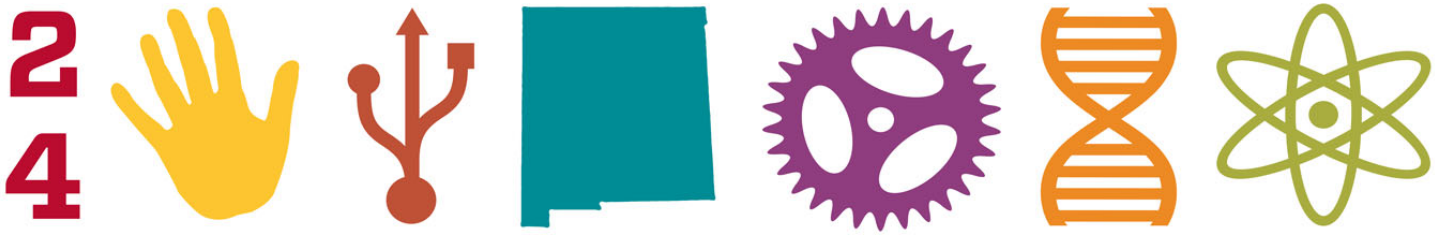
Booklet of Awards & Schedule of Events

2024 Central New Mexico STEM Research Challenge



March 20-24, 2024

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Patricia & Leonard Duda

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Rob Arguelles
James Vigerust

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Berlinda & Kenneth Eras
Bill & Mary Chambers
Emily Weigel
Karen Kinsman & Holly Lowe

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

The MANY other volunteers who do set-up, security, registration and countless other vital tasks. Research Challenge would not be possible without them!

HEALTH SCIENCES
OFFICE FOR DIVERSITY, EQUITY & INCLUSION

STEM-H Center

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2024 Central New Mexico STEM Research Challenge

March 20 - 24, 2024

EXPO NM Manuel Lujan Building & UNM Student Union Building

SCHEDULE OF EVENTS

Visit the RESEARCH CHALLENGE VIRTUAL LOBBY for instant access to virtual Research Challenge events!

Link to the lobby will be emailed to participants and posted on our website no later than 3/18/24.

March 18 – 24 ~ Virtual Lobby Open~ visit at your convenience!

PROJECT SHOWCASE – *browse all student research projects competing in Research Challenge*

STEM HALL – *visit profiles and interactive exhibits from our sponsors and community partners*

SPEAKERS & PANELS – *view engaging discussions with STEM professionals including:*

- **Pajarito Powder** *(manufacturer of advanced catalysts for PEM and alkaline fuel cells and electrolyzers)*

Tuesday, March 19

6:30 pm – 7:30 pm

Judging Workshop – ***Live on Zoom***
Students, prepare for judging day with long-time Research Challenge Master Judge Chairs Len Duda and Robert Deblassie as they provide tips to prepare for judging interviews and answer your questions.
https://hsc-unm.zoom.us/j/96108949779

Wednesday, March 20

3:00 pm – 7:00 pm

Project Set Up – ***EXPO NM, Manuel Lujan Building***
ALL student exhibitors must register and set up their project displays during this time. ***Doors will close promptly at 7:00 pm!***

Community Partner Showcase will also take place during set up. We are excited to host fun and informational booths from local STEM partners!
Students, complete a Community Partners Passport by visiting booths. Turn in completed passport before you leave and be entered into a raffle for prizes!

Thursday, March 21

9:45 am – 12:00 pm — **Junior Division Category Judge Interviews** – ***Manuel Lujan Bldg, Hall A***
STUDENTS AND JUDGES ONLY ON EXHIBIT FLOOR! Doors open at 9:30am. ***9:45 is the required start time for ALL students.***

12:00 pm – 1:15 pm — **Lunch Break** —**NOT PROVIDED**—Food vendors will be available. EXHIBIT HALL CLEARED OF ALL STUDENTS.

1:30 pm – 3:15 pm — **Junior Division Special Award & Grand Award Interviews** ***– Manuel Lujan Bldg, Hall A***
STUDENTS AND JUDGES ONLY ON THE EXHIBIT FLOOR!

Exhibitors must take project board and all other materials with them when they leave at the end of the day!

Friday, March 22

9:30 am – 12:00 pm — **Hands on activities with Air Force Research Labs** (for participating 4th & 5th grade students) – ***Manuel Lujan Bldg, Hall A***

9:45 am – 12:00 pm — **Senior Division Category Judge Interviews** – ***Manuel Lujan Bldg, Hall B***
STUDENTS AND JUDGES ONLY ON EXHIBIT FLOOR! Doors open at 9:30am. ***9:45 is the required start time for ALL HS students.***

12:00 pm – 1:15 pm — **Lunch Break** —**NOT PROVIDED**— Food vendors will be available. EXHIBIT HALL CLEARED OF ALL STUDENTS.

1:30 pm – 3:15 pm — **Elementary Division Judging Interviews** – ***Manuel Lujan Bldg, Hall B***
STUDENTS AND JUDGES ONLY ON THE EXHIBIT FLOOR!
*Note: elementary students will be interviewed by **both** category and special award judges during this time.*

1:30 pm – 3:15 pm — **Senior Division Special Award & Grand Award Interviews** ***– Manuel Lujan Bldg, Hall B***
STUDENTS AND JUDGES ONLY ON THE EXHIBIT FLOOR!

Exhibitors must take project board and all other materials with them when they leave at the end of the day!

Sunday, March 24

4:30 pm — **Award Winners Reception** – ***UNM Student Union Building***
For award winners and guests only. Light refreshments and "selfie station"

5:15 pm — **Grand Awards Ceremony** – ***UNM Student Union Building***
Awards Ceremony is by invite only. Student winners, parents/guardians and teachers will be notified on Saturday if they have won an award and are invited to attend the ceremony.

*Note: **Senior Division** ~ high school; **Junior Division** ~ middle school; **Elementary Division** ~ 4th & 5th Grade*

2024 Grand Awards Ceremony

Central New Mexico STEM Research Challenge

Sunday, March 24

Katie Liberatore, Ph.D.

Executive Director, Operations
Cibus

Keynote Speaker

Katie's interest in science was sparked in high school by enthusiastic science teachers and mentors at Rio Rancho High School and through an opportunity to perform research at the UNM Cancer Research Center. While in high school Katie competed and placed in the Central NM, NM State and International Science and Engineering Fair (2003).

Katie completed her postdoctoral work at the USDA Cereal Disease Laboratory in St. Paul, MN (University of Minnesota campus). She holds a Ph.D. from the School of Biological Sciences at Cold Spring Harbor Laboratory in New York and a B.S. in Biology from UNM. Through the UNM honors program and as a UNM/NIH Post-baccalaureate Research scholar, she also had the unique opportunity to perform molecular ecology and field research over three summers at Lizard Island Research Station in the Great Barrier Reef, Australia.

Currently, Katie is the Executive Director of Operations at Cibus, a biotechnology leader in production of gene edited plant traits. She has been a key operations leader since the merger between Cibus and Calyxt in June 2023. At Calyxt since 2018, Katie held a variety of leadership positions, including roles with oversight of both R&D operations and research functions. Notably, she contributed to the launch of the first gene-edited food product on the market, the Calyno High Oleic Soybean Oil product.

Katie is an avid supporter of science education and places great emphasis on student participation in STEM programs. Katie has been a dedicated volunteer in science fairs/research challenge programs and other local outreach events. She also enjoys gardening, cooking, time outdoors with her family, and quilting.

Byron Morton

Broadcast Meteorologist, KOAT

Master of Ceremonies

Byron graduated with a Bachelor of Science degree from the College of Geosciences at the University of Oklahoma in 1996.

Before joining the KOAT Action 7 News team in December 2001, Byron was chief meteorologist at WMSN-TV in Madison, WI, and fill-in meteorologist at its sister station, WKOW-TV. Byron has also held on-air positions at WOI-TV in Des Moines and WAOW-TV in Wausau, WI, and served as weather producer for Good Morning America, The LA Times, and Televisa Mexico.

Byron is the second forecaster in the state to earn the prestigious designation of "Certified Broadcast Meteorologist" from the American Meteorological Society (AMS), and he holds a seal of approval from the National Weather Association (NWA).

When he's not keeping an eye on the sky, Byron enjoys weight-lifting, tennis, hiking, running, and just about anything else outdoors…and of course joining us every year at Research Challenge!

