

Booklet of Awards & Schedule of Events

OKLAHOMA STATE SCIENCE &
ENGINEERING FAIR



March 7, 2025

2024-2025 Oklahoma State Science & Engineering Fair Sponsors and Donors

Thank you to the donors and sponsors who make OSSEF possible and who inspire STEM learning and curiosity among Oklahoma's young people.



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(Individual cash & in-kind donations of \$1500-\$2499)

Scott & Lisa Huling

(Individual cash & in-kind donations of \$50-\$249)

Kayleen Sugianto

The MANY judges who donate their time and expertise to interviewing students and evaluating projects.

The MANY other volunteers who help with project review, material preparation, set-up, registration, STEM activities and countless other vital tasks.

OSSEF would not be possible without them!

*Thank
you!*

March 7, 2025



Wes Watkins Center (WWC)

OSU Stillwater Campus

(N. Washington St. & W. Hall of Fame Ave.)

SCHEDULE OF EVENTS

Friday, March 7

7:30AM - 9:30AM

Student Check-in, Display & Safety Inspections, Project set-up,

Wes Watkins International Center (WWC) Lobby, Exhibit Hall

9:45AM - 9:55AM

Student Welcome

Junior Division - WWC 108; Senior Division - WWC 109

10:00AM - 12:30PM

Judging

WWC - Exhibit Hall

12:30PM - 1:45PM

Lunch Break

1:30PM

Call-backs for ISEF Finalist Interviews announced

1:45PM - 2:45PM

ISEF Finalist Interviews (Senior Division only) – WWC - 109

1:45PM - 2:30PM

Open House (public viewing of projects) – WWC - Exhibit Hall

3:15PM - 4:15PM

Science Fair Fair (STEM activities event) – Noble Research Center (NRC)

4:30PM - 5:45PM

Awards Ceremony – WWC - Exhibit Hall

Note: **Senior Division** ~ high school; **Junior Division** ~ middle school

2025 Awards Ceremony

Oklahoma State Science & Engineering Fair

Friday, March 7



Steven Bond

**Ethnobotanist and
Restoration Ecologist**



Keynote Speaker

As a child, Bond regularly visited his great-grandparent's subsistence farm in Wister, Oklahoma developing a passion for all things nature and farming. Undergraduate at SWOSU, where he received a double major in Biology and Environmental Chemistry, enriched with research in the field of Biochemistry and Entomology. Graduate studies at OSU began in Botany but were redirected towards Biosystems & Agricultural Engineering yielding a M.S. in the field of Environmental Science with a specialty in Watershed Resource Management. In 2008, he began working for the Chickasaw Nation as their Ethnobotanist. There, he formed the Ecological Resources and Sustainability Program. In 2011, Bond began working with Intertribal Agriculture Council providing technical assistance to all the tribes in Utah and Arizona while maintaining work as an Ethnobotanist. In spring 2013, he returned to Oklahoma to work the Eastern Oklahoma Region. Now, Bond principally works as a consultant in Ecological Restoration and is developing a specialty operation to supply native plant species for restoration, adaptation, and mitigation projects.

OSSEF Category Awards

Un-sponsored category awards are supported by operational funds donated by various entities.

The following prizes are awarded in each of the competition categories:

First Place: Gold medallion

Second Place: Silver medallion

Third Place: Bronze medallion

2025 Categories

Junior and Senior Divisions

Animal Sciences

Behavioral & Social Sciences

Biochemistry & Chemistry

Biomedical & Health Sciences

Earth & Environmental Sciences

Engineering

Mathematics & Computer Sciences

Microbiology

Physics & Astronomy

Plant Sciences

American Psychological Association (APA) Award

Recognizes outstanding research in psychological science under the category of Behavioral and Social Sciences.

Junior or Senior Division **Awardees (2):** APA Certificate, one-year student membership and more.

Association for Women Geoscientists Award

For female-led projects that best exemplify high standards of innovativeness and scientific excellence in the geosciences.

Junior or Senior Division **Awardees (2):** Certificate and letter from the association

Department of Defense STEM Leadership Prize

Recognizes a project that demonstrates excellence in STEM, as well as problem-solving skills, leadership skills, and determination to overcome challenges throughout the research project.

Junior Division **Awardees (1):** Certificate and \$100

Environmental Stewardship and Involvement Award

Recognizes research that exemplifies a passion for wildlife, improvements in conservation efforts, and represents the broad involvement of persons in the field of science, conservation, and/or wildlife biology.

Junior or Senior Division **Awardees (1):** Certificate, \$50, and wildlife plush

Huling Environmental Excellence Award

This scholarship supports and acknowledges the accomplishments of a high school science fair project that investigates topics in the field of environmental science.

Senior Division **Awardees (1):** \$1,500 scholarship to the student's school of choice

Lemelson Early Inventor Prize

For an excellent project which demonstrates problem-solving, empathy, and entrepreneurial and environmental-friendly thinking.

Junior Division **Awardees (1):** Certificate and \$100

NASA Earth System Science Award

For projects that best demonstrate insight into Earth's interconnected systems and incorporate study of different components of Earth systems, their interactions and their evolution over time.

Junior or Senior Division **Awardees (2):** Certificate and invitation to webinar with a NASA scientist

NOAA Taking the Pulse of the Planet Award

For projects whose research emphasizes NOAA's mission to understand and predict changes in Earth's environment and conserve and manage coastal and marine resources.

Junior or Senior Division **Awardees (2):** Certificate and letter of congratulations

Office of Naval Research Award

Recognizes a project with a Naval-relevant science and engineering focus.

