

2025

FUELING OUR FUTURE

**Final Report for the CAFNR Strategic Plan:
Drive to Distinction (2019-2025)**



College of Agriculture,
Food and Natural Resources
University of Missouri

Table of Contents

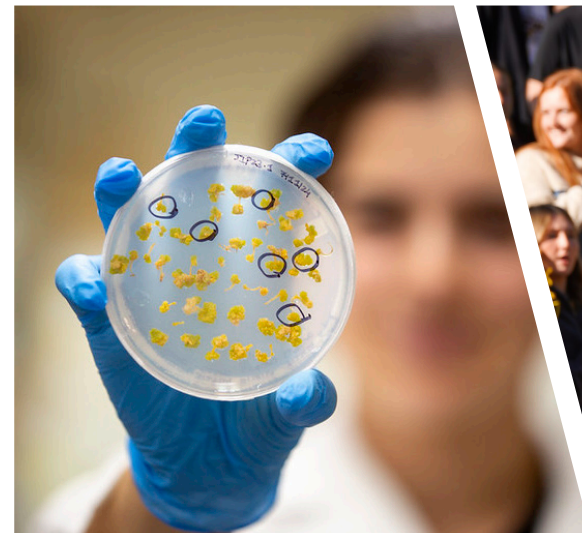
FROM THE DEAN 2
 ENSURING STUDENT SUCCESS 4
 ADVANCING RESEARCH & INNOVATION 8
 EMPOWERING MISSOURIANS 14
 SHOWCASING OUR LEADERSHIP 18
 CULTIVATING COMMUNITY 22
 CHAMPIONING GLOBAL CITIZENSHIP & ENGAGEMENT . . . 23
 PROGRAMS OF DISTINCTION 26
 GRAND IDEAS 34


**College of Agriculture,
 Food and Natural Resources**
 University of Missouri

Compiled, written and edited
 by *CAFNR Marketing & Communications*
 Cover photo by *Abbie Lankitus, University of Missouri*
 News article on page 37 by *Brian Consiglio, Mizzou News & Information*; photo by *Abbie Lankitus*

cafnr.missouri.edu
 573-882-3846
 Office of the Vice Chancellor and Dean
 College of Agriculture, Food and Natural Resources
 2-69 Agriculture Building
 Columbia, MO 65211

MU: An equal opportunity/ADA institution.



FROM THE DEAN



When we launched the *Drive to Distinction* strategic plan in 2019, we set bold, ambitious goals that, honestly, felt daunting at times.

Yet over the years, we steadily implemented each step of the plan, and we began to move the needle — even on the loftiest aspirations. That’s not to say we achieved everything we set out to do six years ago. Some goals proved more difficult to advance, and we discovered that certain metrics are largely beyond our control. Still, much of what we envisioned has come to fruition in meaningful ways.

The biggest lesson learned? We came this far because of the power of teamwork. No single division, center, person or program could have produced the results we achieved together. Our phenomenal growth was driven by coordination and collaboration — a theme I’ve often described using the metaphor of our six divisions as six cylinders, firing in sync like a fine-tuned engine to propel us forward.

We also learned that the process matters. Taking time to engage stakeholders, listen to the pressing issues in agriculture and natural resources, and carefully craft a step-by-step plan — complete with measurable goals and actionable activities — was not fast or easy, but worthwhile. Even during a global pandemic, we never steered away from our drive; rather, the plan kept us advancing to serve Missouri.

As we cross the “finish line” of *Drive to Distinction*, we’re cruising smoothly and steadily toward an exciting future. And, while this particular plan has concluded, we will build on the strong momentum of the past six years.

Enjoy celebrating the many achievements of *Drive to Distinction* in the content that follows, and stay tuned for what’s next for your College of Agriculture, Food and Natural Resources.

Thank you — truly — to everyone who’s been part of this journey. We appreciate each and every one of you!

CAFNR Proud,

Christopher R. Daubert
Vice Chancellor & Dean
College of Agriculture, Food & Natural Resources
University of Missouri

ENSURING STUDENT SUCCESS

Increase Access to Undergraduate Programs

PERFORMANCE MEASURE:
ENROLL 650 NEW STUDENTS ANNUALLY



*All-time high

ACHIEVEMENTS:

- ▶ Designed four distinct prospective student mailings to highlight our 14 degree programs by focus areas.
- ▶ Created "Show-Me" emails for each degree program.
- ▶ Created videos for each degree program, now available on CAFNR's website and for use in social media.
- ▶ Reconfigured Academic Programs suite space to host small groups of prospective students.

GOALS:

Increase Access to Undergraduate Programs

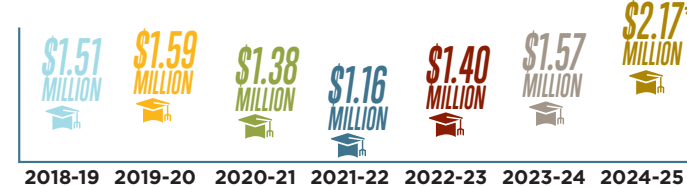
Cultivate Undergraduate Student Success

Increase Graduation Rates and Ensure Student Placement

Require a Signature Experience as a Component of Undergraduate Degree Programs (RISE)

Support Graduate Students for Career Preparedness and Success

Scholarships offered



*All-time high

PERFORMANCE MEASURE:

INCREASE SCHOLARSHIPS OFFERED ON AN ANNUAL BASIS TO \$2 MILLION

ACHIEVEMENT: Scholarship goal achieved in 2024-25.

Cultivate Undergraduate Student Success

PERFORMANCE MEASURES:

RETAIN 93% OF FIRST-YEAR STUDENTS

GRADUATE 65% OF STUDENTS IN FOUR YEARS AND 75% IN SIX YEARS

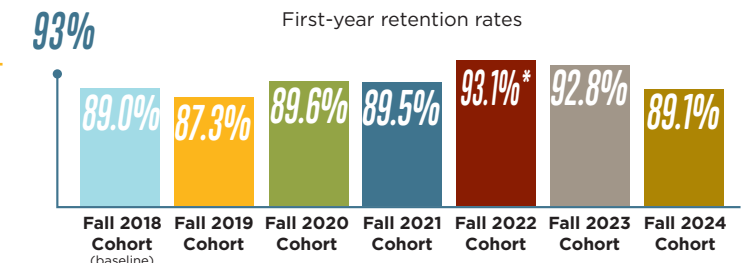
Increase Graduation Rates and Ensure Student Placement

ACHIEVEMENTS:

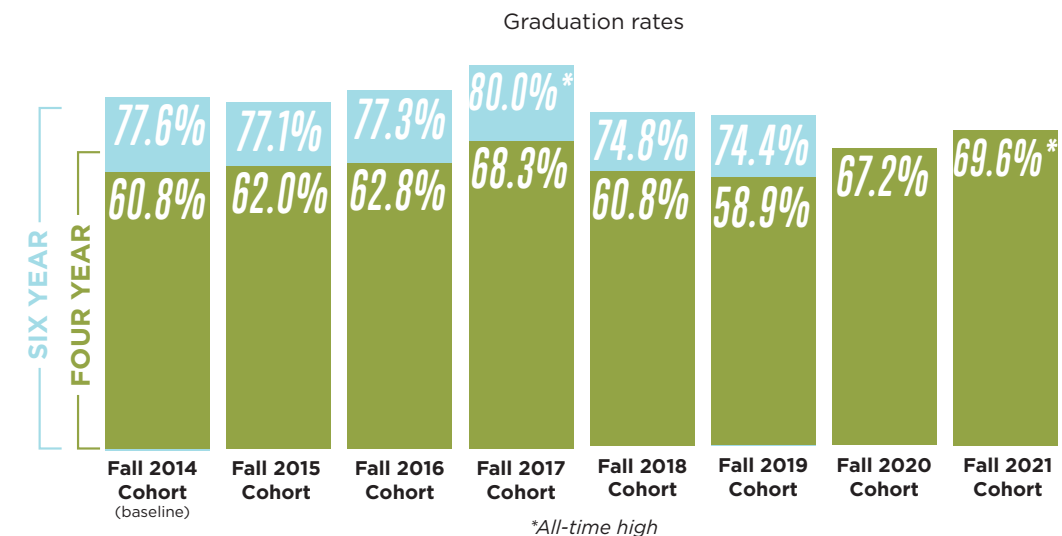
- ▶ Scholarships offered to 100% of eligible first-time college students (65% accepted).

- ▶ Scholarships offered to 65% of continuing students (average award: \$1,300).
- ▶ 57% of new students attended CAFNR Academic Day prior to fall semester.
- ▶ Followed up with more than 300 students with high-risk, early alert flags (Fall '24).
- ▶ Collaborated with campus to implement a more transparent "change of major" process.

SUMMARY: Retention and graduation goals met for most years; the pandemic contributed to fluctuations.



*All-time high



*All-time high

ENSURING STUDENT SUCCESS (continued)

Increase Graduation Rates and Ensure Student Placement

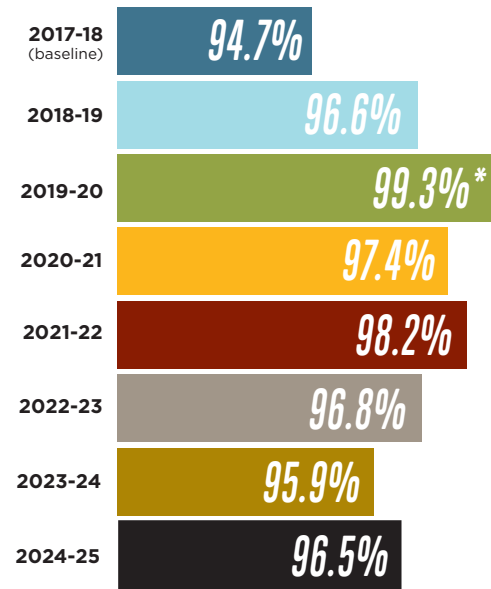
PERFORMANCE MEASURE:

ENSURE THAT 95% OF DEGREE RECIPIENTS, UNDERGRADUATE AND GRADUATE, ACHIEVE CAREER SUCCESS WITHIN SIX MONTHS OF GRADUATION

ACHIEVEMENTS:

- ▶ Second highest number of organizations (159) participated in 2024 fall career fair. More than 1,800 students engaged in fall and spring fairs.
- ▶ Conducted 222 mock interviews, reviewed 973 resumes and collaborated with industry partners on 20+ career development events in 2024.
- ▶ Awarded 162 certificates over the past three years.

