifts of alumni, emeriti faculty, family, friends, faculty and staff to help fulfill our goals in educating the next generation of Biosystems Engineers and Agricultural Systems Technologists.

Support we receive from our valued donors enables us to continue providing quality programs and experiences to our students. With the ever-increasing costs of higher education, student scholarships and funding become increasingly more important. Donations big and small can allow acquisition of state-of-the-art equipment and resources for instruction and research, fund student activities, enhance our facilities and elevate professional development within BAE. We are fortunate to have endowed scholarships in the names of our emeriti faculty, alumni, family and friends that are consistently funded through our donors.

Joining our family of annual donors offers opportunities for students to pursue degrees in Biosystems Engineering and Agricultural Systems Technology. It also allows BAE to be successful in offering curricula and supporting initiatives we can continue to be proud of and that will have lasting positive impacts. Our annual donors help ensure a lasting legacy. Please consider becoming a part of our recognized Friends of Biosystems and Agricultural Engineering, where we celebrate contributions and the wonderful achievements you help stimulate. **To donate, visit [osugiving.com/bae](https://osugiving.com/bae) and select "Discover More Orange Passions-Biosystems"**

## New Orange Passions in 2023

Annette and Bill Barfield Endowed Scholarship (21-68710)

Clarence E. Johnson Endowment (21-55210)

A.P. Lewis, Jr. Scholarship (21-01060)

Biosystems and Agricultural Engineering Program Support Fund (21-00250)

*Support of BAE comes in both dedication of time and donations.  
We thank you for your continued generosity!*

# Friends of Biosystems and Agricultural Engineering

## Friends of Biosystems and Agricultural Engineering As of March 15, 2024

### 2021-2022



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David and Sandra Epperly  
Jodie and Roseanna Whitney  
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Jim and Judy Loftis  
Mary Elizabeth Mach



#### **PISTOLS FIRING**

Larry and Terri Billen  
Tom Rains  
David and Debbie Campbell  
Ron and Sharon Morgan

### 2022-2023



#### **BRIGHTEST ORANGE**

Lieu R. Smith



#### **LOYAL + TRUE**

Tom and Jan Haan  
Jim and Judy Loftis  
Luke Reed  
Oklahoma's Electric Cooperatives  
Mary Elizabeth Mach  
Jodie and Roseanna Whitney  
Mari Chinn and Matt Veal  
Christine Altendorf  
Terry and Marie Barefoot  
Louis and Leatrice Bouse  
David and Sandra Epperly  
Ray and Sandy Huhnke



#### **SPIRIT RIDER**

Ron and Judith Elliott  
Larry and Terri Billen  
Don and Kim Yarbrough



#### **PISTOLS FIRING**

Lawrence and Karen Betche  
Tom Rains  
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## Friends of Biosystems and Agricultural Engineering As of March 15, 2024

2023-2024



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Lieu R. Smith  
Greg and Kristen Hart  
Halliburton Power of Six



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Ron and Judith Elliott  
Michael and Linda Smolen  
Tom and Jan Haan  
Ray and Sandy Huhnke  
Tom Rains  
Jodie and Roseanna Whitney  
Dean and Sharon Yoder  
Terry and Marie Barefoot  
Justin Kistler  
David and Sandra Epperly  
Ron and Zona Noyes



### **SPIRIT RIDER**

Larry and Terri Billen  
Don and Kim Yarbrough



### **PISTOLS FIRING**

Lawrence and Karen Betche  
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Because of donors like you, our students get to take advantage of the opportunity to receive a world class education. Photo by Dr. Mari Chinn



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