Junior and Senior Division **Awardees (1):** Certificate, letter, medallion, cash prize (Senior Division only)

Oklahoma Chapter of the American Chemical Society Award

Recognizes outstanding projects in the broad field of chemistry.

Junior and Senior Division **Awardees (6):** Certificate and cash prize

Regeneron Biomedical Science Award

Awarded to an exceptional student scientist who not only demonstrates an impressive command of biomedical science and research but also embodies Regeneron's core values and behaviors, known as The Regeneron Way.

Senior Division

Awardees (1): Certificate and \$375 cash prize

RICOH Regional Sustainable Development Award

For projects whose principles and technical innovations offer the greatest potential for increasing our ability to grow environmentally friendly and socially responsible businesses.

Junior or Senior Division

Awardees (2): Certificate and letter

Society for In Vitro Biology Award

For the most outstanding 11th grade students exhibiting in the areas of plant or animal in vitro biology or tissue culture.

Senior Division

Awardees (2): Certificate and membership in SIVB

Oklahomans for Excellence in Science Education (OESE) Award

This educational organization recognizes projects that best display sound science involving evolution or climate change.

Junior and Senior Division

Awardees (2): Certificate and \$100 (Teachers receive \$100 and OESE membership)

United States Air Force Award

Recognizes students for their research in science or engineering research of interest to the Air Force.

Senior Division

Awardees (4): Certificate and award package

United States Metric Association Award

Recognizes projects that involves a significant amount of quantitative measurement, and best use the Metric System.

Senior Division

Awardees (2): Certificate and 1-year membership to the US Metric Association

Water Environment Federation/U.S. Stockholm Junior Water Prize

Recognizes students for their research involving water quality.

Senior Division

Awardees (2): Certificate, student membership, advance to the national competition.

WonderMaker Award

Given to projects that inspire curiosity, creativity, and new ways of thinking. The award recognizes students who push the boundaries of imagination and scientific inquiry.

Junior and Senior Division

Awardees (2): Certificate and StillWonder goodie bag

Yale Science and Engineering Association, Inc. Award

Recognizes the most outstanding 11th grade students for their research in science or engineering.

Senior Division

Awardees (2): Certificate and e-book

OSU Department of Animal and Food Sciences Scholarship

For outstanding work in agricultural and/or animal sciences.

Senior Division **Awardees (3):** \$1,500 scholarship

OSU Department of Biochemistry and Molecular Biology Scholarship

Recognizes a student conducting research on topics related to biochemistry and molecular biology.

Senior Division **Awardees (1):** \$500 scholarship

OSU Department of Plant and Soil Sciences (Plant Sciences) Scholarship

Recognizes Senior Division student(s) in the category Plant Sciences.

Senior Division **Awardees:** \$2,000 scholarship

OSU Department of Plant and Soil Sciences (Earth & Environment) Scholarship

Recognizes Senior Division student(s) in the category Earth & Environmental Sciences.

Senior Division **Awardees:** \$2,000 scholarship

OSU College of Engineering, Architecture, and Technology Scholarship

Recognizes top projects relevant to the College with a scholarship upon matriculation in a CEAT degree program.

Senior Division **Awardees (3):** \$2,000/\$3,000/\$4,000 scholarship

OSU Discovery Scholarship

Awards OSU scholarships to all first place category winners at OSSEF.

Junior or Senior Division **Awardees:** \$2,500 scholarship to any major at OSU

Thermo Fisher Scientific Junior Innovators Challenge

The nation's premier STEM research competition for 6th, 7th, and 8th grade students.

Junior Division **Top 10% of Projects:** Certificate; nomination for national competition

OSSEF Representatives to the International Science and Engineering Fair (ISEF)

Top projects will be named ISEF Finalists and represent Oklahoma at ISEF in May 2025

Senior Division **ISEF Finalist Award:** Expense paid trip to Columbus, OH to compete in ISEF
*awarded to top placing individual or team projects;
up to four projects will advance)*



J. Kevin Stitt
Office of the Governor
State of Oklahoma

To the Competitors of the Oklahoma State Science and Engineering Fair,

Congratulations on qualifying for this year's Oklahoma State Science and Engineering Fair! This accomplishment reflects your dedication, curiosity, and passion for scientific discovery.

Your hard work not only brings pride to your school and community, but it also sets an inspiring example for others to pursue their own potential. Your efforts are proof that the future of innovation lies in the hands of curious, driven minds like yours.

I commend you for your persistence and encourage you to continue exploring new ideas, pushing boundaries, and striving for excellence. Your journey is just beginning, and I am excited to see where your talents will take you.

Best wishes for continued success and a bright future ahead.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Kevin Stitt".

J. Kevin Stitt

Governor of Oklahoma





House of Representatives
STATE OF OKLAHOMA

February 27th, 2025

Dear Students,

It is my pleasure to welcome you to the 2025 Oklahoma State Science and Engineering Fair. Your dedication, hard work, and perseverance has paid off. You have made your family, your school, and your community very proud. The key to Oklahoma's future lies in the hearts and minds one of its greatest resources, its young people like you.

This year's OSSEF is like no other. It is full of bright students showcasing their ideas and discoveries to further the studies of science and engineering. The fair's history is rich, filled with incredible young people continuing to keep the public informed of scientific achievements, as it was the goal from the start in 1921. From Philadelphia to Japan to Oklahoma City, students continue to raise the bar, ask meaningful questions, and share their knowledge with their community and beyond. This year is no different.

Congratulations to every one of you that has made it here to OSSEF. It is my hope that you have fun while learning, making 2025 the best year yet for OSSEF and Team Oklahoma. Your time preparing, finalizing, and adding the finishing touches to your project for today is here. Good luck, everyone, and I look forward to seeing what's next.