Undergraduate Career Success



*All-time high

'RISING' TO THE CHALLENGE

Student opportunities for unique, hands-on learning have skyrocketed since launching R.I.S.E.

Signature Experiences as defined by R.I.S.E., which stands for Research, International, Service and Experiential Learning, showcase the unique and impactful opportunities for student learning in the Mizzou College of Agriculture, Food and Natural Resources.

Recent student experiences include:

- As part of the Community Nutrition Field Work/Supervised Practice Experience course, nutrition and exercise physiology and dietetics students implement their community nutrition knowledge by helping with recipes and demonstrations using ingredients available at the local Food Bank Market.
- Environmental science students in Synoptic Meteorology produce the Campus Weather Forecast twice a day every weekday, creating graphics and an area forecast discussion. Students in the Broadcast Meteorology course then create a weather forecast video shown across campus.
- CAFNR's International Study Programs launched a new spring break study abroad experience in France, one of the first programs focused around agricultural education.
- Hospitality management students, as part of a capstone experience, plan local events like "Murder at the Speakeasy," including the entertainment, menu, decor and raffle.

- Students in Personal Financial Planning 4187: Tax Planning learn theory and rules behind tax law, and then complete 48 hours of tax return practice through Volunteer Income Tax Assistance (VITA) tax preparation.
- A committee of Mizzou Block and Bridle members planned and hosted the National Block and Bridle Convention, including animal sciences-related speakers, farm tours across Missouri, networking and social opportunities for the students.



Require a Signature Experience as a Component of Undergraduate Degree Programs (RISE)

ACHIEVEMENTS:

- ▶ 81% of 2025 graduates completed average of 1.9 transcribed signature experiences.
- ▶ Awarded \$31,500 in undergraduate research scholarships in 2024.
- ▶ Provided \$20,000 to student organizations, teams for conferences, competitions.

COMPETING AT THE NATIONAL LEVEL

CAFNR student competition teams put classroom learning to the test.

Experiential — and collaborative — learning at Mizzou is in full gear as student competition teams are back to traveling for regional and national events. (And, typically, awards and honors!)

The Mizzou Academic Quadrathlon Team raced to their fourth consecutive first-place finish at the Midwest American Society of Animal Science meeting in Omaha, Nebraska, March 2025.

The University of Missouri Collegiate Landscaping Team placed 15th out of 54 schools with multiple individual awards at the National Collegiate Landscape Competition at Colorado State University, March 2025.

Mizzou NAMA (pictured above right) claimed first place in the student marketing competition at the Agri-Marketing Conference in Kansas City, April 2025, beating out 30 teams from the U.S. and Canada.

The Mizzou Meat Judging Team placed third overall at the Southeastern Intercollegiate Meats Judging Contest, earning top-five finishes in seven of eight categories and multiple individual awards across two days of competition in Ohio and Kentucky April 2025.

The MU Collegiate Soils Judging Team secured fourth place — just one point shy of third — at the NACTA Judging Conference in April 2025 in Canyon, Texas, with three students finishing in the top 20 individually.

The Mizzou Dairy Products Evaluation Team earned fourth in All Products among other rankings at nationals in Madison, Wisconsin, in April 2025, with one undergrad taking first in All Products and a graduate student placing third.

Mizzou Torq'N Tigers ran two teams in the American Society of Agricultural and Biological Engineers International Quarter-Scale Tractor Student Design Competition in Peoria, Illinois, in summer 2025. One team finished third, redesigning at least 30% of last year's tractor (X-Team). The other placed third in durability, building this year's tractor from the ground up (A-Team).

The MU Student American Institute of Floral Designers Chapter placed second in the nation in the student competition during the American Institute of Floral Designers National Symposium in Palm Springs in July 2025.



EXPLORING CAFNR MAJORS

The college hosts opportunities for high school students via unique Summer Academies.

Each summer, CAFNR hosts a number of Summer Academies — opportunities for high school students to explore a variety of degree offerings. Offerings vary from a single day on campus to weeklong events, but each includes tours, hands-on activities and visits with industry professionals. Some recent examples:

- Animal Sciences Youth Leadership Academy
- Exploring Ag Communications, Leadership & Education Day
- Financial Planning Academy (pictured right)
- Life Sciences Quest
- Plant Sciences Discovery Day



Support Graduate Students for Career Preparedness and Success

ACHIEVEMENT: 41% increase in graduate student enrollment from baseline to Fall 2025.

Graduate Student Enrollment





ADVANCING RESEARCH & INNOVATION

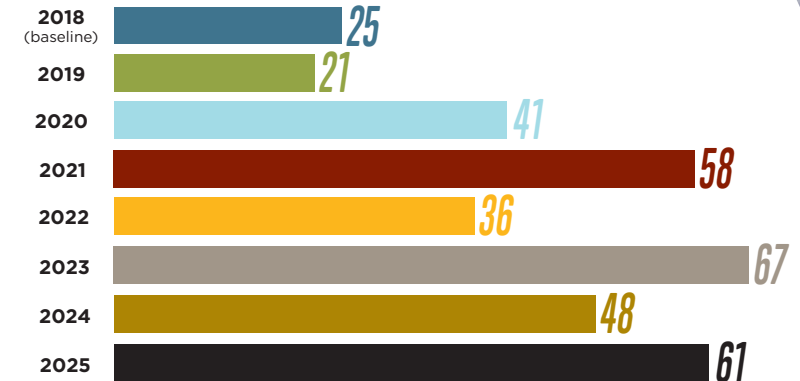
GOALS:

- Cultivate a Culture of Research and Innovation Excellence
- Increase Research, Innovation and Entrepreneurship
- Cultivate Multidisciplinary Collaborations

Cultivate a Culture of Research and Innovation Excellence

PERFORMANCE MEASURE:
INCREASE FACULTY AWARDS & RECOGNITIONS BY 10% PER YEAR

University, national and international awards, fellowships and recognitions



ACHIEVEMENTS:

- Increased nominations of faculty for national and international awards.
- Created additional recognitions internally for early and mid-career research performance, overall grantsmanship during a 10-year period and for mentoring graduate students.
- Recognized winners of awards by featuring them in CAFNR Accolades, on social media and in newsletters.



NEW FACILITIES BRING WORKFORCE DEVELOPMENT, COLLABORATIVE RESEARCH TO CAMPUS

Meat Science Education & Training Laboratory, Energy Innovation Center in the works.

In April 2025, Mizzou broke ground on **The Michael L. Parson Meat Science Education and Training Laboratory**. The 25,000-square-foot building is named for former Missouri Gov. Mike Parson and funded by the state of Missouri.

“This is a fitting tribute to Gov. Parson’s agricultural achievements made throughout his lifetime in public service,” said Todd Graves, Chair of the UM Board of Curators. “This naming honors a true champion of Missouri’s greatest industry.”

The new facility, expected to open in 2026, will update and consolidate the abattoir and the Mizzou Meat Market.

While CAFNR will continue to offer the entrepreneurial and hands-on learning opportunities it already provides, these updates will enhance the facility’s capacity for research and outreach with expanded lab space, classroom space and faculty offices to build the state’s only working and teaching laboratory entirely devoted to meat processing.

Through the **Energy Innovation Center**, Mizzou is committed to tackling challenges presented by rising energy concerns and rapid growth in artificial intelligence and how the two work together to optimize energy production, transmission and grid security.

The facility will bring together engineers, agronomists, physicists, chemists and public policy experts to provide sustainable solutions for the future and strengthen domestic energy supply.

EIC joins a growing tradition at Mizzou — similar to the NextGen Precision Health initiative or Bond Life Sciences Center — of bringing collaborators together for innovation, including the College of Engineering, the College of Agriculture, Food and Natural Resources, and the College of Arts and Science.

ADVANCING RESEARCH & INNOVATION

(continued)

Increase Research, Innovation and Entrepreneurship

PERFORMANCE MEASURE:

DOUBLE INTELLECTUAL PROPERTY OUTPUTS (DISCLOSURES, PATENTS, TRADEMARKS) AND OUTCOMES (LICENSES, ROYALTY, START-UPS)



RESEARCH SYMPOSIUM CELEBRATES 5TH YEAR

Participant numbers continue to grow; symposium has served as opportunity to celebrate CAFNR research milestones.

The CAFNR Office of Research and CAFNR Research Council launched the CAFNR Research Symposium virtually in 2020; since then the annual event has grown each year (and of course is now in-person!)

The Fifth Annual Symposium, held in October 2025, focused on "Solving What's Next: Innovation at the Intersection of Life, Food & Data" and hosted keynote speaker Glenn Davis Stone, who facilitated a robust discussion about research.

Faculty, staff and student sessions included "Innovation in Biological Systems"; "Avian Flu Crisis/Food Safety/

Biosecurity"; and "The Age of AI in Agriculture."

"Each fall we showcase the important work students, post-docs, faculty and staff in our college perform each day to help create a healthy world, as well as inspire them with talks from renowned outside speakers," said Shibu Jose, associate dean for research.

In 2024, the Symposium was paired with a day to celebrate and study the impact of the 75th anniversary of the discovery of life-saving antibiotic aureomycin, produced by a bacterium in the soil of one plot in Mizzou's Sanborn Field.

"The discovery of aureomycin is one of many highlights of the rich history of research done right here in our college," Jose said. "We not only explore this incredible history, but also share how our current faculty and students are ushering us into a healthier world as we look to the future."

ACHIEVEMENTS:

- Awarded six translational research grants in two years through CAFNR Ag-celerator for Agricultural Technologies and collaborated in securing a \$6 million NSF ART (Accelerating Research Translation) grant, efforts that bridge gap between academic research and industry through funding for promising projects.
- 47% increase to intellectual property outputs in 2023 over the baseline was recognized.