Regional Research Challenge ~ Top-of-Category Awards

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

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

First Place: $100, gold medallion and certificate
Second Place: $75, silver medallion and certificate
Third Place: $50, bronze medallion and certificate
Honorable Mention: Medallion and certificate

2024 Categories	Sponsor
Elementary Chemistry	**Intel Corporation**
Elementary Engineering & Energy	**Intel Corporation**
Elementary Life & Environmental Sciences	**Intel Corporation**
Elementary Physical Science	**Intel Corporation**
Junior Behavioral & Social Sciences	**Albuquerque Journal**
Junior Chemistry	**Sandia National Laboratories**
Junior Computer Science	**Intel Corporation**
Junior Earth & Environmental Sciences	**PNM**
Junior Energy & Transportation	
Junior Engineering	**UNM School of Engineering**
Junior Medicine & Health	**UNM School of Medicine/Health Sciences Center**
Junior Microbiology	
Junior Physics & Astronomy	**The Boeing Company**
Junior Plant Science	
Senior Animal Science	
Senior Behavioral & Social Sciences	**Albuquerque Journal**
Senior Biology & Biochemistry	
Senior Chemistry	**Sandia National Laboratories**
Senior Computer & Mathematical Sciences	**Intel Corporation**
Senior Earth & Environmental Sciences	**PNM**
Senior Energy & Transportation	
Senior Engineering	**UNM School of Engineering**
Senior Materials Science	
Senior Medicine & Health Sciences	**UNM School of Medicine/Health Sciences Center**
Senior Microbiology	
Senior Physics & Astronomy	**The Boeing Company**
Senior Plant Science	

Regional Research Challenge ~ Top Junior Division Winner Award

Recognition of the top **Junior Division** exhibitors.

Junior Division	**Physical Sciences:**	**First Place:** $250	**Second Place:** $200	**Third Place:** $150
	Life Sciences:	**First Place:** $250	**Second Place:** $200	**Third Place:** $150

Thermo Fisher Scientific Junior Innovators Challenge

Awarded to the 1st and 2nd place winners of **EACH** category in the Junior Division

Junior Division **First & Second Place**: Certificate and an invitation to submit project to national competition

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

Top projects will be named ISEF Finalists and compete at ISEF in May, 2024

Senior Division **Excellence Award:** Expense paid trip to Los Angeles, CA to compete in ISEF *(awarded to top placing individual or team projects; up to four projects will advance)*

Junior Division **Excellence Award:** Expense paid trip to Los Angeles, CA to attend ISEF as a student observer *(awarded to the top placing 8th grade student)*

ISEF Finalist Awards sponsored by Nusenda Credit Union

Awarded to each regional ISEF qualifier and observer *(funds will be split evenly among team members for any team projects that qualify)*.

Excellence Award: $250

Abrazo Homes Award

For an excellent project related to real estate, including architecture, civil engineering or environmental issues.

Any Division **First Place(x2):** S250

AIC General Contractors Award for Best Sports Related Project

For an excellent project related to sports.

Any Division **First Place:** S300

Albert M. Kudo Memorial Award

For an excellent project in any category in memory of Dr. Albert M. Kudo.

Junior or Senior Division **First Place:** $100

Albuquerque African Violet Club Award

For projects which best convey information on culture, hybridizing, pest control, or other aspects relating to African Violets or other gesneriads.

Junior Division **First Place**: $50 and invitation to display project at the African Violet Show in spring 2024

Senior Division **First Place**: $50 and invitation to display project at the African Violet Show in spring 2024

Albuquerque Area Extension Master Gardeners Award

For outstanding projects involving plants.

Junior Division **First Place**: $125 gift card

Senior Division **First Place**: $125 gift card

Albuquerque Astronomical Society Award

For the best Astronomy related projects. Winners invited to exhibit projects at Astronomy Day. Prizes include 1-year membership in the Albuquerque Astronomical Society.

Junior Division	**First Place**: $175	**Second Place:** $100	**Third Place:** $75
Senior Division	**First Place**: $175	**Second Place:** $100	**Third Place:** $75

Albuquerque Rocket Society Award in Memory of Kyle Foster

For excellent projects related to rocketry or the field of aeronautics.

Junior or Senior Division **First Place:** $100

Allen Sigmon Real Estate Group Award

For an excellent project related to real estate, including architecture, civil engineering or environmental issues.

Any Division **First Place(x2):** S250

American Association of University Women Young Scientist Award

For excellent projects by female exhibitors in the categories of Physics, Computer Science, or Engineering.

Elementary Division **First Place (x4):** $25

Junior Division **First Place (x6):** $30

American Chemical Society Awards, Central New Mexico Section

For the projects that best demonstrate a thorough and logical approach to the investigation and observation of a chemical phenomena or property using the principles of the scientific method.

Junior Division **First Place:** $150

Senior Division **First Place:** $150

Junior or Senior Division **First Place:** $150

American Institute of Aeronautics and Astronautics Award

For projects relating to the fields of Aeronautics and Astronautics.

Junior Division **First Place (x2):** $125 & certificate. Membership in AIAA

Senior Division **First Place (x2):** $125 & certificate. Membership in AIAA

American Psychological Association Award

For an exhibit recognizing outstanding research in psychology in the category of behavioral and social sciences.

Junior or Senior Division **First Place:** Certificate & 1 year student membership in APA

American Society of Safety Professionals Award, New Mexico Chapter

For projects related to environmental or industrial safety.

Elementary Division	**First Place:** $100	**Teacher Award:** $50
Junior Division	**First Place:** $100	**Teacher Award:** $50

Argus Investment Realty, Inc. Award

For an excellent project related to real estate, including architecture, civil engineering or environmental issues.

Any Division **First Place(x2):** S250

Association for Women Geoscientists Award

For a female student whose project best exemplifies high standards of innovativeness and scientific excellence in the geosciences.

Junior or Senior Division **First Place:** Certificate & honorary membership in AWG

Association of Old Crows Award
For a project in the Elementary Division related to electromagnetic spectrometry or information operations.
Elementary Division **First Place:** $100 **Second Place:** $50

Austin Hudson LaPore Biochemistry Award
For projects that demonstrate research excellence in biochemistry, pharmaceutical sciences, or related field.
Senior Division **First Place(x2):** $100

Baca & Howard PC Award
For an excellent project related to real estate, including architecture, civil engineering or environmental issues.
Any Division **First Place(x2):** S250

Bank of Albuquerque Award
For an excellent project related to real estate, including architecture, civil engineering or environmental issues.
Any Division **First Place:** S300

Benjamin Gardner, AIA, LEED, AP Award
For an excellent project related to real estate, including architecture, civil engineering or environmental issues.
Any Division **First Place(x2):** S250

Bohannan Huston Award
For outstanding Engineering projects.
Any Division **First Place(x2):** S250

Bridgers & Paxton Consulting Engineers Award
For an excellent project relating to energy efficiency and engineering that demonstrates energy conservation through analysis of existing technology or exploration of alternative technology associated with the building infrastructure, architectural systems, or the construction industry.
Any Division **First Place(x2):** S250

Broadcom Coding with Commitment Award
For a project in any category that combines STEM Knowledge and Computation/Coding in the project's research, design, or development that expresses passion for helping or improving one's community.
Junior Division **First Place:** $250 gift card & Raspberry Pi Pico Kit

CASE (Creative Application of Science & Engineering) Award
For a project that displays excellence and creativity in the application of Mathematics, Science, and Engineering.
Junior Division **First Place:** $150 **Second Place:** $100 **Third Place (x3):** $50

CBRE Award
For an excellent project related to real estate, including architecture, civil engineering or environmental issues.
Any Division **First Place:** S200

Center for Water & the Environment Excellence Award (UNM School of Engineering)
For a project that shows excellence and interest in water science, water resources, or water engineering.
Senior Division **First Place:** A paid summer internship (2024) in CWE's environmental engineering and water resources laboratories working in-person with CWE faculty.

Century Sign Builders Award
For an excellent project related to information technologies ("IT").
Any Division **First Place:** S300

Chalmers Ford Award
For an excellent project related to the automotive industry.
Elementary Division **First Place:** $150
Junior or Senior Division **First Place:** $150

Cibus Award
For an outstanding project in the plant sciences. A preference will be given to projects that leverage biotechnology tools to advance our understanding of plant biology and/or to improve agriculture.
Senior Division **First Place:** $100 **Second Place:** $50
Teacher Award $100 to teacher of First Place winner

CLA (CliftonLarsonAllen) Award
For an excellent project related to real estate, including architecture, civil engineering or environmental issues.
Any Division **First Place:** S300

Climate Change Award
Presented to the project that demonstrates the greatest insight into climate change using the scientific method.
Elementary Division **First Place:** $75
Junior Division **First Place:** $75
Senior Division **First Place:** $75

Consensus Planning Award

For a project that shows excellence in furthering sustainability through landscape architecture.