Sincerely,

A handwritten signature in black ink, appearing to read "Ty D. Burns", with a stylized flourish at the end.

Representative Ty D. Burns
Veterans and Public Safety Caucus Chair
District 35



Committees:

A&B Finance

Chairman

Agriculture

Appropriations and Budget

Commerce & Economic Development Oversight

Representative Ty Burns-District 35

2300 N Lincoln Blvd Rm 205, Oklahoma City, Ok 73105-4805

Phone number: 405-557-7344 | Email: ty.burns@okhouse.gov

Oklahoma State Senate

CHUCK HALL

STATE SENATOR - DISTRICT 20
2300 NORTH LINCOLN BLVD.
OKLAHOMA CITY, OK 73105
PHONE (405) 521-5628
CHUCK.HALL@OKSENATE.GOV



APPROPRIATIONS CHAIRMAN

February 25, 2025

Oklahoma State University, 216 Agricultural Hall
Attn: Oklahoma State Science and Engineering Fair, Steering Committee
107 Whitehurst
Stillwater, OK 74078

Dear OSSEF Steering Committee,

It is an honor to extend my support of the Oklahoma State Science and Engineering Fair (OSSEF) event and the students who participate in it, as they are the future leaders and pioneers of our community and beyond. Oklahoma's commitment to excellence in education and STEM fields is a key factor in shaping the future of our state.

As the event continues to grow, it is encouraging to see the next generation of innovators, problem-solvers, and leaders making meaningful contributions to advancing knowledge and finding solutions to some of today's challenges. OSSEF is an exceptional opportunity for young people to demonstrate their abilities and earn the recognition they deserve, whether it be through competing for prizes, scholarships, or representing our great state on Team Oklahoma at the 2025 Regeneron International Science and Engineering Fair.

I commend OSSEF for providing a platform for Oklahoma students to showcase their hard work, creativity, and dedication to the fields of science, technology, engineering, and mathematics (STEM) and look forward to seeing the incredible work and achievements of our students.

Sincerely,

A handwritten signature in black ink that reads "Chuck Hall".

Senator Chuck Hall
Senate Appropriations Committee Chairman
District 20



Dear Oklahoma State Science and Engineering Fair Participants,

I am honored to extend my support and best wishes to all the students, educators and organizers participating in the 2025 Oklahoma State Science and Engineering Fair (OSSEF) at Oklahoma State University. This event highlights the innovation, dedication, and brilliance of Oklahoma's young minds, reinforcing our state's commitment to STEM education and research.

Science, technology, engineering and mathematics are at the forefront of progress, and it is personally encouraging to see OSU leading the way. (Go Pokes!) By engaging in original research, problem-solving, and discovery, you are not only strengthening your own skills but also contributing to the advancement of knowledge and innovation in Oklahoma and beyond.

I commend the OSSEF steering committee and all those who make this event possible, providing students with a platform to showcase their talents and compete for scholarships and national recognition. To the students—your curiosity, hard work and passion for learning are truly inspiring. No matter the outcome of this competition, your dedication to STEM will serve you well in any path you choose to pursue.

Congratulations to all participants, and best of luck as you compete and represent the best of Oklahoma's future in science and engineering!

Best Regards,

A handwritten signature in black ink that reads "Kyle Hilbert". The signature is written in a cursive, flowing style.

Kyle Hilbert
Oklahoma Speaker of the House





HOUSE *of* REPRESENTATIVES

Minority Caucus Chair Trish Ranson

OKLAHOMA HOUSE DISTRICT 34

Wednesday, February 26th, 2025

Oklahoma State Science and Engineering Fair
Oklahoma State University
Stillwater, OK 74078

RE: Letter of Support for Oklahoma State Science and Engineering Fair Participants

Dear Esteemed Participants,

I want to extend my heartfelt congratulations to each of you for making it to the Oklahoma State Science and Engineering Fair. Reaching this stage in such a prestigious competition is a remarkable accomplishment, and I commend you for your hard work, dedication, and commitment to advancing the field of STEM (Science, Technology, Engineering, and Mathematics).

The Oklahoma State Science and Engineering Fair, held at Oklahoma State University on March 7, offers a platform where you have the opportunity to showcase your original STEM research. It's clear that your efforts, which have led you to this point, are a testament to your passion and curiosity in exploring the world of science and engineering. For many of you, this fair could serve as a stepping stone toward even greater academic and professional success in the future.

Being selected to represent your regional science and engineering fair at the state level is no small feat. It highlights your talent, perseverance, and ability to think critically and creatively. You've already demonstrated exceptional skill, and this next step in your journey is one to celebrate. As you engage with your peers and mentors during the fair, I hope you take pride in how far you've come and know that your work is not only valued but truly impactful.

The opportunity to compete for prizes, scholarships, and perhaps a chance to join Team Oklahoma at the 2025 Regeneration International Science and Engineering Fair is an exciting prospect. I wish each of you the best of luck at the fair. No matter the outcome, you should be proud of what you have achieved. You are the future innovators, researchers, and problem-solvers who will shape the world. Keep pushing the boundaries of discovery, and continue to explore the unknown with curiosity and determination.

Congratulations once again on reaching this incredible milestone, and enjoy the experience of sharing your groundbreaking work with the broader STEM community!

Sincerely,

A handwritten signature in black ink that reads "Trish Ranson".

Representative Trish Ranson

District 34, Oklahoma State House of Representatives





March 7, 2025

Dear Oklahoma State Science and Engineering Fair Participants,

As president of Oklahoma State University, it is my great pleasure to welcome you to our campus for the 2025 Oklahoma State Science and Engineering Fair. Your presence represents Oklahoma's bright future in science, technology, engineering and mathematics.