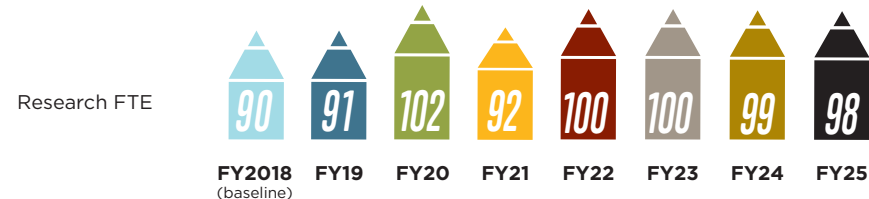
Total of patents issued, technologies licensed/optioned, and invention disclosures submitted



PERFORMANCE MEASURE:

INCREASE RESEARCH FTE BY 20%

ACHIEVEMENT: In FY22 and FY23 we saw an 11% increase over the baseline.

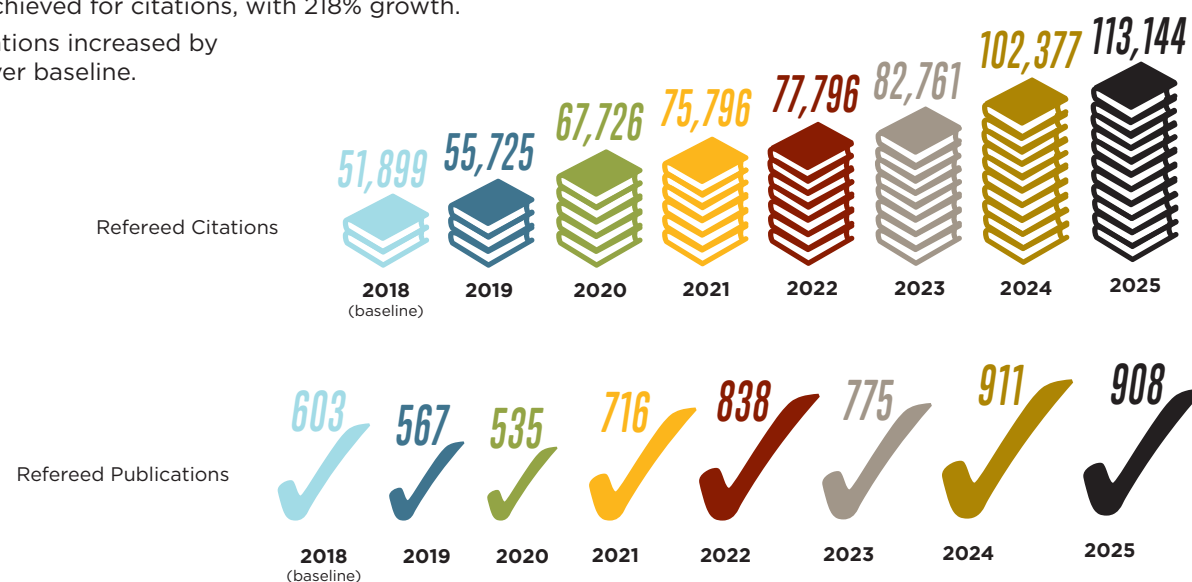


PERFORMANCE MEASURE:

INCREASE PEER-REVIEWED PUBLICATIONS AND CITATIONS BY 10% PER YEAR

ACHIEVEMENTS:

- Goal achieved for citations, with 218% growth.
- Publications increased by 50% over baseline.



Cultivate Multidisciplinary Collaborations

PERFORMANCE MEASURE:

PROMOTE INTER- AND TRANS-DISCIPLINARY AND MULTI-INSTITUTIONAL COLLABORATION TO INCREASE PROPOSAL SUBMISSIONS AND RESEARCH EXPENDITURES BY 10% PER YEAR

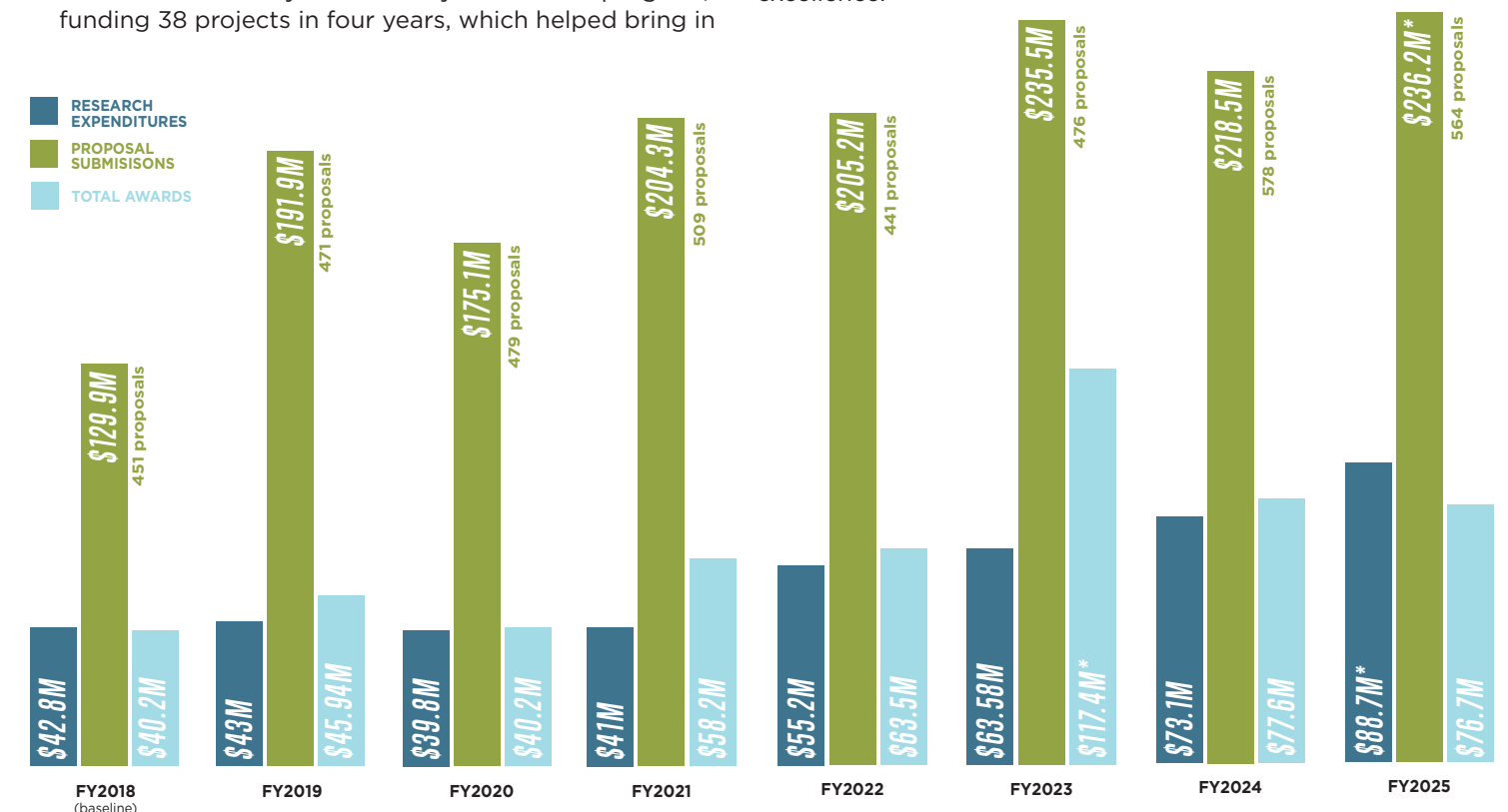
ACHIEVEMENTS:

- Established CAFNR Grants Office to help with proposal submissions, particularly large interdisciplinary proposals.
- Launched CAFNR Research Symposium to promote excellence in research and showcase our impact.
- Created CAFNR Joy of Discovery Seed Grant program, funding 38 projects in four years, which helped bring in

additional \$14+ million in external funding.

- Established CAFNR matching equipment grant program to increase interdisciplinary collaboration and shared use of equipment.

SUMMARY: Aspirational goal met due to prioritizing seed funding, grants assistance and promotion of research excellence.



*All-time high



\$5 MILLION IN FUNDING VITAL FOR TECH TRANSFER, WORKFORCE DEVELOPMENT

Directors look to innovative partnerships, grant funding to increase outreach opportunities.

Reaching local producers with new technology is part of the land-grant mission in CAFNR. Two recent grants are taking that directive to new heights.

First, through a pair of USDA Natural Resources Conservation Service (NRCS) grants, Mizzou is expanding outreach and technical assistance to Missouri land-owners for conservation practices.

This is a new model of partnership for the Missouri Agricultural Experiment Station's (MOAES) Research, Extension and Education Centers (REECs) and NRCS.

"The purpose of this project is to enhance the adoption of conservation practices that will increase crop productivity, improve adoption of water management practices and enhance water quality," said Jeff Case, director of the Northern Missouri REEC and the administrator of the NRCS grant.

"This is a very innovative agreement between the University of Missouri and the Natural Resources Conservation Service," said Scott Edwards, NRCS State Conservationist for Missouri. "The ability to partner at this level and to add dedicated staff to Outreach and Training will benefit Missouri farmers and ranchers for years to come."

A grant from the Missouri Department of Higher Education and Workforce Development looks to open doors for Missourians to receive agricultural drone training, also through the REECs, along with the Digital Agriculture Research and Extension Center (DAREC) and MU Extension. Although drones are growing in popularity, there are few training opportunities available in Missouri.

"This is a true workforce development project because it will help train people to have careers in agriculture," said SW-REEC Director Jay Chism, who is spearheading the program. "This program will train people for FAA licensing as well as using drones in agricultural contexts."

Missouri farmers can use drones in several applications, including spraying pesticides and herbicides on crops, locating missing or injured livestock and for imaging that can translate into data that ultimately increases crop yields. Chism and the DAREC faculty expect those uses to expand over time, creating more opportunities for future drone operators and farmers alike.

"This technology just keeps advancing, and we want to make sure we are working to harness that to help people farm better," Chism said.

The \$3.7 million MoExcels grant covers the cost of "train the trainer" sessions for faculty, who will then offer producer trainings locally.