Any Division	**First Place(x2):** S250

Dave and Rhonda Hill Award

For an excellent project related to real estate, including architecture, civil engineering or environmental issues.

Any Division	**First Place:** S200

Dekker, Perich, Sabatini Engineering Excellence Award

For an excellent project related to structural engineering

Any Division	**First Place(x4):** S250

Diane Vigerust Memorial Award

For a project by or benefiting a student with special needs.

Any Division	**First Place:** S100	**Second Place:** $50

Directed Energy Profession Society Award

For projects that display the best use of electromagnetic spectrum to solve or diagnose a modern problem or create a new application or capability.

Junior Division	**First Place:** $250	**Second Place:** $150	**Honorable Mention:** $50
	Teacher Award: $100	**Teacher Award:** $100	**Teacher Award:**$100
Senior Division	**First Place:** $250	**Second Place:** $150	**Honorable Mention:** $50
	Teacher Award: $100	**Teacher Award:** $100	**Teacher Award:** $100

DoD STEM Leadership Prize

For a student who demonstrates excellence in STEM knowledge, technical and problem solving skills, communication skills, creative thinking and determination to overcome challenges throughout the research project,

Junior Division	**First Place:** $100

Don't Stop Now Award

For projects in any category that show enthusiasm and promise for continued learning.

Junior or Senior Division	**First Place (x6):** $50

Dr. Donald Partridge Memorial Neuroscience Award

In memory of Dr. Donald Partridge for a project which best demonstrates and tests principles of neural science.

Junior Division	**First Place:** $100	**Second Place:** $50
Senior Division	**First Place:** $100	**Second Place:** $50

Dr. John K. Prentice "Coolness" Award

For especially novel and ingenious projects in any category in memory of Dr. John K. Prentice.

Junior Division	**First Place (x2):** $100
Senior Division	**First Place (x2):** $100

Duke City Commercial Award

For an excellent project related to real estate, including architecture, civil engineering or environmental issues.

Any Division	**First Place:** S250

E-mobility Award from the Tesla Owners Club of New Mexico

Recognition for an innovative project that furthers the advancement of e-Mobility.

Senior Division	**First Place:** $200

Enchanted Lens Camera Club Award

For projects which either advance the state of the art of film/digital photography, or use photography as a key diagnostic in an engineering and/or science project.

Junior Division	**First Place:** $75
Senior Division	**First Place:** $75

Engineering Excellence – New Mexico Engineering Foundation

For excellence in Engineering and/or applied topic or research in Engineering, Physics, Astronomy, Computer Science or Energy & Transportation.

Junior Division	**First Place:** $100
Senior Division	**First Place:** $100

ENLACE Statewide Collaborative Excellence Award

For excellent projects in any category.

Elementary Division	**First Place (x4):** $25 UNM Bookstore Gift Card
Junior Division	**First Place (x4):** $25 UNM Bookstore Gift Card
Senior Division	**First Place (x4):** $25 UNM Bookstore Gift Card

Eric & Bryanna Baker Award
For an excellent project related to real estate, including architecture, civil engineering or environmental issues.
Any Division **First Place:** S150

Explora Science Center and Children's Museum Award
For excellent projects in Chemistry, Environmental Science, Math, Microbiology or Physics.
Junior Division **First Place (x10):** $50 plus an invitation to exhibit project virtually at Explora.

FBT Architects Award
For an excellent project related to real estate, including architecture, civil engineering or environmental issues.
Any Division **First Place(x4):** S250

Goodman Realty Group Award
For an excellent project related to real estate, including architecture, civil engineering or environmental issues.
Any Division **First Place(x3):** S250

Green Leaf Award
For an excellent project in the Plant Sciences Category.
Elementary Division **First Place:** $25

Home Builders Association of Central NM Award
For an excellent project related to real estate, including architecture, civil engineering or environmental issues.
Any Division **First Place:** S250

Huning, LLC Award
For an excellent project by a Valencia County student related to real estate, including architecture, civil engineering or environmental issues.
Any Division **First Place(x2):** S250

International Test & Evaluation Association Awards, Roadrunner Chapter
For the best application of test and evaluation techniques in an experiment.

Junior Division	**First Place:** $100	**Second Place:** $50	**Third Place:** $25
Senior Division	**First Place:** $250	**Second Place:** $50	**Third Place:** $25

James Topmiller Award
For an excellent project related to real estate, including architecture, civil engineering or environmental issues.
Any Division **First Place:** S350

Jaynes Corporation Award
For an excellent project related to real estate, including architecture, civil engineering or environmental issues.
Any Division **First Place(x2):** S250

Jerran Golightly Memorial Award
Awarded to the best project addressing the issues of heart disease and cardiac health, particularly in young people.
Junior or Senior Division **First Place (x2):** $100

Jim Adams Memorial Award
For an excellent project by a student faced with physical or mental challenges.
Junior or Senior Division **First Place:** $100

Karen & Tommy Hudson Award
For excellent projects related to Engineering (materials and bioengineering) or Robotics & Intelligent Machines.
Any Division **First Place(x2):** S500

Keith Meyer and Mary Meyer, Ph.D Award
For an excellent projects in the category of social sciences.
Any Division **First Place:** S300

Kiwanis Club of Coronado Awards
For excellent projects in any category.

Elementary Division	**First Place(x2):** $50			
Junior Division	**First Place:** $100	**Second Place:** $50	**Third Place:** $50	**Fourth Place:** $50
Senior Division	**First Place:** $100	**Second Place:** $50	**Third Place:** $50	**Fourth Place:** $50

Klinger Constructors, LLC Award
For an excellent project related to real estate, including architecture, civil engineering or environmental issues.
Any Division **First Place(x2):** S250

Lawrence M. Wells, Esq. Award
For an excellent project related to real estate, including architecture, civil engineering or environmental issues.
Any Division **First Place(x2):** S250

Lemelson Early Inventor Prize

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

Junior Division **First Place:** $100 & certificate

Louis & Stacy Abruzzo Award

For an excellent project related to real estate, including architecture, civil engineering or environmental issues.

Any Division **First Place(x2):** S250

Maxine Grossman Award

For an excellent project in the category of Plant Science.

Junior or Senior Division **First Place:** $100

Metro Commercial Realty Award

For an excellent project related to real estate, including architecture, civil engineering or environmental issues.

Any Division **First Place:** S100

NAI SunVista Commercial Award

For an excellent project related to real estate, including architecture, civil engineering or environmental issues.

Any Division **First Place:** S300

Nancy Schmierbach Award

For an excellent project by a Valencia Country student related to real estate, including architecture, civil engineering or environmental issues.

Any Division **First Place(x2):** S250

NASA Earth System Science Award

For the project that best demonstrates insight into Earth's interconnected systems. The project should incorporate studies of the different components of Earth systems, their interactions and their evolution over time.

Junior or Senior Division **First Place:** Certificate & invitation to a webinar with a NASA scientist

National Oceanic and Atmospheric Administration Award

For the project 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 **First Place:** Certificate

New Mexico Bank & Trust Awards

For an excellent project related to real estate, including architecture, civil engineering or environmental issues.

Any Division **First Place (x2):** $250

New Mexico Trout Award

For a project that supports the goals of New Mexico Trout: the study, conservation and restoration of riparian habitats.

Junior Division **First Place:** $100 and membership **Teacher Award:** $100

Senior Division **First Place:** $100 and membership **Teacher Award:** $100

Nusenda Credit Union Awards

For an excellent project related to real estate, including architecture, civil engineering or environmental issues.

Any Division **First Place(x2):** S500

Peacock Law, P.C. Award

For an excellent project that includes a novel patentable idea, concept, or device.

Any Division **First Place:** S250

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 **First Place:** $375

Regional Research Challenge Ingenious Research Award

For a project involving the testing and/or use of common materials.

Junior Division **First Place:** $100

Regional Research Challenge Junior Encouragement Awards

Sponsored by the Foreman Family. For outstanding middle school projects in **EACH** category.

Junior Division **First Place:** $35 **Second Place:** $30 **Third Place:** $25
Teacher Award: $25 to teacher of first place winners

Regional Research Challenge Scholarships to UNM

Senior Division **First Place:** A minimum $750 UNM scholarships to all 12th grade participants who enroll at UNM in the Fall of 2023 (one-time award for Fall 2024)

Richard Bild Memorial Research Challenge Award

For a student or team whose project demonstrates excellence in interdisciplinary research and who demonstrates an ongoing passion for STEM with excellent problem-solving, communication, and leadership skills.

Elementary Division	**First Place(x2):** $25	**HM:** Certificate
Junior Division	**First Place(x2):** $100	**HM:** Certificate
Senior Division	**First Place(x2):** $200	**HM:** Certificate

Ricoh Regional Sustainable Development Award

For a project 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 **First Place:** Certificate

RKL Sales Award

For an excellent project related to real estate, including architecture, civil engineering or environmental issues.