At OSU, we believe that STEM education is fundamental to solving tomorrow's challenges. Each project you've brought to this fair demonstrates the kind of innovative thinking and careful research that we celebrate. Whether you're exploring renewable energy, developing new technologies, or investigating solutions to environmental challenges, you're already contributing to scientific progress in meaningful ways.

Your journey to this competition shows remarkable dedication. The late nights perfecting your hypotheses, the careful documentation of your experiments, and the creativity you've shown in presenting your findings matter. They're building blocks for future discoveries and innovations that will help shape our world.

Always remember that you're part of a proud tradition of scientific inquiry at this event. Many successful scientists, engineers, and innovators started their journeys at science fairs just like this one. Some even went on to study here at OSU, where we continue to push the boundaries of scientific discovery through cutting-edge research.

Your curiosity and commitment to understanding the world through science inspires us all. Whether you take home an award or not, you've already proven yourself to be among Oklahoma's most promising young minds.

Once again, welcome to Oklahoma State University. I encourage you to explore our campus while you're here and imagine yourself as part of our scientific community in the future.

Best of luck in the competition, and Go Pokes!

Sincerely,

Jim Hess

Interim President, Oklahoma State University





OFFICE OF THE
PROVOST

101 Whitehurst
Stillwater, OK 74078-1011
O | 405.744.5627
F | 405.744.5495
academicaffairs.okstate.edu

February 21, 2025

Dear Oklahoma State Science and Engineering Fair Participants,

As Provost of Oklahoma State University, it is my pleasure to welcome you to the OSU campus and congratulate you on your hard work and determination leading up to this year's Oklahoma State Science and Engineering Fair (OSSEF) event.

You represent some of the brightest and most talented young minds in our state, and we are truly honored to host the OSSEF participants again this year. You have undertaken and risen to the unique challenges that come with research and innovation and have persevered to the highest levels of competition. I hope you enjoy your time on campus, are proud of what you've accomplished to this point, and are excited to take on new challenges. Be sure to soak today in and have fun with it too - you have earned it!

I look forward to celebrating you and your accomplishments and following your future achievements in the areas of science, technology, engineering, and mathematics. There is no doubt you will be successful in your academic and professional endeavors. Your passion for these subjects can lead to life- and world-changing discoveries! I encourage you to continue to be curious, ask questions, seek to find answers, and dream big.-Please know we would enjoy celebrating your return to campus as a future Cowboy!

Just like the Cowboy Code that we live by here at OSU says, we end the day knowing we gave it everything we had. I hope you end today proud of a job well done.

All of us at OSU wish you the best of luck in today's competition!

Sincerely,

Jeanette M. Mendez
Provost and Senior Vice President
Oklahoma State University





CENTER FOR HEALTH SCIENCES
OFFICE OF THE PRESIDENT

February 21, 2025

Dear Oklahoma State Science and Engineering Fair Participants,

Congratulations on your dedication to scientific discovery and innovation! Your participation in the 2025 Oklahoma State Science and Engineering Fair is a remarkable achievement, and I commend you for your hard work, creativity, and curiosity.

Science, technology, engineering, and mathematics (STEM) are at the heart of progress, shaping the future of medicine, technology, and countless other fields. At Oklahoma State University Center for Health Sciences, we see firsthand how scientific research transforms lives—whether through new medical breakthroughs, advancements in public health, or innovations that improve patient care. Many of the categories in this competition align with the critical work being done in health sciences, and your contributions today may one day lead to discoveries that change the world.

This fair is more than a competition; it is an opportunity to develop critical thinking, problem-solving, and communication skills—essential qualities for future scientists, engineers, and healthcare professionals. The ability to convey complex ideas clearly and confidently will serve you well in your academic and professional careers. No matter the outcome of this year's fair, the knowledge and experience you gain will propel you toward success.

I encourage you to continue exploring, questioning, and pushing the boundaries of knowledge. The future of science and medicine depends on bright minds like yours. I wish you all the best in this competition and in your future endeavors.

Sincerely,

A handwritten signature in black ink that reads 'Johnny R. Stephens'.

Johnny R. Stephens, Pharm.D.
President, OSU Center for Health Sciences





OFFICE OF THE
**VICE PRESIDENT
FOR RESEARCH**

203 Whitehurst
Stillwater, OK 74078
405.744.6501 | O
405.744.6244 | F

Dear Student Participants,

Oklahoma State University is proud to celebrate your success in being a part of the 2025 Oklahoma State Science and Engineering Fair.

As OSU's Vice President for Research, I want to tell you that your hard work, perseverance and passion for discovery are inspiring to me personally! Whether you are exploring microbiology, biomedical sciences, mathematics, computer science, or any other exciting field, your efforts contribute to the scientific advancement of our state and beyond. I encourage you to continue pushing the boundaries of knowledge and to seek out opportunities to further your education and research.

In 2024, OSSEF welcomed 167 students from 33 schools across 18 counties in Oklahoma — a 20% increase from 2023. Notably, 11 new schools joined the competition, expanding opportunities for students just like you to engage in scientific exploration. The variety of research topics reflects the broad interests and talents of our state's future leaders in STEM.

The impressive growth in OSSEF participation underscores the dedication of all the educators, mentors and families who have supported and encouraged YOU in your scientific pursuits. All of us in research leadership at OSU recognize the critical role of STEM education in preparing the next generation of researchers, problem-solvers and industry leaders.