“ Conservation practices can be very different in each of the REEC regions. ”

The four REECs are located in four distinct regions of the state and each contain research farms and facilities to help conduct research specific to the conditions Missouri producers face in that region. The \$1.4 million grant will help support eight new staff members, two at each REEC, to work directly with landowners in their area. At each REEC, one of the new staff will specialize in technical assistance and the other in outreach.

"One of the reasons we are putting these at each REEC is because it can be tailored to that area," Case said. "Conservation practices can be very different in each of the REEC regions."

CAFNR'S FOREMOST DAIRY OFFERS HANDS-ON LEARNING FOR VET STUDENTS

Unique partnership between veterinary and agricultural programs means world-class animal care for Mizzou's dairy cows.

At Foremost Dairy, Mizzou is cultivating more than milk — it's nurturing the next generation of veterinary and agricultural leaders through a collaborative partnership between the College of Veterinary Medicine and CAFNR.

Located just west of Columbia, Foremost Dairy is part of the Missouri Agricultural Experiment Station, a statewide network of farms and facilities that supports research, education and extension. What sets this facility apart is its role as a collaborative classroom for students across disciplines and a model of top-tier animal care.

Vet Med students visit the dairy herd weekly — twice as often as most commercial operations — providing world-class, hands-on care to the cows. This frequent interaction allows students to spot and respond to health issues early, gaining critical skills in preventive care and herd management.

"The Foremost Dairy Facility stands as a remarkable resource for both faculty and students at the University of Missouri," said Dr. Celeste Morris, assistant professor in the College of Veterinary Medicine. "It allows for studies and education in dairy science, animal health and management practices."

For some veterinary students, Foremost offers their first direct experience with livestock. The opportunity to work closely with dairy cows — animals known for their calm temperament — makes it an ideal learning environment.

"While beef cows spend most of their time with other cattle out on pasture, dairy cows are handled by people daily from birth," said Dusty Walter, director of the Central Missouri Research, Extension and Education Center, which includes Foremost. "That makes them temperamentally much gentler and is a real benefit for a student who maybe grew up in the city and hasn't spent a lot of time with cattle before."

Morris echoed the importance of this exposure.

"This is crucial for veterinary students, especially those pursuing livestock careers," she said. "It gives them the skills and confidence needed for success in the field."

The benefits of the partnership are mutual. As students learn, the animals thrive.

"The relationship that Vet Med and CAFNR have cultivated at the dairy is truly symbiotic," Walter said. "While their students gain access to experiences with our animals, our animals are getting the best care available."

Foremost also serves as a launchpad for cross-disciplinary research and education, where veterinary and agricultural sciences converge.



Empowering MISSOURIANS



GOALS:



- Grow Missouri's Agricultural and Natural Resource Economy
- Create Lifelong Learning Opportunities
- Contribute to a Healthier Missouri by Sharing Science and Discoveries

Grow Missouri's Agricultural and Natural Resource Economy

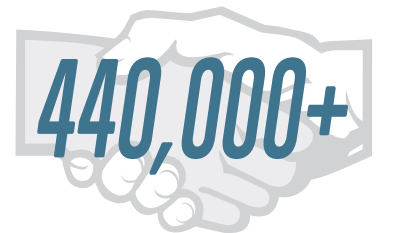
PERFORMANCE MEASURE:

DOUBLE ECONOMIC IMPACT OF MISSOURI AGRICULTURE BY 2030

ACHIEVEMENTS:

- ▶ Engagement in Show-Me-Select Replacement Heifer Program is up 42% in 2025, due to expanded visibility and adoption through statewide producer networks. Show-Me-Select receipts continue to top records, with five regional sales combined bringing in more than \$2.3 million in spring 2025.
- ▶ Drone training has taken to new heights across the state through a \$3.7 million "train the trainer" MoExcels grant. In total, more than 30 Mizzou faculty, staff and graduate students have been trained as trainers, and more than 3,500 Missourians have been exposed to the drone training for agricultural applications through demonstrations and workshops.
- ▶ Grazing School engagements are up 65% in 2025; the surging interest is driven by rotational stocking and expansion into virtual fencing.
- ▶ 125 food processors have been trained in better process control schools since 2021, when a process authority was hired for the state.

Missourians engaged directly in 2025



EMPOWERING MISSOURIANS

(continued)



JEFFERSON FARM & GARDEN PROVIDES PLANTS FOR EDUCATIONAL GARDENS

Extension programs work together at Jefferson Extension & Education Center to make a difference.

University of Missouri Extension’s Jefferson Farm and Garden in Columbia raises thousands of bedding plants each year and supplies them to hundreds of gardens throughout the state.

More than 750 educational and community gardens receive fruit and vegetable bedding plants for free from Jefferson Farm and Garden as part of a Family Nutrition Program grant. Seedlings can include peppers, watermelon, tomatoes, blackberries, grapes, cucumbers, broccoli, lettuce, cabbage and okra.

The greenhouse at Jefferson serves as a training site for extension educators from across the state. Those working with school and community gardens come to trainings to learn more about engaging the community in edible gardens. The thousands of plants raised, as well as seeds donated to the program, are sent out three times during the year.

“I like being outside working with the plants and helping people,” said Larry Roberts, MU Extension state garden coordinator. Roberts leads the trainings and raises the bedding plants. A former extension nutrition program associate, he taught nutrition for 12 years and has been working for MU Extension for 26 years.

The recipient gardens are asked to weigh the produce from the plants they harvest and distribute in their communities, use in their food service or use in educational programs.

“Some gardens allow community members to harvest produce, so they are not always able to submit produce weights, but last year 32% of our gardens reported harvesting more than \$36,000 worth of produce,” said Jo Britt-Rankin, extension professor of health sciences.

Contribute to a Healthier Missouri by Sharing Science and Discoveries

PERFORMANCE MEASURE:

INCREASE THE NUMBER OF PRODUCERS ENGAGED AT TRADITIONAL AND NON-TRADITIONAL FIELD DAYS AND WORKSHOPS BY 25%

ACHIEVEMENTS:

- ▶ Master Gardeners program saw engagement increase by 109% in 2025; the visibility surge was driven by urban gardening and cicada coverage. Urban agriculture alone saw engagement rise 132%, with a major jump in community gardens and school-based food programs.
- ▶ The Integrated Crop Management program engaged with more than 18,500 Missourians in 2025, including pesticide stewardship, soil testing and integrated pest management.
- ▶ AgrAbility and Heroes to Hives broadened their reach to veterans and producers with disabilities, seeing an uptick in engagement by 112% in 2025.

PERFORMANCE MEASURE:

IMPROVE MISSOURI HEALTH RANKING TO 35 (UNITED HEALTH FOUNDATION RANKINGS)

ACHIEVEMENT:

Partnered with MFA Foundation to expand teletherapy sessions and increase educational awareness in rural communities of mental health needs and resources.

PERFORMANCE MEASURE:

DOUBLE GLOBAL MEDIA PRESENCE FOR CAFNR PROGRAMS

ACHIEVEMENTS:

- ▶ Pivoted writing staff to focus on communications plans for programs, centers and specialists to showcase impact of Ag & Environment Extension.
- ▶ Worked with Mizzou News and Information and MU Extension to identify CAFNR experts to pitch to media.

SUMMARY: This goal was met and surpassed (150% increase in media readership over baseline). A strong focus on communications staff and output was key.

Create Lifelong Learning Opportunities

PERFORMANCE MEASURE:

IMPROVE THE NATURAL RESOURCES STATE RANKING (NATURAL RESOURCES INVENTORY FOR USDA)

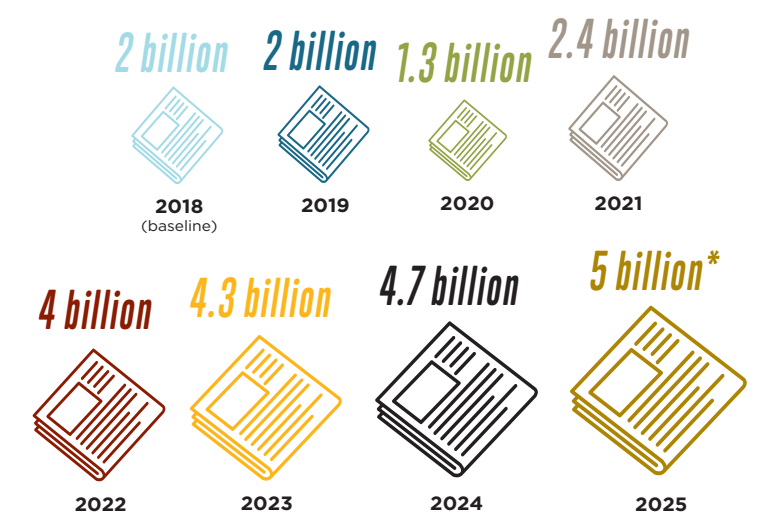
ACHIEVEMENTS:

- ▶ Partnered with Missouri Department of Natural Resources to promote science-based soil and water conservation practices, decreasing soil erosion by nearly 50% since the program started.
- ▶ Grown the visibility of Missouri Master Naturalist program, with a media reach in 2025 of 4.9 billion, and engagement up 34%.
- ▶ Decreased numbers of feral hogs in Missouri watersheds by 84% since 2016, as part of a Feral Hog Elimination Partnership with MDC.
- ▶ Created Missouri Water Center, a partnership between CAFNR and the College of Engineering, building capacity, accelerating collaboration and generating new resources to meet today’s and tomorrow’s water resource needs.

National Health Ranking



Media Readership



Includes media such as print, radio and television mentions
*All-time high



SHOWCASING OUR Leadership

GOALS:

Enhance Visibility while Gaining Recognition as a National Leader in Agriculture, Food and Natural Resources

Build Greater Awareness of and Participation in CAFNR's Programs of Distinction and Grand Ideas while Communicating the Impact of these Initiatives

Develop Future Leaders for Agriculture, Food Systems and Natural Resources

Enhance Visibility while Gaining Recognition as a National Leader in Agriculture, Food and Natural Resources

PERFORMANCE MEASURE:

DOUBLE THE NUMBER OF FACULTY ENGAGEMENTS IN NATIONAL AND INTERNATIONAL LEADERSHIP ROLES

ACHIEVEMENT: CAFNR HR created a faculty leadership institute to encourage professional growth, collaboration across the college. Each participant performed a service project for their unit.