Any Division **First Place(x2):** S250

Rodey Law Award

For an excellent project related to real estate, including architecture, civil engineering or environmental issues.

Any Division **First Place:** S250

Sandia Grotto Award

For a project related to cave conservation, cave related studies (cave geology, hydrology or biology such as bats, beetles, salamanders or cave microbes) or equipment technology related to cave research.

Elementary Division	**First Place:** $75
Junior Division	**First Place:** $75
Senior Division	**First Place:** $50

Sandia Laboratory Federal Credit Union Award

For an excellent project related to real estate, including architecture, civil engineering or environmental issues.

Any Division **First Place(x3):** S500

Sandia Peak Tram Company Award

For an excellent project related to structural engineering or construction.

Any Division **First Place(x4):** S250

Schroeder Sales Award

For an excellent project related to real estate, including architecture, civil engineering or environmental issues.

Any Division **First Place(x2):** S250

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 **First Place:** Certificate and membership in SIVB

Society of Women Engineers Award, Central New Mexico Section

For an exhibit in Engineering, Physics & Astronomy, Computer Science, Environmental Management or Energy & Transportation.

Junior Division **First Place (x2):** $100

Springhill Suites by Marriott (Journal Center) Award

For an excellent project related to real estate, including architecture, civil engineering or environmental issues.

Any Division **First Place(x2):** S500

Sun Vista Enterprises, Inc. Award

For a project that displays innovation in energy use for construction and architecture.

Any Division **First Place:** S300

The Hartman + Majewski Design Group Award

For a project that displays excellence in the study or application of climate use in the built environment.

Any Division **First Place:** S200

Thomas Keleher Award

For an excellent project related to real estate, including architecture, civil engineering or environmental issues.

Any Division **First Place:** S250

United States Agency for International Development (USAID) Award

For an exceptional project that has the potential to make an impact on addressing international development challenges.

Junior or Senior Division **First Place:** Certificate & webinar with USAID leaders

United States Air Force Awards

Naval Science Awards for excellent individual projects in science and engineering.

Junior or Senior Division **First Place (x4):** Certificate & Tangible Award

United States Agency for International Development (USAID) Award

For an exceptional project that has the potential to make an impact on addressing international development challenges.

Junior or Senior Division **First Place:** Certificate & webinar with USAID leaders

United States Air Force Awards

Naval Science Awards for excellent individual projects in science and engineering.

Junior or Senior Division **First Place (x4):** Certificate & Tangible Award

United States Metric Association Award

For a project that involves a significant amount of quantitative measurement and which best uses the SI Metric System.

Junior or Senior Division **First Place:** Certificate & 1 year of membership in USMA

United States Navy and Marine Corps Awards

Naval Science Awards for excellent individual projects in science and engineering.

Junior Division **First Place(x3):** Certificate of achievement

Senior Division **First Place(x3):** Certificate of achievement and $50

University of New Mexico College of Pharmacy Awards

For a project related to the Pharmaceutical Sciences which best demonstrates an innovative problem, the scientific approach to the problem, the methodology for solving the problem, and the scientific interpretation of the results.

Elementary Division **First Place:** $100

Senior Division **First Place:** $200 **Teacher Award:** $200

University of New Mexico Health Sciences Center Awards

For excellent projects in each of the categories of Biochemistry, Medicine & Health and Microbiology

Junior Division **First Place:** $150 **Second Place:** $100 **Third Place:** $50

Senior Division **First Place:** $150 **Second Place:** $100 **Third Place:** $50

UNM Brain & Behavioral Health Institute Research Award

For projects that demonstrate excellent research and presentation in the area of brain and behavioral health.

Junior Division **First Place:** $200

Senior Division **First Place:** $200

WaFd Award

For an excellent project related to real estate, including architecture, civil engineering or environmental issues.

Any Division **First Place(x2):** S250

Yale Science and Engineering Association, Inc. Award

For an outstanding 11th grade student exhibiting in the area of Computer Science, Engineering, Physics or Chemistry.

Senior Division **First Place:** Certificate

Congratulations to all the student participants and winners!

27	7	31	88	22	16
Co	N	G (a)	Ra	T (i)	S
Cobalt 58.933	Nitrogen 14.007	Gallium 69.732	Radium 226.025	Titanium 47.88	Sulfur 32.066

BEN RAY LUJÁN
NEW MEXICO
498 RUSSELL SENATE OFFICE BUILDING
WASHINGTON, DC 20510
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United States Senate

WASHINGTON, DC 20510-3105

COMMITTEES:
COMMERCE, SCIENCE, AND TRANSPORTATION
CHAIR, COMMUNICATIONS, MEDIA, AND BROADBAND
AGRICULTURE, NUTRITION, AND FORESTRY
HEALTH, EDUCATION, LABOR, AND PENSIONS
INDIAN AFFAIRS
BUDGET

Central NM STEM Research Challenge Participants
UNM HSSB - Suite 102
MSC09 5235

March 24, 2024

Dear Research Challenge Participants,

Congratulations on competing in the 64th Annual Central NM STEM Research Challenge. I want to take this opportunity to congratulate you on your accomplishments, recognize your hard work, and wish you the best of luck in this competition.

Creative, resourceful, and community-driven young New Mexicans like you are the future of our country, and I hope you know that you have made your community and New Mexico proud. There is no doubt that this esteemed and long-running competition will prepare you for your future academic and career path.

With continued hard work, you can achieve anything you set your mind and heart to throughout your life. Please continue the great work, never stop asking questions, and keep looking for innovative solutions to pressing challenges. I look forward to hearing of your great accomplishments in the future.

Sincerely,

Ben Ray Luján

Ben Ray Luján
United States Senator

CONGRESSWOMAN
MELANIE
STANSBURY
1st Congressional District

Congratulations on winning the 2024 Central NM STEM Research Challenge! This is a tremendous achievement and I hope you are taking time to enjoy this accomplishment.

The Central NM STEM Research Challenge is an amazing program inspiring a new generation of STEM researchers. During my career as a STEM educator, I had the privilege of working with communities across the state to teach children about water conservation and natural resources. That's why I believe STEM research must be an exchange between science, sustainability, and social justice, especially as we try to understand how we can live sustainably in this beautiful mountain desert ecosystem where our communities have lived for millennia.

I'm a proud "water nerd" and I have always been interested in science and sustainability ever since I was a kid. Some of that interest was sparked by programs like the Central NM STEM Research Program. In middle school I won an award at the state science fair and that's when I first realized STEM could be an actual career, not just a hobby. That is why I am so excited to see the next generation pursuing STEM; we have our water, our land, our ways of life, our cultures, and our heritage, and STEM is a part of it all. We need to build new opportunities for our community so that we can live here in this beautiful place for generations to come. Thank you for helping make that a reality and continuing the tradition of New Mexican excellence. You have a bright future ahead of you!

Sincerely,

Melanie A. Stansbury

State of New Mexico

Michelle Lujan Grisham
Governor

March 24, 2024

Dear Participants and Winners of the 2024 Central NM STEM Challenge,

I am thrilled to extend my heartfelt congratulations to each and every one of you on your remarkable achievements in the 64th Annual Central NM STEM Challenge. This event not only celebrates your individual successes but also highlights the collective brilliance and potential of our state's youth in the fields of Science, Technology, Engineering, and Math (STEM).

As Governor of New Mexico, I am continually inspired by the dedication, innovation, and talent displayed by participants like yourselves. It is evident that you are among the best and brightest students, destined to become the future scientists, medical researchers, engineers, and even astronauts who will shape the course of our state and beyond.

New Mexico is undeniably a hub for STEM innovation, and it's an exciting time to be part of our state's journey. With institutions like Spaceport America, two prestigious national laboratories, four military bases, prominent tech companies like Intel, burgeoning startups, and esteemed research universities, we stand at the forefront of technological advancement and discovery.

Your participation in this challenge underscores the critical importance of STEM education in New Mexico. Our state needs bright young minds like yours who can devise innovative solutions to today's complex problems and tackle the challenges of tomorrow. By harnessing your talents and passion for STEM, you have the power to drive progress, foster innovation, and propel our state toward a brighter future.

I am delighted to learn that a diverse array of STEM fields, including robotics, ecology, behavioral sciences, engineering, and more, are being represented in this year's challenge. Your engagement in these disciplines not only demonstrates your intellectual curiosity but also your commitment to exploring new frontiers and pushing the boundaries of knowledge.