As Oklahoma's flagship land-grant university, OSU is committed to fostering a culture of innovation, discovery and problem-solving. It perfectly aligns with our mission to advance knowledge and serve our communities. OSSEF exemplifies this mission by inspiring young scientists and engineers such as yourselves to tackle real-world challenges with curiosity and creativity.

OSU remains dedicated to supporting OSSEF as the program clearly cultivates the scientific talent that will drive economic and technological growth in Oklahoma. I look forward to seeing your continued achievements as budding scientists and hope to welcome many of you to OSU in the future.

Congratulations on your participation in OSSEF and thank you for your contributions to advancing knowledge and innovation in our state.

Go Pokes!

A handwritten signature in black ink, appearing to read "K. Sewell".

Dr. Kenneth Sewell





**COLLEGE OF ENGINEERING, ARCHITECTURE
AND TECHNOLOGY**

Office Address
Stillwater, OK 74078
Office Phone Number

Dear OSSEF Participants,

Welcome to the College of Engineering, Architecture and Technology at Oklahoma State University! We are thrilled to support the Oklahoma State Science and Engineering Fair and to have the opportunity to engage with some of the brightest young minds in our state.

At CEAT, we believe innovation and creativity are the cornerstones of progress. Our college is dedicated to nurturing the next generation of engineers, architects and technologists, providing them with the education and resources they need to succeed. We are committed to fostering an environment where ideas can flourish and where students are encouraged to push the boundaries of what is possible.

During my career as an educator and researcher, I have seen firsthand the incredible impact that STEM education can have on individuals and communities. Programs like OSSEF inspire a new generation of STEM researchers and innovators, and I am excited to see the contributions you will make to our world. Your passion for science, technology, engineering and mathematics is the key to addressing the challenges of our time and building a sustainable future.

As you participate in OSSEF, I encourage you to explore all that CEAT has to offer. Our state-of-the-art facilities, distinguished faculty and vibrant community provide the perfect setting for aspiring innovators like yourselves. We are proud to support your journey and look forward to seeing the incredible contributions you will make to the world.

Thank you for joining us, and best of luck with the competition!

Sincerely,

A handwritten signature in black ink, appearing to read 'H. Huang'.

Hanchen Huang
Dean, College of Engineering, Architecture and Technology
Oklahoma State University





DIVISION OF
**AGRICULTURAL SCIENCES
AND NATURAL RESOURCES**

Office of the
Vice President and Dean
202 Agricultural Hall
Stillwater, OK 74078
405-744-5398
agdivision.okstate.edu

January 8, 2025

Oklahoma Science and Engineering Fair Participants,

I am delighted to extend my congratulations and encouragement to each of you participating in the Oklahoma State Science and Engineering Fair. Your dedication, curiosity, and hard work have brought you to this exciting event, and I am proud of your achievements.

Science and engineering are the cornerstones of innovation and progress. By engaging in this fair, you are not only showcasing your talents but also contributing to the advancement of knowledge and technology. Your projects reflect the creativity and critical thinking that are essential for solving the complex challenges of Oklahoma and our world.

As the Vice President and Dean of Agriculture, I am particularly inspired by your commitment to exploring new ideas and pushing the boundaries of what is possible. We will need to continue to innovate if we are to feed a growing world population while protecting our natural resources. Agriculture, like many fields, relies on the ingenuity and passion of young scientists and engineers like you. Your efforts today will shape the future of food and farming.

Every great discovery begins with a question and a willingness to explore the unknown. Whether your project wins an award or not, the skills and experiences you gain from this fair are invaluable. They will serve you well in your future academic and professional endeavors.

I encourage you to continue pursuing your interests with enthusiasm and determination. Embrace the challenges, learn from your experiences, and never stop asking questions. Your journey in science and engineering is just beginning, and I am confident that you will achieve great things.

Best of luck to all of you, and I look forward to seeing the innovations you develop.

Sincerely,

A handwritten signature in black ink that reads "Jayson Lusk".

Jayson L. Lusk
Vice President and Dean, Division of Agricultural Sciences and Natural Resources
Oklahoma State University





COLLEGE OF
ARTS AND SCIENCES

Office of the Dean
201 Life Sciences East
Stillwater, OK 74078-3015
P | (405) 744-5663
cas.okstate.edu

March 5, 2025

Oklahoma Science and Engineering Fair Participants,

It is with great joy and honor that I present my congratulations and encouragement to the participants in the Oklahoma State Science and Engineering Fair. It is from your passion, curiosity, and devotion that you are here at this exhilarating event, and I could not be prouder of how far you have gone in your journey.

As the Dean of the College of Arts & Sciences at Oklahoma State University, I'm deeply inspired by your dedication to exploring new ideas and expanding the limits of what is possible. The College of Arts & Sciences is committed to fostering an environment where intellectual curiosity and interdisciplinary collaboration thrive. Our goal is to prepare students like you to engage with the global community, contribute to impactful discoveries, and tackle the critical issues of the future.

Every significant discovery starts with a question and the courage to explore the unknown. Regardless of whether your project wins an award, the skills and experiences you gain here are invaluable. They will benefit you greatly in your academic and professional future. The College of Arts & Sciences, and its 24 departments, are dedicated to helping you develop the skills necessary for success in diverse fields, providing you with the resources and support to continue exploring, learning, and creating.

You have my full support to keep pursuing your passions with enthusiasm and persistence. Do not be afraid to make mistakes, take a deep breath, and embrace whatever challenges come your way. There is always room to learn from your experiences and to keep asking questions. Your path in science and engineering is just starting, and I have no doubt that you'll achieve incredible things that you put your mind and heart into. At Oklahoma State University, we're here to support and guide you as you pave the way for the future.

I wish the very best for all of you and cannot wait to see the places you will go.