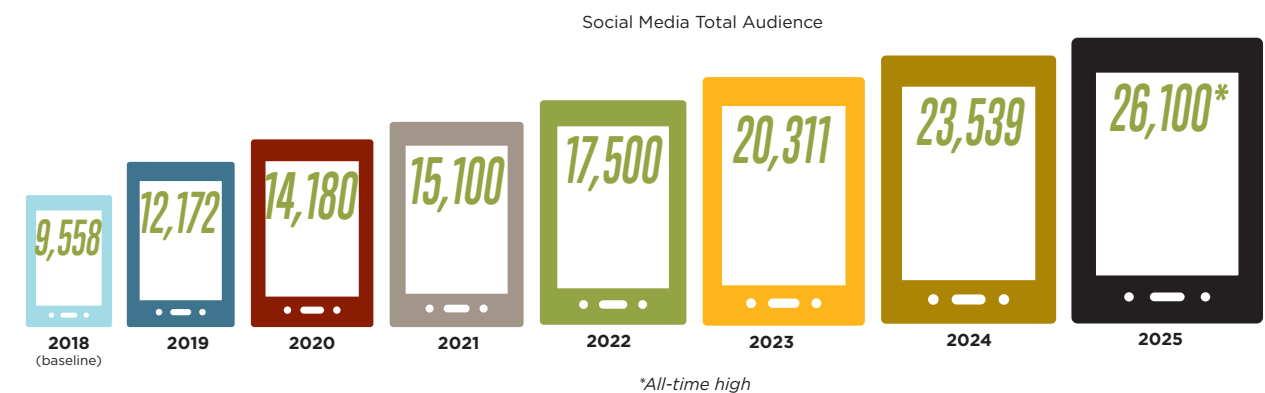
PERFORMANCE MEASURE:

DOUBLE THE REACH AND VIEWS OF CAFNR'S PRESENCE ON SOCIAL MEDIA

ACHIEVEMENTS:

- ▶ Showcased school spirit and event coverage through snapshot-style Instagram and Facebook posts (behind-the-scenes, Q&As, photo recaps).
- ▶ Created successful #CAFNRMOmentum campaign for LinkedIn, supporting strategic plan investments and impact.

SUMMARY: This goal was met and surpassed. The key was focusing on the right content for each social media platform, encouraging new followers by reaching out to those who interacted with content, and creating campaigns to push toward milestone follower numbers.



SHOWCASING OUR LEADERSHIP

(continued)



Mary Hendrickson, professor, Division of Applied Social Sciences, received a Fulbright Specialist Program Award from the U.S. Department of State and the Fulbright Foreign Scholarship Board. Hendrickson is completing a project at the Agricultural University of Iceland that aims to exchange knowledge and establish partnerships benefiting participants, institutions and communities both in the U.S. and overseas through a variety of educational and training activities within agriculture. She was named a Fulbright U.S. Scholar in 2019, spending five months in Iceland teaching courses at the same university.



Cecilia Constantino Rocha, assistant research professor in livestock systems in the Division of Animal Sciences, was named the recipient of the American Society of Animal Science (ASAS) Young Scholar Award. As a component of her award, Rocha presented her talk, "The importance of estrous expression and endometrial function for the pregnancy success in beef cattle," at the 2025 ASAS Annual Meeting. The honor allows the association to highlight the next generation of scientists who will be serving the Society in the future.



Andrew Clarke, associate professor emeritus of food science, received the 2025 Signal Service Fellow Award from the American Meat Science Association for outstanding contributions to the meat industry. The AMSA Signal Service Fellow Award was established in 1956 and is given to members in recognition of devoted service and lasting contributions to the meat industry and to the association.



Felix Fritschi, C. Alice Donaldson Professor in Plant Science and Technology, was named a Fellow of the American Association for the Advancement of Science for contributions to the field of crop physiology. In addition, in 2026 he is serving as President of the Crop Science Society of America, which fosters the vision to improve the world through crop science.



Jeff Wood, assistant professor in the School of Natural Resources, was recognized by agInnovation North Central as recipient of the 2025 agInnovation Early Career Excellence in Agricultural Innovation Award. The honor is given to a researcher who strives to achieve benchmarks including demonstration of high impact of research within their discipline, and sustained record of scholarly productivity.



Kelly Nelson, professor of agronomy in Plant Science and Technology, was named a 2024 American Society of Agronomy Fellow, the highest recognition bestowed by the Society. Members of the Society nominate worthy colleagues based on their professional achievements and meritorious service. Up to 0.3 percent of the Society's active and emeritus members may be elected as Fellows.

RECENT ACCOLADES

Build Greater Awareness of and Participation in CAFNR's Programs of Distinction and Grand Ideas while Communicating the Impact of these Initiatives

PERFORMANCE MEASURE:

DOUBLE THE NUMBER OF CAFNR'S PROGRAMS OF DISTINCTION

ACHIEVEMENTS:

- ▶ Created informational videos and one-pagers about Programs of Distinction.
- ▶ Featured programs prominently on CAFNR website.
- ▶ Invited six new Programs of Distinction in 2024 and 2025 (goal was seven).



Develop Future Leaders for Agriculture, Food Systems and Natural Resources

PERFORMANCE MEASURE:

DOUBLE THE NUMBER OF STUDENTS ENGAGED IN NEW AND EXISTING CAFNR LEADERSHIP PROGRAMS

ACHIEVEMENTS:

- ▶ Litton Leadership Scholars Program develops cohort of at least 20 students each academic year to successfully navigate today's challenges and tomorrow's uncertainty.
- ▶ 40+ CAFNR-specific clubs and organizations, including CAFNR Ambassadors and Student Council, provide engagement and leadership opportunities.



CULTIVATING COMMUNITY



GOAL:

PROMOTE AN INVITING AND COLLABORATIVE CULTURE OF EXCELLENCE

ACHIEVEMENTS:

- ▶ Developed CAFNR Community Cultivator Award to honor those who create and nurture healthy communities within CAFNR.
- ▶ CAFNR Staff Council plans events and supports resources for collaboration, engagement and community across the college, including Dean's Traveling Office Hours, lunch and learns, a celebratory lunch each semester, and awards for staff development.
- ▶ CAFNR Marketing & Communications promotes community by featuring a faculty or staff Q&A in each issue of the Inside CAFNR internal newsletter, in addition to showcasing milestone years of service and a photo gallery of CAFNR faculty and staff events.
- ▶ The Office of the Vice Chancellor and Dean celebrates those who stand out for going above and beyond on our Drive to Distinction with the Driver to Distinction Award.

SUMMARY: This goal will always be part of the heart of CAFNR; our community is a driving force behind everything we do.



CHAMPIONING Global Citizenship & ENGAGEMENT



GOALS:

- Empower CAFNR Faculty, Staff and Students to Engage Globally
- Spearhead Collaborative Education and Training Programs with Communities Around the World
- Engage with Partners on Global Issues and Challenges

CHAMPIONING GLOBAL CITIZENSHIP AND ENGAGEMENT

(continued)

Empower CAFNR Faculty, Staff and Students to Engage Globally

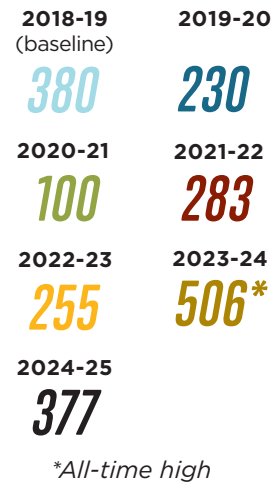
PERFORMANCE MEASURE:

INCREASE INTERNATIONAL ENGAGEMENT LEARNING OPPORTUNITIES FOR STUDENTS BY 10% PER YEAR

ACHIEVEMENTS:

- ▶ Funded two student scholarships to study insect diversity in Costa Rica and water conservation in South Africa.
- ▶ Awarded more than \$60,000 in scholarships for study abroad in 2024-25 academic year.
- ▶ Provided administrative and programming leadership for both Africa Hub and Deaton Scholars Program, which engage students in international activities.

Students participating in study abroad, Deaton Scholars and Africa Hub, per academic year



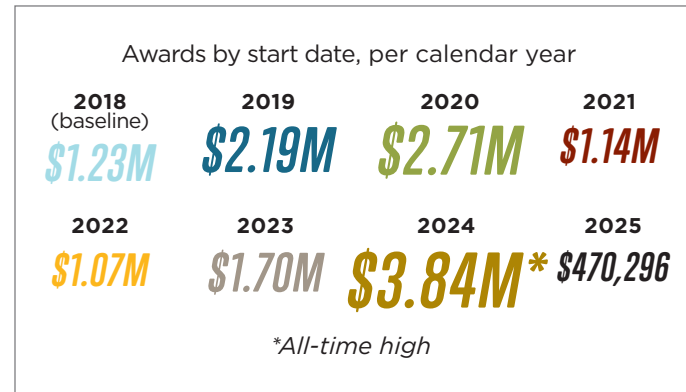
PERFORMANCE MEASURE:

INCREASE SUBMISSIONS OF COLLABORATIVE INTERNATIONAL EDUCATION AND RESEARCH GRANT PROPOSALS BY 10% PER YEAR

ACHIEVEMENT:

- ▶ Awarded eight International Collaboration Grants for MU faculty in 2024, totalling \$32,000. Projects included those in India, Germany, Ukraine, Bolivia, South Africa, Brazil, Japan and Uganda.

SUMMARY: Goals were met in years not sidelined by pandemic travel halts and international programming funding cuts. For example, in 2024, we saw a 212% increase over the baseline.