I would also like to extend my sincere gratitude to the parents, teachers, volunteers, and community partners who have played a pivotal role in supporting the education and bright futures of our students. Your dedication and unwavering support are instrumental in nurturing the next generation of STEM leaders and innovators.

In closing, I want to express my utmost pride in each of you and your remarkable accomplishments. As you continue on your journey in STEM, remember that your potential is limitless, and the opportunities ahead are boundless. Congratulations once again on your well-deserved success, and may you continue to inspire others with your passion for excellence and discovery.

Sincerely,

Michelle Lujan Grisham

Michelle Lujan Grisham Governor

State Capitol • Room 400 • Santa Fe, New Mexico 87501 • 505-476-2200

ONE ALBUQUERQUE
city of albuquerque

OFFICE OF MAYOR TIM KELLER
one civic plaza nw, 11th floor
p.o. box 1293
albuquerque, nm 87102
505.768.3000
cabq.gov

Dear Research Challenge Participants,

I want to take this opportunity to congratulate you on your accomplishments and recognize the incredible work it took to get to this point in your educational and proffessional journey. The time and effort you have put into expanding your knowledge within the science, technology, engineering, and/or mathematics fields is a testament to your determination and drive.

New Mexico is home to world-class scientists and engineers at the national laboratories and many other cutting-edge local companies. We strive to continuously support you all so that New Mexico can always remain at the forefront of STEM research. I am confident that each of you will go on to innovate and develop new ideas that will make a positive and lasting impact on the lives of our families and on our communities.I know how much work it took to get here, and the City of Albuquerue applauds that hard work and we will be cheering on all of your future success.

Best of luck in the 64th Annual Central NM STEM Research Challenge!

Sincerely,

Mayor Tim Keller

City of Albuquerque

Dear Students,

I applaud your participation in the 64th Annual Central NM STEM Research Challenge. Your knowledge in the fields of science, technology, engineering, and mathematics reflects your drive, creativity, and intelligence.

I am truly impressed by the hard work, dedication, and perseverance you demonstrated while tackling challenges and finding innovative solutions for your completed project, which you are now sharing with our community. This esteemed competition will undoubtedly equip you for your future academic and professional endeavors. Many past participants have gone on to win international competitions, obtain patents, pursue higher education, embark on careers at prestigious institutions globally, and even become NASA shuttle astronauts and directors of academic research laboratories. As these careers continue to thrive in New Mexico and beyond, it is imperative that more students pursue STEM-H careers to ensure our state and nation remain competitive and at the forefront of scientific advancement and exploration.

The pursuit of intellectual inquiry in STEM fields profoundly impacts our lives, driving new discoveries in medicine, shaping innovative responses to the grand challenges confronting New Mexico and the global community, and inspiring inventive solutions to complex social issues and sustainable lifestyles.

A heartfelt thank you goes out to all our sponsors, award donors, and volunteers whose unwavering support makes events like these possible for our pre-college students and educators. Your contributions are invaluable to our community's advancement in STEM education and research.

I stand alongside your family, friends, and classmates in recognizing and applauding your outstanding efforts. I have no doubt that we will witness continued excellence from each of you.

Gregg Hull
Mayor of Rio Rancho

OFFICE OF THE PRESIDENT

March 24, 2024

Dear Research Challenge Participants,

As President of The University of New Mexico, I have the pleasure of welcoming you to UNM for the 64th Annual Central New Mexico STEM Research Challenge. We are delighted to have you here, and Lobos everywhere congratulate you on all that you have accomplished.

UNM is New Mexico's only comprehensive, Carnegie-designated Research 1 university, which means we are considered to have "very high research activity." What this *really* means is that innovation infuses everything we do, from business to biochemistry, English to engineering. Our diverse research and creative works enable student success, engage local and global communities, foster innovation, and create new knowledge. As we like to say at UNM: our innovation is as limitless as our imagination.

That's why you're here today—and it is our privilege to be your host. We are proud to encourage each of you, the next generation of STEM professionals, to innovate and develop revolutionary ideas that will serve our state, our nation, and our planet. This long-running competition, which can trace its origins back to 1960, is a big step in preparing you for your future career in STEM—whether in academics, at our government facilities or national laboratories, in a tech startup, or maybe in something we haven't even dreamed of yet.

Many former participants of this competition have gone on to win international prizes and recognition, invent something new, teach in universities, or even become the director of an academic research laboratory. New Mexico is home to innumerable amazing scientists and engineers who bring their expertise and energy to every corner of the Land of Enchantment.

As we continue to advance into an increasingly digital and virtual age, I am confident New Mexicans will be enthusiastically leading the charge into the future, developing strategies to combat climate change, fight disease, and explore the deepest parts of our universe. I hope you will never stop inventing, never stop innovating, and never stop asking questions; your curiosity is the key to finding innovative solutions to the challenges we face locally and globally.

I can't wait to hear more about all you've accomplished, and I hope you'll consider bringing your imagination and ingenuity to The University of New Mexico. Whatever your future holds, I wish you the utmost success.

I know how much work it took to get here, and the Lobos are proud of each and every one of you. We also know that you still have plenty of work ahead this weekend, so we'll let you get to work!

Have a great competition and thank you again for joining us at The University of New Mexico.

Warm regards,

Garnett S. Stokes

Garnett S. Stokes
President

505.277.2626 | Office of the President | 1 University of New Mexico | MSC05 3300 | Albuquerque, NM 87131 | Scholes Hall, Building 10
president.unm.edu

HEALTH & HEALTH SCIENCES

Office of the CEO & Executive Vice President

Dear Research Challenge Participants,

Congratulations on participating in the 64th Annual Central NM STEM Research Challenge! I want to take this opportunity to recognize the hard work it took to get here and wish you the best of luck in the upcoming competition. It takes a great deal of determination and self-confidence to take on this challenge. Please know that I am extremely proud of every one of you.

Those taking part in this year's competition are setting the stage for future academic and career success. Many former participants have ventured on to win international competitions, create inventions, secure patents and pursue careers at prestigious institutions around the world.

As you know, New Mexico's universities and national laboratories are home to world-class scientists and engineers. They set a sterling example that I'd like to encourage each of you to emulate. The next generation of STEM professionals should think big and pursue ground-breaking innovations that will improve lives everywhere.

I know that bold, talented New Mexicans like you will be at the forefront as America advances in the 21st century. Your generation will one day develop strategies to combat climate change, fight dangerous diseases and advance our nation's space program. So please continue the great work, never stop asking questions, and keep looking for innovative solutions to all the grand challenges we face!

In the meantime, I look forward to hearing about your achievements and I wish you success in your future endeavors.

Sincerely,

Douglas Ziedonis, MD, MPH
Executive Vice President (EVP) for UNM Health Sciences & Chief Executive Officer (CEO) for the UNM Health System

HEALTH SCIENCES
OFFICE FOR DIVERSITY, EQUITY & INCLUSION

Dear Central NM STEM Research Challenge Participants,

Congratulations to each one of you on your accomplishments over the course of this competition. The 64th Annual Central New Mexico STEM Research Challenge is a premier opportunity to gain exposure to vital areas of Science, Technology, Engineering, Mathematics and Health Sciences (STEM-H). I hope this experience has sparked and strengthened your passion for the many career opportunities within these fields.

The hard work you have put into expanding your knowledge is a testament to your drive, creativity, and ingenuity. I encourage each of you, our future STEM-H leaders, to continue to innovate and develop revolutionary ideas that will improve the lives of New Mexicans, and the broader national and global community. Continue to Dream BIG ... I know you can achieve it!

Opportunities like the Research Challenge will help to guide you throughout your educational journey as talented and motivated students and leaders. Today I join you in celebrating this accomplishment. I am impressed and proud of the determination you have all shown in completing exceptional projects you can now share with our community.

I am impressed by and proud of the determination you have all shown in completing exceptional projects you can all now share with our community.

Sincerely,

Valerie Romero-Leggott, MD
Vice President and Executive Diversity, Equity & Inclusion
HSC Endowed Professorship for Equity in Health
University of New Mexico Health Sciences Center
Professor of Family & Community Medicine
Executive Director, Combined BA/MD Degree Program
University of New Mexico School of Medicine

OFFICE OF THE VICE PRESIDENT FOR RESEARCH

March 24, 2024

Dear Research Challenge Participants,

Congratulations on participating in the 64th Annual Central NM STEM Research Challenge. Your hard work and perseverance in preparing for this event will serve you well in all of your future academic and professional endeavors. Thank you for taking on this challenge and know that I am truly impressed with your drive, creativity, and innovative spirit.