Sincerely,

A handwritten signature in black ink, appearing to read "Melinda Cro".

Dr. Melinda Cro, Ph.D.
Dean, College of Arts & Sciences
Oklahoma State University





JUNIOR DIVISION (GRADES 6-8)

Junior Animal Sciences

JR-ANIM-006 **Jersey Berryman** Regenerating Rivals

JR-ANIM-013 **Locklyn Ward** What's for Dinner?

JR-ANIM-017 **Doc Downing** Boosting Cattle Growth

JR-ANIM-105 **Addilee Armer** Egg-citing Science

JR-ANIM-136 **Emma Mourer** Internal Parasite Resistance in Beef Cattle

Junior Behavioral and Social Sciences

JR-BEHA-009 **Brianna Caskey** Beat the Bias

JR-BEHA-015 **Sophie Green** Aim High

JR-BEHA-018 **Maverick Love** Multitasking Madness

JR-BEHA-019 **Peighton Baker** You've Got This

JR-BEHA-022 **Nevaeh Grant & Caitlynn Tapia** Bright Minds, Better Times

JR-BEHA-083 **Leahn Kim** Peeking for Pressure

JR-BEHA-084 **Collin Young** Battle of the Generations

JR-BEHA-101 **Grayson Bolz & Eli Bolz** Sleep Quality Vs. Blue Light

JR-BEHA-129 **Taylor Pickering** Who Are the Parents?

JR-BEHA-137 **Raegan Luter** The Value of Trust: Exploring Seller Reputation in Cattle Buyer Decisions

Junior Biochemistry and Chemistry

JR-BIOC-005 **Brantly Bergmann** Have You Had Your Nitrates Today

JR-BIOC-036 **Margaret King** Separating Ethanol Contamination from Vegetable Oil Renewable Feedstock

JR-BIOC-039 **Karis Shamhart** Fireproof 3.0 Testing Synergistic Properties

JR-BIOC-075 **Reid Wilson** Cool Chemistry: The Freezing Point Factor in Cloud Chambers

JR-BIOC-082 **Boston Banks** Mix It Up!

JR-BIOC-086 **Lishitha Kollati** Food Safe, Earth Safe!



Junior Biochemistry and Chemistry, continued

JR-BIOC-100 **Camryn Powell & John Rink** Penny + Foil = Power

JR-BIOC-103 **Arianna Gadiwalla** What Can the Dew Do to You?

JR-BIOC-106 **Katelynn Reed** Rotten to the Core

JR-BIOC-107 **Makena Phelps** Blood, or Not Blood, That is the Question

JR-BIOC-114 **Aniya Anderson** DNA Extraction from Strawberries

JR-BIOC-116 **Sylas Bargas** Forming Sugar Crystals

JR-BIOC-131 **Tarik Ardahanli** Power of the Powdered Carbon

Junior Biomedical and Health Sciences

JR-BMHS-029 **Lily Shriver** Cardiac Counter

JR-BMHS-052 **Halle Haywood** The Adverse Effects of Energy Drinks

JR-BMHS-070 **Juliette Jackson** The Raisin They Decline: An Analysis of Your Taste Buds and How They Work

JR-BMHS-081 **SanjanDheer Alla** Basic Genes Vs. Antibiotic Resistance

JR-BMHS-104 **Aiden Erikson** Caffeine's Speed to Your Heart

JR-BMHS-134 **Isabella Ahmadi** What Transcription Factors of the Heart are Good Targets for Reprogramming Efforts

Junior Earth and Environmental Sciences



JR-EAEV-003 **Elizabeth Kratky** Turning Tap Water Into Treasure Saving Money and Saving the Planet

JR-EAEV-004 **Ansley Beasley** Solution Not Pollution

JR-EAEV-008 **Amina Hart** Rainbow Mulch

JR-EAEV-030 **Caroline Boudreaux** Electrolyte Experiment: Boosting Hydrogen, Cutting Costs

JR-EAEV-032 **Katie Sheffield** Sunscreen Science

JR-EAEV-038 **Eric Wu** BioRace: The Degradation Test

JR-EAEV-044 **Riley Myers** How Does Trash Affect the Albedo?

JR-EAEV-063 **Charlie Compton** Rock N' Roots

JR-EAEV-095 **Ragavarsha Karuppan** Ocean Acidification and Coral Bleaching

JR-EAEV-127 **Kadence Gray** What Water?

JR-EAEV-128 **Brek Haraway** Ice Ice Baby

JR-EAEV-135 **Monica Brown & Miranda Navarro** How to Make a Saltwater Battery?

Junior Engineering

JR-ENGN-011 **Grayson Sowers** Dealing with Diabetes

JR-ENGN-014 **Paxton Harjo** Off to the Races

JR-ENGN-051 **Emanuel Ramirez** Breaking Bridges: Testing Design for Maximum Strength

JR-ENGN-060 **Xayden Gardner & Rosealie Hogan** Remote Autonomous Rover

JR-ENGN-061 **Olivia VanVoast** Busting Bridges

JR-ENGN-072 **Mannie Jimenez** Oh Snow!