Spearhead Collaborative Education and Training Programs with Communities Around the World

Engage with Partners on Global Issues and Challenges

PERFORMANCE MEASURE:

DOUBLE CAFNR'S GLOBAL EDUCATION AND TRAINING PROGRAMS PORTFOLIO

ACHIEVEMENTS:

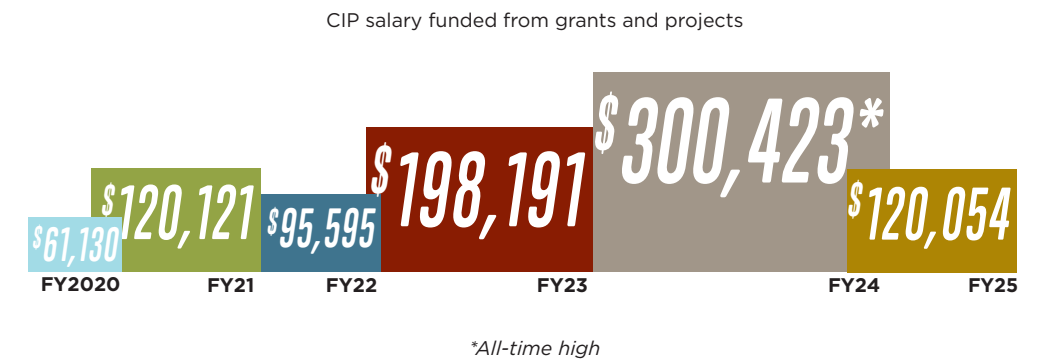
- ▶ Sponsored international programs in food safety and pesticide standards across African continent in collaboration with USDA Foreign Agricultural Service..
- ▶ Led two FAS Scientific Exchange Programs that hosted 12 fellows for three months each; six fellows were West African regulators and scientists, the other six were women from across Africa in food, soil and plant sciences.
- ▶ Supported five Borlaug Fellows and three Cochran Programs in 2024, with a total of 39 fellows.



PERFORMANCE MEASURE:

GROW EXTRAMURAL FUNDING TO A LEVEL THAT ENSURES CAFNR INTERNATIONAL PROGRAMS (CIP) IS SELF-SUSTAINING

ACHIEVEMENT: CIP faculty and staff were investigators on grants totalling \$3.84 million.





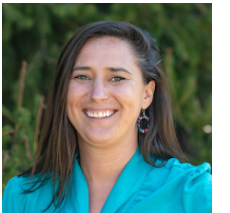
Programs of

CENTER FOR REGENERATIVE AGRICULTURE

The Center for Regenerative Agriculture has 15 active grant projects involving state, regional and national research and extension efforts. The \$10 million USDA-NIFA funded National Cover Crop Variety Development project involves 38 cooperating scientists in 16 states and is developing improved varieties of cover crops to protect and improve soil and profitability. The \$25 million Missouri Conservation Resilient Crop and Livestock (CRCL) Project focuses on helping Missouri farmers with conservation practices, leading to adoption of improved farming practices on over 300,000 acres in the state.

Current Grant Funding:
\$47.6 MILLION

Kelly Wilson, associate director of the Center for Regenerative Agriculture, is coordinating a new project aimed at helping women landowners with regenerative agriculture approaches.



- ▶ More than 1,200 Missouri farmers participating in the Missouri CRCL project
- ▶ New conservation practices implemented on over 10,000 fields and pastures in Missouri
- ▶ More than 40 presentations given by center staff in 2025
- ▶ More than 15 new research and extension publications

CENTER FOR TREE-RING SCIENCE

The Center for Tree-Ring Science (CTRS) continues to grow in capacity and distinguish itself as a research leader in forestry, wildland fire and climate dynamics. New research addresses novel effects of wildfires on wood properties, characterization of emerging forest pathogens and flash droughts in the agricultural Midwest. At the same time, CTRS is working towards increasing awareness of its program and capabilities, strategic planning including gift raising, and improved facilities for its specimen archive. Increased awareness has included social media campaigns, regional radio programs and workshops.

Current Grant Funding:
\$551,840

Mike Stambaugh, associate professor, School of Natural Resources, and director, CTRS, participated in CAFNR's Leadership Program 2024-25.



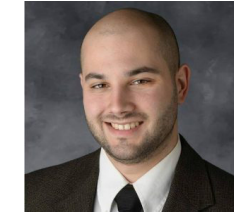
- ▶ 3 post-doctoral fellow hires, 1 staff hire
- ▶ 4 training workshops, 11 oral presentations
- ▶ Prestigious journal articles in Nature Communications, Global Ecology and Biogeography



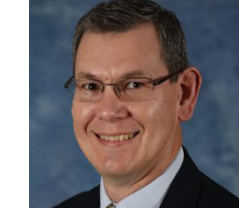
FINANCIAL RESEARCH INSTITUTE

For more than 35 years, the mission of the Financial Research Institute has been to facilitate effective public utility regulatory policy and decision-making by providing a neutral environment for stakeholders in regulated public utility industries to come together to examine, understand and debate current issues relating to public utility policy. Historically, FRI has accomplished that mission by focusing on symposia, webinars and executive education programs delivered to state regulators, regulatory staff, industry personnel and state consumer advocates.

Current Grant Funding:
\$250,000



"Powering Rural Prosperity: The Local Economic Impact of Renewable Wind and Solar," was a finalist for the North American Regional Science Council's Stephan Weiler Award for Research Excellence in Regional and Rural Development. Authors include Austin Landini, research consultant; Adriene Ohler, FRI associate director and associate professor; and Mike Sykuta, FRI executive director and associate professor.



- ▶ Added regulators from three new states to Advisory Board
- ▶ Two signature programs hit registration records



FOOD AND AGRICULTURAL POLICY RESEARCH INSTITUTE

The Food and Agricultural Policy Research Institute (FAPRI) provides analysis of issues related to agricultural markets and policies to government and private decision makers, fellow scientists and the public. In addition to its annual outlook for the farm economy, other recent output has included analysis of how farm bill options would affect the agricultural sector. In 2024, FAPRI launched an undergraduate modeling laboratory; faculty taught six classes in the Division of Applied Social Sciences. Institute faculty expanded capacity for state-level farm income outlook and analysis.

Current Grant Funding:

\$3.7 MILLION

- ▶ 24 publications including articles, reports and refereed journals in 2025
- ▶ Faculty frequently cited by national and international media
- ▶ 81 presentations to a wide range of audiences; 38 were in-state agribusiness and policy audiences
- ▶ Researchers continued collaborations with the European Commission, the OECD (Organisation for Economic Co-operation and Development) and FAO (Food and Agriculture Organization of the United Nations), and in countries from South Africa to South Korea



Pat Westhoff announced his retirement as director of FAPRI after 15 years at the helm, effective March 1, 2026. Mizzou has hired Seth Meyer, most recently the USDA's chief economist, as the new director of FAPRI; he returned to the University of Missouri Jan. 1, 2026.



PROGRAMS OF DISTINCTION

(continued)

INTERDISCIPLINARY PLANT GROUP

The Interdisciplinary Plant Group (IPG) is a community of Mizzou faculty, students, postdoctoral fellows and professionals pursuing novel, creative and transformative ideas in the field of plant biology. It comprises 58 faculty-led teams (plus 19 emeriti members) from multiple units, colleges and the USDA. In 2025, IPG held its 41st symposium, focused on "Root Biology." The 42nd symposium will focus on "Advances in Plant Biology," and will also serve as the annual meeting of the American Society of Plant Biologists Midwest Chapter.

The Interdisciplinary Plant Group (IPG) is a community of Mizzou faculty, students, postdoctoral fellows and professionals pursuing

Current Grant Funding:

\$16.4 MILLION

Gary Stacey, Curators' Distinguished Professor of Plant Sciences & Technology, received the Stephen Hales Prize from the American Society of Plant Biologists.



- ▶ High-profile publications in Proceedings of the National Academy of Sciences, Plant Physiology, New Phytologist and Nature Plants.
- ▶ In 2025, IPG faculty received 9 national/international awards and 14 from MU, the UM System and CAFNR

GRADUATE INSTITUTE OF COOPERATIVE LEADERSHIP

The Graduate Institute of Cooperative Leadership (GICL) contributes to the long-term success of agricultural cooperatives through the generation of new knowledge and development of research-based executive-level leadership programs targeting board and management leaders. In 2025, GICL met this goal through programs like

Current Grant Funding:

\$10 MILLION

Summer Institute, Cooperative Advantage and its Engel Workshop, and by curating and delivering unique regional and national workshops on cooperative governance, finance and strategy. GICL reaches cooperative leaders - board and management - through programs, extension and outreach efforts. Those leaders are responsible for the success of organizations that, in turn, produce positive impacts for their tens of thousands of farmers and ranchers who are members of the co-op and in the rural communities in which they live and their cooperatives operate.



In 2025, GICL Executive Director Keri Jacobs expanded GICL's reach and impact by engaging as host and creator of the Build Better Boards podcast. To date, the podcast has had more than 11,000 total plays, with 270 followers and 70 email subscribers.

- ▶ 67 senior-level employees from 24 of nation's largest and most innovative agricultural cooperatives attended Summer Institute
- ▶ 58 employees from 11 agricultural cooperatives or associations participated in The Cooperative Advantage Series: Fundamentals for Employees seminar
- ▶ 4 keynote style presentations at national and regional cooperative conferences
- ▶ 27 regional invited talks, keynotes or workshops with local, regional, and national cooperative audiences

INTERDISCIPLINARY REPRODUCTION & HEALTH GROUP

Challenges to efficient reproduction occur in all species and are prevalent in farm animals, humans and endangered species in the wild. In agriculture, reproductive efficiency is the most important factor affecting farm profitability. The IRHG addresses grand challenges in science and society, contributes to economic development of Missouri and the nation, and aligns with CAFNR's strategic plan. Focus areas of research and training in the IRHG are integrative, multidisciplinary, and encompass domestic animals, humans, laboratory animals, aquatic species and wildlife.

Challenges to efficient reproduction occur in all species and are prevalent in farm animals, humans and endangered species in the wild. In agriculture,

Current Grant Funding:

\$18.4 MILLION

Areas of expertise include applied reproduction, assisted reproduction techniques, contraception, developmental biology, endocrinology, epigenetics, genomics, gamete biology, genetic engineering, gonadal function, pregnancy, stem-cell biology, systems biology and toxicology.