As a scientist and researcher, I know that completing a research or engineering project during the best of times is difficult and can present many obstacles that must be overcome. I applaud your interest in discovery and encourage the curiosity you possess to explore new territory and tackle new challenges. Our state is home to world-class scientists and engineers, many of whom started out just like you in local and regional competitions. I believe many of you will ultimately join their ranks and contribute to the advancement of the digital age, produce solutions to global climate change, develop innovative treatments for a range of health issues, and create new products that improve our daily lives. As Vice President for Research at The University of New Mexico, I also encourage you to explore the many quality programs in science and engineering that UNM has to offer.

I also recognize this event could not be possible without every parent, teacher, mentor, friend, volunteer, and sponsor who works alongside a student during every research project. Team effort is how NASA and the Navy Seals succeed, and how we will solve the world's most challenging problems – we are truly better together!

I hope you take a moment to genuinely enjoy every aspect of this unique event, while continuing to ask questions of yourself and the other participants to truly understand more about our amazing world and what we are capable of achieving. I look forward to learning more about your successes in the years to come.

Best of luck in the 2024 Central NM STEM Research Challenge!

Sincerely,

Ellen R. Fisher (Mar 1, 2024 16:33 MST)

Ellen R. Fisher, Ph.D.
Vice President for Research
Professor of Chemistry

505.277.6128 | Office of the Vice President for Research | 1 University of New Mexico | MSC05 3480 | Albuquerque, NM 87131
research.unm.edu

March 24, 2024

Dear Students,

I congratulate you for participating in the 64th Annual Central NM STEM Research Challenge. The hard work you have put into expanding your knowledge in the science, technology, engineering, and mathematics fields is a testament to your drive, creativity, and intelligence.

I am so impressed with the hard work, dedication, perseverance, and grit you have shown as you figured out how to do things differently, solve issues creatively, and present a remarkable project.

I encourage you to pursue your interest in science, technology, math, engineering, or health professions. You can contribute to society in very important ways - scientists and others are working to find solutions for climate change, disease, world hunger, threatened habitats, weak infrastructure, cybersecurity threats, the need for complex technologies and much more." We need more students like you pursuing STEM-H careers to ensure our state and our country remain competitive and at the forefront of scientific thought and discovery.

I join your family, friends, and teachers in applauding your efforts. I know we will continue to see great things from each of you.

Sincerely,

Connie Beimer

Connie Beimer
Executive Director
UNM Alumni Association

2024 Central New Mexico STEM Research Challenge

Projects and virtual materials (abstract, virtual display board) can be viewed in the online Project Showcase. Click on link or scan QR code and then enter **KEY: CNMSRC2024**

Elementary Chemistry

ECHEM-1 Dunya Abdelhack *Sea the Shell*

ECHEM-2 Elize Zuni *Lava Lamp Dance*

ECHEM-3 Dylan Martinez & **Ayden Reyna** *Instant Ice*

ECHEM-4 Emily Quintana & **Zurie Twitchell** *Spherification*

ECHEM-5 Heath Linam *Breaking Bonds: Simulating How to Break Methane Bonds with a Java Program*

ECHEM-6 Alexis Cereceres *Color Corroding*

ECHEM-7 Dylan Cahill *Candle Carousel*

ECHEM-8 Benjamin Vicenti *The Effect of Acidic Liquid on Chicken Bones*

ECHEM-9 Allison Lomax *Electrolyte Challenge*

ECHEM-10 Amy Teal *Electric Drinks*

ECHEM-11 Jasper Tillotson *Cupcakes*

ECHEM-12 Aubrie Castillo & **Mina Gonzalez** *Turning Milk Into Plastic*

ECHEM-13 Emily Perez *Are all Sugars the Same?*

Elementary Engineering & Energy

EENG-14 Chanum Traxler *Welding*

EENG-15 Christopher Leyba *3D Holographic Projector*

EENG-16 Avery Burkett *Ice Ice Maybe*

EENG-17 Zeynep Anderoglu *Making Strong Composite Materials*

EENG-18 Lily Gray *How Strong Is an Eggshell?*

EENG-19 Andrew Auyang *Oh No, Not Again! Researching the Strongest Toilet Paper to Prevent Accidental Contact*

EENG-20 Addison Chapman *The Great Egg Collapse*

EENG-21 Silas Bledsoe *A Better Egg Carton*

EENG-22 Oliver Shelton *Earth Friendly Insulator*

EENG-23 Aria Maes *Comparative Study on Heat Maintenance and Ice Retention In Travel Mugs*

EENG-24 Abigail Sandidge *Clean up Your Mess!*

EENG-25 Carlos Enriquez Lozoya & **Aaron Garringer** *Coding a Maze for a Robot*

EENG-26 Jerome Sandoval & **Gauge Velasquez** *Testing a Roller Coaster*

EENG-27 Ella Ong *Origami Carbon Structures*

Elementary Life & Environmental Sciences

ELIFE-28 Alharith Mansour *How Is the Intake of Insulin Effectiveness Determined by the PH Effect of Denaturing Insulin?*

ELIFE-29 Caileigh Hulskamp *Trash Patrol*

ELIFE-30 Aayah Momani *No Pain, Lots of Game*

ELIFE-31 Maxwell Carper *Let It Pop!*

ELIFE-32 Yusra Alawawdah *Choose Right for a Smile so Bright*

ELIFE-33 Brielle Garcia *The Mozart Effect*

ELIFE-34 Brooke Shelland *Million Dollar Smile*

ELIFE-35 Rebecca Cox *Do People Navigate a Virtual Space the Same Way as they Navigate in a Physical Space?*

ELIFE-36 Sofia Beverido *Clean Water for Everyone*

ELIFE-37 Zoey Smith & **Halen Velasquez** *Which Filtration Material Leads to the Best Drinking Water?*

Elementary Physical Sciences

EPHYS-38 Lilly Ortiz *Stuck to You*

EPHYS-39 Ethan Cochran *Baseball Bats*

EPHYS-40 Ahmad Lilo *Reservoir Capacity of Igneous, Sedimentary and Metamorphic Rocks*

EPHYS-41 Will Rainer *Bubble Gum Blow Out*

EPHYS-42 Teddy Ligon *Eliminating Erosion*

EPHYS-43 Ian With *Mag Lev Scientific Magic*

EPHYS-44 Gareth Jones *Measuring the Earth's Magnetic Field*

EPHYS-45 Camylle Hubbard *Experimental Measurement of Drag on a Sphere*

EPHYS-46 Mila Kurth *Cubical Earth*

EPHYS-47 Ahmet Yanar *Fuel the Future*

EPHYS-48 Kymia Wortman *Stop Erosion!*

EPHYS-49 Yulanie Ruiz Munoz & **Alannah Salazar** *Electromagnet*

EPHYS-50 Micaiah Awuah-Gyasi *Anemometers*

Junior Behavioral & Social Sciences

JBEH-101 Eric Raymond *AI vs Human*

JBEH-102 Sienna Salvas *Which Treat Do Cats Prefer? (Price Edition)*

JBEH-103 Ella Duque *Brain Freeze*

JBEH-104 Lyla Del Curto *How Smart Is the Human Brain?*

JBEH-105 Abigail Garza *Color My Emotion*

Junior Chemistry

JCHEM-201 Trenton Pitz *Electrolytes at Work*

JCHEM-202 Irlanda Blanco *Bake, Break, or Cupcake?*

JCHEM-203 Vanessa Castro *Testing the Conductivity of Different Water Solutions*

JCHEM-204 Claire Power *Packed With Power*

JCHEM-205 Avianna Bernal *True Colors*

JCHEM-206 Rika Garcia *What Liquid Has the Most Electrolytes?*

JCHEM-207 Autumn Nguyen *The Science Behind the Oscillating Chemical Reaction*

JCHEM-208 Donovan Dominguez *Electrifying Fruits*

JCHEM-209 Kaylee Gray *What Liquids Make the Best Popping Boba?*

JCHEM-210 Lily Sandoval *How Many Carbohydrates Are in Different Milks?*

JCHEM-211 Beckett Nuanes *Fizz to Nothing*

Junior Computer Science

JCOMP-301 Wilson Hummingbird *Analyzing Music*

JCOMP-302 Emma Raymond *AI: A Proficient Classification System*

JCOMP-303 Ruthvik Quadros *Testing Speed of Linux and Windows*

JCOMP-304 Amelia Sedillo & **Catherine Sedillo** *Spacecraft Debris Avoidance in a 3D Environment*

JCOMP-305 Mateo Madrid Larranaga *Coding an In-the-Pocket LED*

JCOMP-306 Steinar Kelly *Lunar Tag*

JCOMP-307 Mauritius Turner *How Random Is Random?*

Junior Engineering

JENGR-401 Edward Bielejec *Analysis of Insulative Effectiveness as a Function of Polystyrene Foam Density*