JR-ENGN-113 **Bailey Jennings & Sophie Spillman** Flight Weight

JR-ENGN-117 **Chrystian Carlton** Turning Heat Into Electricity

JR-ENGN-155 **Omar Elhami** 3D Robotic Hand

JR-ENGN-161 **Murad Atay** HPW Hydro Electric Power by Waves & Electrolysis through Hydrogen Production



Junior Mathematics and Computer Sciences

- JR-MACS-007 **Miley DeSha** Gotta Make a Living
- JR-MACS-010 **Gema Mussati** Does Every Color Count?
- JR-MACS-055 **Abigail Jiang** Chords of the Sea
- JR-MACS-069 **Abigail Bever-Froman** Fractals
- JR-MACS-163 **Taylor Davis** Analyzing Election Results

Junior Microbiology

- JR-MCRO-021 **Hastings Myhlhousen** Bacteria VS Water
- JR-MCRO-057 **Addilyn Boswell & Eli Kaskaske** Exploring Bacteria in Cats and Dogs
- JR-MCRO-078 **Collin Malcom** Do Household Speices Have Antimicrobial Properties
- JR-MCRO-120 **Alejandro Flores-Velez & Kirby Ramirez-Davila** Container Impact on Spoilage Rate
- JR-MCRO-125 **Josef De la Cruz** The Overlooked Danger of Devices
- JR-MCRO-126 **Olivia Garner** Dogs Mouths VS Humans Mouths
- JR-MCRO-139 **Semra Ozturk** The Five Second Rule

Junior Physics and Astronomy

- JR-PHYS-012 **Steven Carrell, Devin Taylor, & Tripp Teague** Portable Air Cooler Using Seebeck Effect
- JR-PHYS-050 **Maddox Morgan & Wyatt Morgan** Can Your Backpack Save Your Life
- JR-PHYS-053 **Kaia Moore** Electrolysis and pH Change in Salt Solutions
- JR-PHYS-056 **Garrett Alderman & David Randall** Fishing Knot Frenzy
- JR-PHYS-062 **Kate Shelby** Shocking Soil
- JR-PHYS-064 **Isabelle Courtney** Arrow Weight Study
- JR-PHYS-077 **Olivia Tonubbee** Which Bat Hits the Ball the Furthest? (Wood or Aluminum)

Junior Plant Sciences

- JR-PLNT-016 **Mya Callison** How Does Your Garden Grow?
- JR-PLNT-020 **Kaylin Vang** Prouting Spuds
- JR-PLNT-034 **Jesslyn Thompson** Alien Plants
- JR-PLNT-054 **Finley Harrel** Sandburs: Scrooge of the South
- JR-PLNT-065 **Kory George** Blossoming Nutrients
- JR-PLNT-130 **Nihal Kelesli** Gravitational Confusion: Root Growth Directions in Simulated Zero Gravity

SENIOR DIVISION (GRADES 9-12)**Senior Animal Sciences**

SR-ANIM-026 **Caytie Couch** Milk It

SR-ANIM-037 **Afton Miller & Kayden Swisher** Warm Vs. Cool: Which One Attracts Birds Better?

SR-ANIM-144 **Devon McKinney** Lameness in Horses

SR-ANIM-146 **Seth Dunivan** Trends in the Incident of Persistently Infected Bovine Diarrhea Cattle: Performance Implications and Salvaging Value of Infected Animals

SR-ANIM-156 **Bailey Faires** Horsing Around with Novelty Stimuli

Senior Behavioral and Social Sciences

SR-BEHA-031 **Nick Du** Design to Decline: Reducing Traffic Speeds Through Neighborhood Design

SR-BEHA-043 **Xenon Spurlock** Pick Me! Pick Me! Pick Me! Investigating Psychological Effects of Colors in Marketing

SR-BEHA-045 **Sophia Barnes** Paper VS Pixels: Does Screen Testing Affect Test Scores

SR-BEHA-102 **Lincoln Coleman & Nicolas Sant'Anna** Do Video Games Affect Real-life Skills? (Continued)

SR-BEHA-112 **Kathryn Clancy** Shockingly Bored

SR-BEHA-119 **Estrella Aguilar** Hearing Loss Due to Listening Devices

SR-BEHA-157 **Sarah Guzman** What do Students at Central Technology Center Know about Biosolids as Fertilizer in Crop Production?

SR-BEHA-162 **Kinsley Sammons** Homegrown or "Homeland"

Senior Biochemistry and Chemistry

SR-BIOC-028 **Slade Dixon** Take Your Shot

SR-BIOC-035 **Jonathan Lai** Turning Trash into Treasure: Creating Sustainable Bioplastic Products from Food Waste Through Innovation

SR-BIOC-041 **Kevin Contreras & David Contreras** Can We Make a Cornstarch Body Protection?

SR-BIOC-067 **Daniela Espinoza, Addison Haffner, & Peyton Roberts** Long Lasting Lotion

SR-BIOC-068 **Emalea Hicks & Riley Perryman** Shield Your Strands

SR-BIOC-109 **Romina Gonzalez & Joely Zuniga-Ortiz** Fruit Based Pigmentation

SR-BIOC-122 **Andrew Pan** Hydrogen Farm

SR-BIOC-152 **Adam Azaou & Joseph Chavez** Rates of Corrosion in Different Metals

SR-BIOC-153 **Angela Duenes & Daniel Pizarro** What Milk Makes the Best Plastic

SR-BIOC-158 **Aurelia Maldonado & Guadalupe Gonzalez** How Does the Amount of Sugar in Homemade Ice Cream Affect How Fast it Freezes?