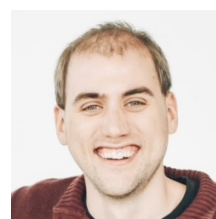
- ▶ Approximately 60 faculty members located primarily in CAFNR's Division of Animal Sciences, the College of Veterinary Medicine and the School of Medicine (OB-GYN)
- ▶ 69 research publications; 3 CAFNR awards and 4 state or national awards in 2020

MISSOURI CLIMATE CENTER

In addition to Zack Leasor, director of the Missouri Climate Center, the MCC has one full-

time senior director of program operations, seven part-time staff, one master's student and four undergraduate student research assistants. The Center also co-supervises two full-time research scientists in collaboration with the Missouri Resource Assessment Partnership. The Missouri Mesonet is the primary feature of the Center. Data is collected daily from a statewide network of 47 automated weather stations. Historical data are archived and provided on a web server for free unlimited public access. Primary monitoring variables include temperature, relative humidity, wind speed, wind direction, barometric pressure, solar radiation, soil temperature and rainfall.

Current Grant Funding:
\$2.2 MILLION



Director Zack Leasor co-hosted the American Association of State Climatologists Annual Meeting with Kansas State University colleagues in June 2025. Leasor is also an assistant professor in the School of Natural Resources and the state climate extension specialist.

- ▶ **Upgraded numerous Missouri Mesonet stations for soil monitoring in collaboration with the Missouri Department of Natural Resources in 2025**
- ▶ **More than 1,000 Missouri farmers receive Horizon Point location-based climate and weather reports via email**
- ▶ **280 unique media mentions in 2025 with readership of more than 39 million**
- ▶ **Conducted 23 extension program activities in 2025 with nearly 4,000 participants, in addition to guest lectures, external partner presentations and more**
- ▶ **Coordinated the state's weekly recommendations to the United States Drought Monitor**

Current Grant Funding:
\$12 MILLION

The Forage-Livestock Group at the University of Missouri advances research, education and extension activities supporting Missouri's farmers and ranchers through activities like the Missouri

Grazing Schools, Forage-Livestock Townhall Series and Mizzou Feedlot School. In 2024, the Group integrated Mizzou Digital Agriculture Research and Extension Center (DAREC) tools, such as PaddockTrac, autonomous tractors and precision irrigation systems. In addition, faculty participated in USDA Climate-Smart Commodities projects to enhance silvopasture systems, native grass resilience and methane reduction strategies.

- ▶ **Contributes more than \$200 million annually to Missouri's economy**
- ▶ **Partnerships enhance soil health, water conservation and carbon sequestration through improved forage management**



With the retirement of co-director Craig Roberts, Eric Bailey, associate professor of animal sciences & MU Extension state beef nutrition specialist, serves as director.

MU FORAGE-LIVESTOCK GROUP

PROGRAMS OF DISTINCTION

(continued)

MU LIVESTOCK ENGINEERING TEAM

The program continues to lead the world in genetic engineering in swine; most of this emphasis is biomedical. The MULE Team works to address critically needed biomedical models of human disease and allows researchers an insight into ongoing studies within animal sciences at Mizzou. In a ground-breaking step toward understanding, and ultimately preventing

Alzheimer's disease, researchers have created a novel genetically engineered pig model that mirrors a key genetic mutation found in humans with early-onset Alzheimer's.

Current Grant Funding:
\$40 MILLION

Bethany Redel, adjunct assistant professor, animal sciences, was lead author on a paper receiving "cover of the month" honors in The CRISPR Journal: "Novel off-targeting events identified after genome wide analysis of CRISPR/Cas9 edited pigs."



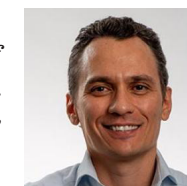
- ▶ **More than 10 peer-reviewed journal publications and 10 issued abstracts in 2025**
- ▶ **Prestigious journal articles included those in Biology of Reproduction, Reproduction and Fertility, the Journal of Immunology, and Human Gene Therapy**
- ▶ **More than 10 presentations, including one international**

SHOW-ME-SELECT REPLACEMENT HEIFER PROGRAM

The Show-Me-Select® Replacement Heifer Program is an on-farm beef heifer development and marketing program heavily supported by beef cattle extension faculty in the Division of Animal Sciences. Show-Me-Select exemplifies the "benchtop to barnyard" success of our Division of Animal Sciences in linking fundamental basic science with translational research and extension efforts. 2025 saw continued adoption of advanced reproductive technologies, such as artificial insemination (AI), with 82% of enrolled heifers receiving at least one AI service. Heifers carrying AI-sired pregnancies sold at an average premium of \$124 compared with those carrying natural-service pregnancies, indicating buyer recognition of the added value of AI and the superior genetics used in these programs.

Current Grant Funding:
\$2.9 MILLION

Thiago Martins, assistant research and extension professor of beef reproduction, organized a two-week immersive "Beef Camp" collaboration to expose Brazilian beef industry leaders to the U.S. beef production system.



- ▶ **4 publications, 22 presentations, 8 popular press articles in 2024**
- ▶ **4,306 heifers enrolled in the program**
- ▶ **Heifers marketed as Show-Me-Plus increased by 326% relative to 2024**
- ▶ **1,690 heifers marketed through sanctioned sales**
- ▶ **\$7.04 million in gross sales of heifers marketed through sanctioned sales in 2025**
- ▶ **5 peer-reviewed publications; 4 international invited talks, 8 national and 8 in-state; 5 webinar/podcasts; 12 popular press articles**

**UNIVERSITY OF
MISSOURI CENTER FOR
AGROFORESTRY**

The University of Missouri Center for Agroforestry (UMCA) saw another successful year in 2025, continuing strong research, outreach and education programming in support of an expanding agroforestry stakeholder base. Data from the 2022 USDA Census of Agriculture shows over 900 Missouri farms now growing emphasized specialty crops (up from 670 in 2017). Chestnut and elderberry in particular are growing considerably, with 5,883 and 1,837 new acres in the US from 2017 to 2022 (>2x growth), while maintaining high farm gate prices. Core research programming at UMCA has laid the groundwork for these new industries in our region. In addition, the Center patented the first black walnut cultivar, marking a milestone for Missouri's tree nut industry. The UMCA® "Hickman" Walnut was developed by Mark Coggeshall, retired faculty member, and Ron Revord, associate professor. Metabolomics research, led by Chung-Ho Lin, research professor, has experienced extraordinary growth with support from over a dozen agencies and foundations to advance programs across four areas that address public, human and environmental health challenges.

- ▶ **23 peer-reviewed publications, 57 presentations**
- ▶ **700 attendees at 2025 Agroforestry Symposium, 50 Agroforestry Academy trainees, 2,000 attendees at Missouri Chestnut Roast**
- ▶ **44 agroforestry graduate students (15 are new grad students in 2025)**



Ron Revord, associate professor, School of Natural Resources, has been named director of the University of Missouri Center for Agroforestry.

**Current Grant Funding:
\$20.8 MILLION**

CAFNR CENTER RECEIVES PROGRAM OF DISTINCTION DESIGNATION, JOINS 12 OTHERS IN THE COLLEGE

The National Center for Applied Reproduction and Genomics (NCARG) is joining the ranks of Mizzou's College of Agriculture, Food and Natural Resources' (CAFNR) Programs of Distinction, a designation that points to programs that help define CAFNR's impact on Missouri's agricultural and natural resources economies and provide understanding for how CAFNR is addressing the challenges presented in our state.

NCARG stems from the CAFNR Grand Idea "Center for Genomics Reproduction and Health Innovation," focusing on two powerful tools — reproductive technologies and genomics — which can greatly improve beef herd health, productivity and profitability.

"NCARG is highly-deserving of this honor," said Shibu Jose, CAFNR associate dean for research. "I am continually amazed and incredibly proud of the work of our faculty, staff and students here in CAFNR. The faculty leading these programs exemplify a drive to answer questions and solve problems faced by Missourians and beyond, and I am thankful for their dedication and the legacies they are building."

NCARG, like the 12 existing Programs of Distinction, met a rigorous set of criteria to earn the designation. These are research, teaching and extension programs that stand out among the many nationally and internationally recognized programs within CAFNR and align with the college's Drive to Distinction strategic plan.

The center is directed by Jamie Courter, assistant professor of animal sciences. Courter is pictured above at the Northern Missouri Research, Extension and Education Center Field Day.

NCARG is a hub for innovation and education in the U.S. beef industry, created to help producers, veterinarians and allied industry apply cutting-edge science to real-world cattle operations. While



technologies have been available for some time, many producers and practitioners haven't had access to the training or economic data needed to use them effectively. NCARG addresses this gap by combining scientific research with hands-on education and outreach.

"As a newer faculty member, joining the NCARG team has been a wonderful and exciting experience," Courter said. "This platform allows for seamless education and integration of reproductive and genomic technologies that are pivotal to the continued success of the beef industry. I very much am looking forward to contributing to these efforts."

Faculty in the Division of Animal Sciences and the College of Veterinary Medicine work directly with veterinarians, cattle producers, students and industry professionals to teach practical skills. Educational offerings through NCARG also provide insight on how to apply these tools for better breeding decisions and herd management. By showing the economic value of using these technologies, NCARG helps beef operations grow stronger and more sustainable. The Center also develops curriculum and training programs — both in-person and online — to ensure that all parts of the beef cattle sector can benefit.

The Creed Barn at the Beef Research and Teaching Farm was recently remodeled to facilitate NCARG educational programming.

GRAND IDEAS



Complementing the Programs of Distinction, CAFNR also pursued **Grand Ideas**. These initiatives focused on solving big societal problems and bring distinction to the college. In this section are recent advancements in these vital, forward-thinking areas of research, teaching and extension.

HEALTHY ECOSYSTEMS FOR LIFE ON PLANET (HELP)

The **Johnny Morris Institute of Fisheries, Wetlands and Aquatic Systems** at the University of Missouri's College of Agriculture, Food and Natural Resources (CAFNR) selected Rick Relyea as its first director, starting July 1, 2025. In addition, Relyea assumed the William J. Rucker Professorship in Fisheries and Wildlife, in the School of Natural Resources.