JENGR-402 David Brooke *Developing a Desalination Solar Still Utilizing Mechanisms to Increase Effective Surface Area*

JENGR-403 **Troy Garcia** & **Champ Piper** *Up Your Game*

JENGR-404 **Maggie Lu** *The Effect Blade Shapes Have on the Rotations per Minute of Waterwheels*

JENGR-405 **Oliver Lechman** *Electromagnetic Life*

JENGR-406 **Isabella Ramos** *Preventing Accidents With Ultrasonic Sensors*

JENGR-407 **Harshin Reddy Jagirapu** *The Efficiency of Nano Silver Technology in Solar Cells*

JENGR-408 **Layla Abdelhack** *Does Weather Affect Solar Cell Output?*

JENGR-409 **Elijah Santos** *Windy Wind Mills*

JENGR-410 **Andrew Gonzales** & **Louis Ray** *Have You Ever Considered the Possibility of a Bridge Collapsing on You?*

JENGR-411 **Corbit Hopkins** *Investigation of the Effect of Nerf Dart Mass on Range*

JENGR-412 **Adalyn Baca** *Stitch Elasticity*

JENGR-413 **Julian N'getich** *Making a Faster Stealth Bomber*

JENGR-414 **Adam Briceno** *Which Liquid Works Best in Waterlight?*

JENGR-415 **Sonya Sanchez** *Do Ceiling Fans Cool off Rooms?*

JENGR-416 **Victoria Standlee** *Lightning Motors 2.0*

JENGR-417 **Leah Toledo** *Bright Ideas*

JENGR-418 **Anise Turner** *What Is the Best Kind of Oven?*

JENGR-419 **Pearl Duryea-Loewen** *Does the Submerged Construction of a House Impact the Internal Temperature of That House?*

Junior Earth & Environmental Sciences

JENVR-501 **Bryant Bell** *The Solar Generator*

JENVR-502 **Declan Padget** *WIndbreakers*

JENVR-503 **David Wang** *Frugal Filtration*

JENVR-504 **Aanya Asoori** *Using Tannic Acid as a Cost-Efficient Flocculant in Different Types of Wastewater*

JENVR-505 **Aja Patel** *Drink My Dish Water!*

JENVR-506 **Casidee Gutierrez** *Water Filtration*

JENVR-507 **Matias Pohl** *Evaporation Filtration*

JENVR-508 **Jarian Traxler** *What Holds Water the Best?*

JENVR-509 **Laila Khalil** *Decoding Ants' Sweet Tooth*

JENVR-510 **Braylon Sherwood** *Using Dirt to Get Clean*

JENVR-511 **Rania Awawda** *Water Quality*

JENVR-512 Habbas Awawda *Which Filtration Material Leads to the Best Drinking Water?*

JENVR-513 Max Hamilton *Chemicals in Drinking Water in the Albuquerque Area*

JENVR-514 Mira Nakip, Maram Taher & Mayar Taher *The Evaporation Meter*

JENVR-515 Zubeida Mohamed *Water Filter*

JENVR-516 Harper Owensby *Colors and Climate Change*

JENVR-517 Mila Pacheco *Filtration 101*

JENVR-518 Zachary Riley *What Type of Wrapping Would Have the Most Evaporation?*

JENVR-519 Mia Romero *Runoff Washout Part II*

JENVR-520 Ahana Koushik *Testing Whether Microplastics Can Pass from One Generation to the Next in Tomato Plants*

Junior Medicine & Health Sciences

JMED-H-601 Abigail Baum *The Best Effortless Method to Control Heart Rate*

JMED-H-602 Abdulkarim Alhassan & Hasan Zamir *Does Your Gender Effect Your Blood Pressure?*

JMED-H-603 Patrick Branch *A Tough Pill to Swallow*

JMED-H-604 Aarika Banerjee *Does Covid-19 Create Problematic Blood Clots?*

Junior Microbiology

JMICRO-701 Ruby Hennie *Dirty to Disinfected*

JMICRO-702 Emma Welch *DNA Extraction*

JMICRO-703 Oscar Groves *Health Professionals Recommend Chicken NOT be Washed Before Cooking*

Junior Physics & Astronomy

JPHY-801 Elizabeth Long *Coupling the Mechanical Oscillations in a Non-Galilean Pendulum*

JPHY-802 Patricio Vallejos *Drills That Grow Your Skills*

JPHY-803 Len Janert *Which Airfoil Creates the Most Amount of Lift?*

JPHY-804 Jaxon Argo *Vacuum Sucks*

JPHY-805 Miriam Jilek *Sugar Water Rainbow*

JPHY-806 Janessa Baber *Surface Tension*

JPHY-807 Jude Foulk *Exit Velocity*

JPHY-808 Kassandra Arundale-Walton & Skyla Bustard *Electrify Your Soda*

JPHY-809 Omar Terrazas *What Is the Best Way to Cool Soda?*

JPHY-810 Jafar Salem *Magnetism with Temperature*

JPHY-811 Afid Damian-Reyes & **Eli Serafin-Lopez** *Physics with a Slayer Exciter*

JPHY-812 Benson Shaw *Reflecting on Stealth*

JPHY-813 Madison McKenney *The Wave-Particle Duality of Light: An Introduction to Quantum Physics*

JPHY-814 Cruz Martinez *How Will Weight Affect the Performance of a Hovercraft?*

JPHY-815 Lorelai Hopkins *Strength of Water*

JPHY-816 Evan Varela *Basketball Lost Energy: Where Does It Go?*

Junior Plant Science

JPLANT-901 Saideetya Chinala *Effects of Chemicals on Seed Germination*

JPLANT-902 Allison Overton *My Rotten Apple*

JPLANT-903 Elijah Girroir *Farming with Aeroponics, Aquaponics and Hydroponics*

JPLANT-904 Jawad Awawda *A Plants Favorite Water*

JPLANT-905 RionMarie McBain *What Type of Water Helps Plants Grow the Fastest: Well Water, Tap Water or Filtered Water?*

JPLANT-906 Andres Valdez *How Will Different Types of Water Affect a Plant?*

JPLANT-907 Hailey Cannon *Dying Plants*

JPLANT-908 Luke Brito *Plant Race!*

Junior Energy & Transportation

JTRAN-1001 Achilles Orpinel-Padilla *Dirty Energy*

JTRAN-1002 Konik Pearl *Flying Cars*

JTRAN-1003 Sydney Kerr *Impact Roof Color Has on an Internal Temperature of a Home*

JTRAN-1004 Anderson Stoker *Producing Rocket Fuel with Consideration of Resources Found on Mars*

JTRAN-1005 Isabel Duselis *Driving and Arriving*

JTRAN-1006 Damien Vargas *Height and Velocity*

JTRAN-1007 Mateo Sanchez *Self Sustaining Generator*

JTRAN-1008 Gabe Ramos *What Gas Makes More Kinetic Energy: Carbon Dioxide or Helium?*

JTRAN-1009 Angelita Tapia & **Carmelita Tapia** *Maglev Trains*

JTRAN-1010 Samantha Nunez *Rubber Band Racer*

Senior Animal Science

SANI-1101 Xavier Martinez *Behavioral Changes in Crickets When Exposed to UV Light*

SANI-1102 Dakota Braught & **Regina Herrera** *The Effect of Gender Exposure on Cricket Behavior*

SANI-1103 Javier Camarena & **Rylie Reza** *Decreasing Salinity in Costal Waters Effects on Brine Shrimp and Surrounding Food Chain*

SANI-1104 George Privett *The Beetles: Examining the Effect of Isolated Supplementation in Cigarette Beetles to Optimize Nutrient and Biomass Transfer via Consumption*

SANI-1105 Salinda Stallings *Measuring the Neutralization of Capsaicin Using Earthworms*

SANI-1106 Milania Vigil *Do Isopods Prefer Plants or Fungi?*

Senior Behavioral & Social Sciences

SBEH-1201 Lola Cordova-Quinn & **Carter Higgins** *Does Delayed Gratification Correlate to Cognitive Function?*

SBEH-1202 Ana Choe *The Impact of Visuals on Phonological Working Memory*

SBEH-1203 Sarah House *Recognizing ChatGPT versus Human Writing*

SBEH-1204 Nicole Mangu *Making Faces: The Correlation Between Emotional Quotient (EQ) and the Ability to Discern False Verbal Statements from Truthful Ones Through an Analysis of Microexpressions*

SBEH-1205 Aubrey Kuper & **Olivia Pacheco** *The Color Competition*

SBEH-1206 Reanad Almanasra *The Stroop Effect Test: Introverts vs. Extroverts*

Senior Chemistry

SCHEM-1301 Rowan Oglesby *Saponin Soaps*

SCHEM-1302 Christina Agrusa & **Ryan Nguyen** *A Symphony in a Droplet: Improving Valve Oil for Brass Instruments*