Senior Biomedical and Health Sciences

- SR-BMHS-023 **Hayden Nebhut & Cale Tapia** Turn the Volume Up
- SR-BMHS-047 **Abigail Byers & Elliot Hutchison** Get a Grip on Quality
- SR-BMHS-059 **Ranee Russell** Soda or Stress?
- SR-BMHS-074 **Izzi Mahoney & Maximus Phillips** Investigating the Impact of Nightshade Consumption on Digestive Health: a Fruit Fly Model Study
- SR-BMHS-079 **Nevaeh Aguero & Lilliona Pardue** Hearing Loss Through the Decades
- SR-BMHS-088 **Reagan Anderson & Nidhi Rajesh** The Antimicrobial Effect: Nature's Defenders
- SR-BMHS-097 **Katelyn Gunnell & Ciara Swisher** Heart Slowdown Showdown
- SR-BMHS-118 **Eve Vaclaw** Testing the Effectiveness of Antibacterial Remedies
- SR-BMHS-145 **Andria Huang** Do Cigarette Smoke Extract and Kitchen Oil Smoke Extract Activate Cancer-related Genes?
- SR-BMHS-149 **Krish Patel** Basal Molecular Profiles for Predicting Physical Performance Enhancements After Endurance Training
- SR-BMHS-164 **Ceren Isikli** Is DNA in My Food?

Senior Earth and Environmental Sciences

- SR-EAEV-024 **Waylon Overman** Here Deer!
- SR-EAEV-073 **Josh Kalkat, Leo McCoy, & Kaleb Willis** The Effects of Different Water Types on Planaria Regeneration
- SR-EAEV-087 **Isaiah Figures** Stratus on Demand: Cloud Seeding
- SR-EAEV-091 **Benton Lightfoot** Hydro Vs Aqua
- SR-EAEV-110 **Jd Casteel & Lillie Stowers** Livestock Water Quality
- SR-EAEV-111 **Griffin Salerno** Soil-based Degradation of Seed Oils: Evaluating Natural and Easily Remediation of LNAPL Oil Spills
- SR-EAEV-132 **Brianna McGee** Disposable Wipes Friend or Foe
- SR-EAEV-138 **Kason Skaggs** The Effect of Oil Drill Cutting on Soil
- SR-EAEV-140 **Joy Yang** Microbial Biodiversity Decline in a Uranium-contaminated Aquife



Senior Engineering

SR-ENGN-027 **Brooklyn Brock** Shake It Up!

SR-ENGN-033 **Talmage King & Eliza Miller** High Winds on High Buildings: Testing Wind Resistance of Building Designs

SR-ENGN-071 **Rebecka Carlson** Wind Turbine Efficiency 2.0

SR-ENGN-093 **Ruben Salazar Estala** Rapid-prototyping Vs Waterfall Engineering Design Methods

SR-ENGN-133 **Andrew Zhang** Development of an Assay Method for Zirconium Based on Chemiluminescence

SR-ENGN-159 **Leonardo Flores** Ionic Thruster Vs. Magnetized Ion Thruster

Senior Mathematics and Computer Sciences

SR-MACS-042 **Adit Paul** Developing a Spatial Processing Model Using a Holistic Machine Learning Algorithm

SR-MACS-098 **Caylen Lee & Carson Lee** HeartGuard: A Model to Detect Heart Disease Using Machine Learning

SR-MACS-121 **Erina Katoh** Enhancing Image Segmentation in Cone-Beam Computed Tomography Scans

SR-MACS-042 **Aiden Yejoon Kim** Statistical Analysis of Brain Connectivity: Comparing Correlation Matrices and Genotypic Variability

SR-MACS-150 **Yavuz Yilmaz** AI Meets Medicine: Your Digital Health Companion

Senior Microbiology

SR-MCRO-040 **Ridhima Narain** The Bacteria Around Us Part 2

SR-MCRO-046 **James Stallings & Alexander Waite** The Effect of Bacterial Transformation on the Longevity of Escherichia Coli at Varying Temperature Conditions

SR-MCRO-080 **Makenzie Harris & Sahara Stamps** Investigation of the Impact of Temperature on Oxygen Production of Phytoplankton and How it Affects the Environment

SR-MCRO-092 **Ryedale Kimble** Bacteria Begone!

SR-MCRO-142 **Alex Kidangathazhe** Understanding the Synergy Between Antibiotics and Phenolic Acids

SR-MCRO-160 **Lina Aborahma & Betul Ardahanli** Swab and Grow



Senior Physics and Astronomy

SR-PHYS-049 **Rhielan Jackson & Rowdy Menefee** Robin Hood's Research

SR-PHYS-058 **Haven Stoner** Gear'n Up

SR-PHYS-076 **Isabel Thoreson** Revolutionizing Spacesuits: Stength Meets Science

SR-PHYS-085 **Andrew Norton** Battle of the Brands

SR-PHYS-094 **Emma Mattke** Unraveling the Pirouette Paradox Part 2: Exploring Angular Momentum, Torque, and the Physics of Spinning!!!

SR-PHYS-147 **Naomi Baxter-Aranda & Sergio Rodriquez** How Does the Air Pressure of a Soccer Ball Effect the Distance it Travels

SR-PHYS-151 **Lydia Kent** Not Just Winging It - Determining How Camber Effects a Wing's Lift

Senior Plant Sciences

SR-PLNT-025 **Trevyn Arnold & Jack Berryman** Spectrum of Growth

SR-PLNT-090 **Gavin Johnson** Microwaved Food Vs. FLAME LICKED DINNER!

SR-PLNT-096 **Likhitha Pasala** Go Green: a Better SAP for Plants (Part 2)

SR-PLNT-123 **Kyden Archuleta** Do Bananas Ripen Other Fruits and Vegetables Faster?

SR-PLNT-124 **Remington Farney** Cost Analysis of Boosting Nitrogen Levels in Wheat Growth

SR-PLNT-141 **Molly Warren** Impact of Sweep Tillage on Wheat Growth and Soil Nutrients

SR-PLNT-143 **Emma Haken** Plants with Nitrogen

**Thank you for
being part of the
2025 Oklahoma
State Science and
Engineering Fair!**

See you next year!