"I am excited to be working with such an impressive partnership of conservation organizations," Relyea said of his appointment. "The power of this partnership lies in the outstanding scientists and conservationists who are contributing their talents to make the Johnny Morris Institute of Fisheries, Wetlands and Aquatic Systems a national center for education, research and resource management."

Relyea joined Mizzou from Rensselaer Polytechnic Institute (RPI) where he was David M. Darrin '40 Senior Endowed Chair in the Department of Biological Sciences and acting department head of Earth & Environmental Sciences. He had also served as director of both the Darrin Freshwater Institute at RPI and of The Jefferson Project, a public-private collaboration to protect fresh water using advanced technologies. His specialization is in freshwater ecosystems, and he has been involved in education, mentoring, outreach and research throughout his career.

"Dr. Relyea brings a wealth of experience in running and revitalizing large operations similar to what our Institute aspires to be," said Patrick Market, director of the School of Natural Resources. "I am confident in his leadership and his ability to help us create a sound foundation for the Institute for generations to come."



His research grant funding has totaled more than \$10 million, including awards from the National Science Foundation and for The Jefferson Project, and he has published nearly 220 peer-reviewed papers and been an invited speaker across the globe. Relyea is the author of the leading textbooks in Ecology, AP Biology and AP Environmental Science. At RPI, he collaborated across disciplines to communicate the mission of the Darrin Freshwater Institute through the arts, including immersive educational games.

His lab group is a world leader in researching freshwater salinization, invasive species, pesticide ecotoxicology, disease ecology, forest inputs to wetlands, predator- and competitor-induced plasticity, freshwater monitoring and harmful algal blooms.

"Dr. Relyea's broad, comprehensive ecological interests fit well into our current programs in the School of Natural Resources. He is the right person to lead this important Institute for Missouri," said Christopher Daubert, CAFNR Vice Chancellor and Dean.

The Johnny Morris Institute of Fisheries, Wetlands and Aquatic Systems was established through a public-private partnership in March 2023, and that fall was named for Morris, founder of Bass Pro Shops, headquartered in Springfield, Missouri. The Institute supports cultivating conservation professionals through workforce development, research and public policy.

The Institute is a partnership with the Missouri Department of Conservation (MDC), the Missouri Conservation Heritage Foundation (MCHF) and CAFNR, and was made possible through an MCHF endowment. MCHF has a mission to enhance the conservation of Missouri's forest, fish and wildlife resources.

"On the education front, we will train undergraduate and graduate students to become the next generation of scientists and resource managers for the Missouri Department of Conservation and other employers throughout the country," Relyea said. "On the research front, we will work with public and private organizations to help improve the management of fisheries, wildlife and aquatic ecosystems. Finally, we will conduct public outreach to inspire families to appreciate and value the precious natural resources of our region."

PRECISION FOOD FOR HEALTH (PFH)

The Division of Food, Nutrition and Exercise Sciences works with MU Extension to provide a unique service to mid-Missouri. **NutriZou** is a free nutrition coaching services clinic where dietetic students provide nutrition coaching appointments to community members under the supervision of a Registered Dietitian Nutritionist. The program helps community members and their families reach their health goals using nutrition and food.

Students train in the **MU Nutritional Center for Health (MUNCH)**, which includes a metabolic kitchen, a teaching kitchen and an observational food-choice behavior lab, as well as **MU Physical Activity and Wellness (PAW)**, a state-of-the-art clinical research facility for the assessment of physiological and behavioral health-related outcomes. The facilities contain a full suite of analytical instruments for conducting body composition analysis, ultrasound, autonomic nervous system flow, and metabolic and resting metabolic rate analysis, allowing studies of the interactions of exercise and diet on metabolism, human performance and development or prevention of disease.

GRAND IDEAS

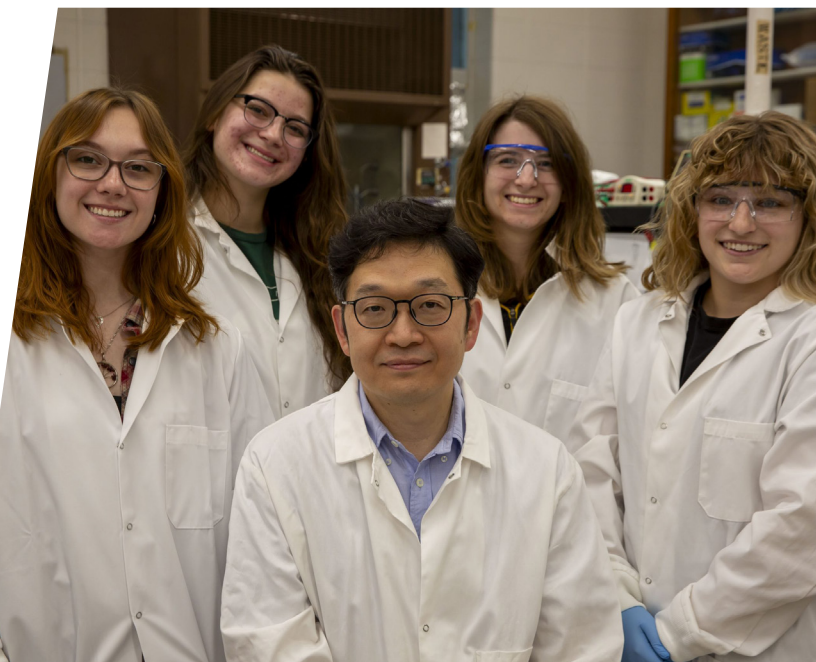
(continued)

PRECISION MODELS FOR HEALTH (PMH)

Work performed at Mizzou's NIH-funded **National Swine Resource and Research Center** not only aids in treatment of diseases in pigs, but also translate to work with human diseases, too.

Most recently, in a ground-breaking step toward understanding — and ultimately — preventing Alzheimer's disease, an interdisciplinary research team, pictured below and led by Kiho Lee, associate professor in the Division of Animal Sciences, has created a novel genetically engineered pig model that mirrors a key genetic mutation found in humans with early-onset Alzheimer's.

Unlike traditional mouse models, pigs share greater genetic, physiological and anatomical similarities with humans, especially when it comes to brain structure and size. As the models age, the Mizzou team is tracking brain changes using non-invasive imaging techniques in collaboration with researchers at the University's **NextGen Precision Health building**. The model can help researchers see what's happening in the brain before diagnosis — something that could eventually help early intervention — and maybe even prevention. Mizzou's infrastructure allows this long-term tracking of disease progression, testing of treatments and studying the safety of potential drugs before they reach patients.



SHOW-ME-STATE FOOD, BEVERAGE AND FOREST PRODUCTS MANUFACTURING INITIATIVE

In addition to **The Michael L. Parson Meat Science Education and Training Laboratory**, which the University of Missouri broke ground on in April 2025 (see page 9), CAFNR is remodeling a large space in the Agricultural Engineering building on campus to serve as the new **Grape and Wine Fermentation Center**.

A major need of the wine industry is workforce development. To serve this need, the new commercial fermentation sciences center will replicate the machines, fermentation tanks, pumps, barrels and bottling all found within a typical commercial wine production facility. This allows Mizzou Grape and Wine Institute faculty to train and educate new winemakers, winery owners, vineyard managers and stakeholders in a setting they will encounter in any commercial wine production facility to better serve them in the future.

The overall goal is to add value to Missouri agriculture commodities, via workforce development, research into best practices and new varieties for the state. This in turn will provide jobs within the agricultural sector and add to Missouri's agricultural economic contribution, which is currently more than \$93 billion.

SMART FARMS, SMART AGRICULTURE: THE DIGITAL AGE OF FARMING

Researchers at the University of Missouri have found a mix of drones and AI can help farmers measure the health of their corn more efficiently.

Instead of relying on handheld devices — which are slow and impractical for larger fields — the researchers surveyed corn fields in mid-Missouri using drones equipped with special cameras to capture images and data. By analyzing the images and data using artificial intelligence, the team was able to accurately estimate chlorophyll levels — a key indicator of corn health.

The drone's special cameras capture different wavelengths of light that plants reflect, such as near-infrared light and red-edge light, which are invisible to

the human eye but closely linked to plant health.

After combining these drone images with soil data, the Mizzou researchers used a type of AI known as machine learning to quickly predict the chlorophyll content in the corn leaves of the entire field with great accuracy.

The study was led by Fengkai Tian, a Mizzou doctoral student who works in the lab of Jianfeng Zhou, associate professor in the Division of Plant Science and Technology.

"The goal of our lab is to use innovative technologies to improve the efficiency of agricultural systems," Zhou, who is the co-director of research for Mizzou's **Digital Agriculture Research and Extension Center**, said. "Nitrogen application has been one of the biggest challenges facing corn farmers. We want to help farmers increase their yields while using fewer chemicals that can impact the environment. Precision agriculture can help farmers apply nitrogen at the right time to the right location in the right amount."

Tian is hopeful that drones can give farmers a tool to make more informed decisions surrounding crop management — and ultimately maximize crop yield while saving time and money and protecting the environment.

“The goal of our lab is to use innovative technologies to improve the efficiency of agricultural systems.”



"Going forward, farmers could potentially contract with agriculture technology companies who can fly the drones and process all the data so the farmers can benefit from the technology without having to be experts in it themselves," Tian said.

Tian added that while this study focused on corn, the innovation of combining drone imagery with machine learning can eventually help inform farmers about the health of other crops, including soybean and wheat.

"Estimating corn leaf chlorophyll content using airborne multispectral imagery and machine learning" was published in *Smart Agricultural Technology*. The study was a collaboration between Mizzou and the Agricultural Research Service, the chief scientific research agency for the United States Department of Agriculture.

Zhou's interdisciplinary research team includes experts in statistics, computer science, artificial intelligence, mechanical engineering and plant sciences, positioning the university as an epicenter for innovation in precision agriculture.

FUELING OUR FUTURE

Final Report for the CAFNR Strategic Plan:
Drive to Distinction (2019-2025)



College of Agriculture,
Food and Natural Resources

University of Missouri

cafnr.missouri.edu
573-882-3846

Office of the Vice Chancellor and Dean
College of Agriculture, Food and Natural Resources
2-69 Agriculture Building
Columbia, MO 65211

MU: An equal opportunity/ADA institution.