SCHEM-1303 Matthew Hibler *How Different Electrodes and Electrolytes Affect the Production of Hydrogen in Electrolysis*

SCHEM-1304 Akilan Sankaran *Analyzing Per- and Poly-fluoroalkyl Substances through Atomistic Simulations*

SCHEM-1305 Alexia Webb *Increasing the Efficiency of Water Electrolysis*

SCHEM-1306 Charley Torres *Fighting Cavities*

SCHEM-1307 Elias Braun *Carbon Dioxide Capture and Storage Using Acid-Base Neutralization on CO2 Dissolved in Water*

Senior Computer & Mathematical Sciences

SCOMP-1401 Sowmya Sankaran *Generalization of Object Detection for Multiple Species in Drone Images Using a Fine-Tuned Machine Learning Model*

SCOMP-1402 Mya Ramon *Determining Which Zip Codes Affect Housing Prices the Most in New Mexico*

SCOMP-1403 Anirudh Nanda *A Comparative Analysis of the CGNR and CAV Iterative Algorithms in Solving Linear Systems of Equations*

SCOMP-1404 Jacob Cummings *Object Identification: Are Two Models Better than One?*

SCOMP-1405 Kyuryeon Kim *Learning Drug Representation Using Drug-Drug Similarity for Large-Scale Prediction of Drug-Drug Interactions*

SCOMP-1406 Branden Rastegari-Kirk *Programming Language Speed Comparison*

SCOMP-1407 Ohafi Faruk *Using Artificial Intelligence and Machine Learning to Predict Criminal Activity in Albuquerque*

Senior Engineering

SENGR-1501 Allyna Thomas *Does the Choice of Infill Patterns Affect the Result of the Compressive Strength in Weaker or Stronger Materials?*

SENGR-1502 Matthew Brooke *Turning the Tide: Designing a New Floodwall*

SENGR-1503 Ameen Asfan *Building a 3D Printer Utilizing 3D Printed Components*

SENGR-1504 James Hung *Creating a More Efficient Heat Sink for EV Batteries*

SENGR-1505 Asa Hoover *Triboelectric Nanogenerators: Exploring Material Combinations for Efficient Energy Harvesting*

SENGR-1506 Michael Contreras *Optimizing Heat Preservation: A Study on Effective Insulating Materials*

SENGR-1507 Orion Gonzales *The Economic Viability of Dual-Axis Solar Tracking without Computational Technology*

SENGR-1508 Naveen Gonzales *Making Biodegradable "Water Bottles"*

SENGR-1509 Nathan Moritz *Optimal Rod Shape for Velocity and Perforation*

SENGR-1510 Jason McDonald *3D Printing in a Vacuum: Creating a 3D Printer That Can Function in the Environment of Space*

SENGR-1511 Adalynn LeBaron & **Annika LeBaron** *How Blade Shape in Propeller Design Impacts Thrust*

SENGR-1512 Kevin-Khanh Do-Nguyen & **Alex Sitarz** *What Is the Most Efficient Structure for Artificial Slow-Twitch Muscle Fibers?*

SENGR-1513 Keith Fike & **Connor McLellan** *What Is the Optimal Material to Use in Building a Model Humerus Bone?*

SENGR-1514 Andrew Boggan & **Clark Kardian** *MOCHA: Motorized Operator Controlled Hand Apparatus*

SENGR-1515 Michael Wright *Making a Game*

Senior Energy & Transportation

STRAN-1601 John Edwards & **Joshua Wilson** *Hydrogen-Oxygen Engine*

STRAN-1602 Jiayang Wang *A Self-Adjusting Resonating Piezoelectric Vibration Energy Collector Based on a Cantilever Structure*

STRAN-1603 Yusef Abdelhack *MAGLEV*

STRAN-1604 Stephan James *Collecting Airplane Static to Power Parts*

Senior Earth & Environmental Sciences

SENVR-1701 Luke Brown *The Study of PPM and TDS With Chemicals on Water*

SENVR-1702 Sebastian Stoker *Analyzing the Effectiveness and Scalability of Natural and Artificial Filters at Sequestering Aquatic Microplastics*

SENVR-1703 Taylor Gomez & **Saanvi Kadu** *Construction of an Environmentally Efficient and Solar-Powered System to Distill Salinated Water for Hydroponic Cultivation*

SENVR-1704 Tenzin Tsering *Sloped Sites*

SENVR-1705 Audrey Finkelstein *Analyzing the Origins of Microplastic Contaminants in Honey*

SENVR-1706 Kaitlynn Ramsey *From Fires to Fields: How Is Soil Affected by Fire?*

SENVR-1707 Josh Shaver *The Effect of Green Roofs on the Interior Temperature of Buildings*

SENVR-1708 Megan Spurgeon *Dissolvable Plastic and Its Effects on Plants*

SENVR-1709 Ojemeh Ukpedinjagba *Using AI Topology Optimization to Refine Biodegradable Plastics*

SENVR-1710 Aurora Espinosa *Effect of Gas Ovens on Home Air Quality*

SENVR-1711 Clayton Buttram *Do Urban Surfaces Affect City Temperatures?*

SENVR-1712 Gene Huntley *A Realtime Camera Fusion 3D Model with a Novel Feature-Matching and Star Identification-Based Calibration for Tracking Smoke Plumes*

SENVR-1713 Isaiah Lopez *Can Radiation Be Washed Away?*

Senior Materials Science

SMATS-1801 Peyton Kerr *Investigating the Effectiveness and Necessity of the Two Current Radon Abatement Systems*

SMATS-1802 Akansha Nanda & **Pearl Nguyen** *Conducting Novel Thermomechanical Temperature Variation Analysis with Thermal Characterization of Microparticulate Helices and Other Geometric Devices.*

SMATS-1803 Keira Gray *Firewalls (Which Housing Materials Best Resist Fire Damage)*

SMATS-1804 Jalyn Lovato *Kombucha Leather in the Rain: Waterproofing the Future!*

SMATS-1805 Philip Marquardt *Testing the Rate of Fatigue on Various Materials*

Senior Biology & Biochemistry

SBIOCH-1901 Irina Gruzdeva *Efficiency of Silver Ions Added to Ammonium Silk in Disinfection*

SBIOCH-1902 Dhruv Grandhe *Modeling Chronic Cadmium Exposure Effects on Epithelial Cell Migration*

SBIOCH-1903 Rachel Taylor *Effects of Hemotoxins on Mammalian Blood*

SBIOCH-1904 Bridget Braun *Sourdough in Space*

Senior Microbiology

SMICRO-2001 Nellie Zamora *Preserving Fruits and Vegetables with Essential Oils*

SMICRO-2002 Kailynn Hernandez *A Natural Nemesis to Fruit Decomposition*

SMICRO-2003 Gabrielle Montoya *Nature's Antibiotic*

SMICRO-2004 Marissa Montano *5 Second Rule*

SMICRO-2005 Sarah Revelli & **Carly Worthen** *Bacterial Band*

SMICRO-2006 Alex McGee *Acetate Results on Bacterial Electricity*

Senior Medicine & Health Sciences

SMED-H-2101 Reese Brown & **Chloe Vincent** *Reducing Cortisol Levels to Heart Conditions*

SMED-H-2102 Natavianna Dodge *Bioartificial Pancreas Arduino: Creating a Feedback Circuit for an Artificial Pancreatic Prototype to Revolutionize Diabetes Management!*

SMED-H-2103 Arjun Ganesh *Machine Learning Approaches to Determine Sex-Related Immune Factors in Skin Cutaneous Melanoma*

Senior Physics & Astronomy

SPHY-2201 Haasika Reddy Jagirapu *Characterizing Dark Matter*

SPHY-2202 Alfred Jones *Designing an Optimized Acoustic Lens for Sonic Focus and Enhancement*

SPHY-2203 Sama Lilo *Measuring Skyglow Using a Digital Camera*

Senior Plant Science

SPLANT-2301 Hyder Mandilawi & **Sean Rey-Vaughn** *Effect of Electro Stimulation on Pinto Bean Growth in Hydroponics*

SPLANT-2302 Eric Valerio *The Differences in Plant Growth Based on Earthworms Altered Activity Levels in Soil by the Presence of Light*

SPLANT-2303 Ryanne Hughes *Do Radishes Respond Well to Roommates? The Effect of Different Seed Groupings on Radish Growth*

SPLANT-2304 Claire Ross *Increasing Yield and Food Safety in a Home Grown Hydroponics System with Vermicompost Tea*

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