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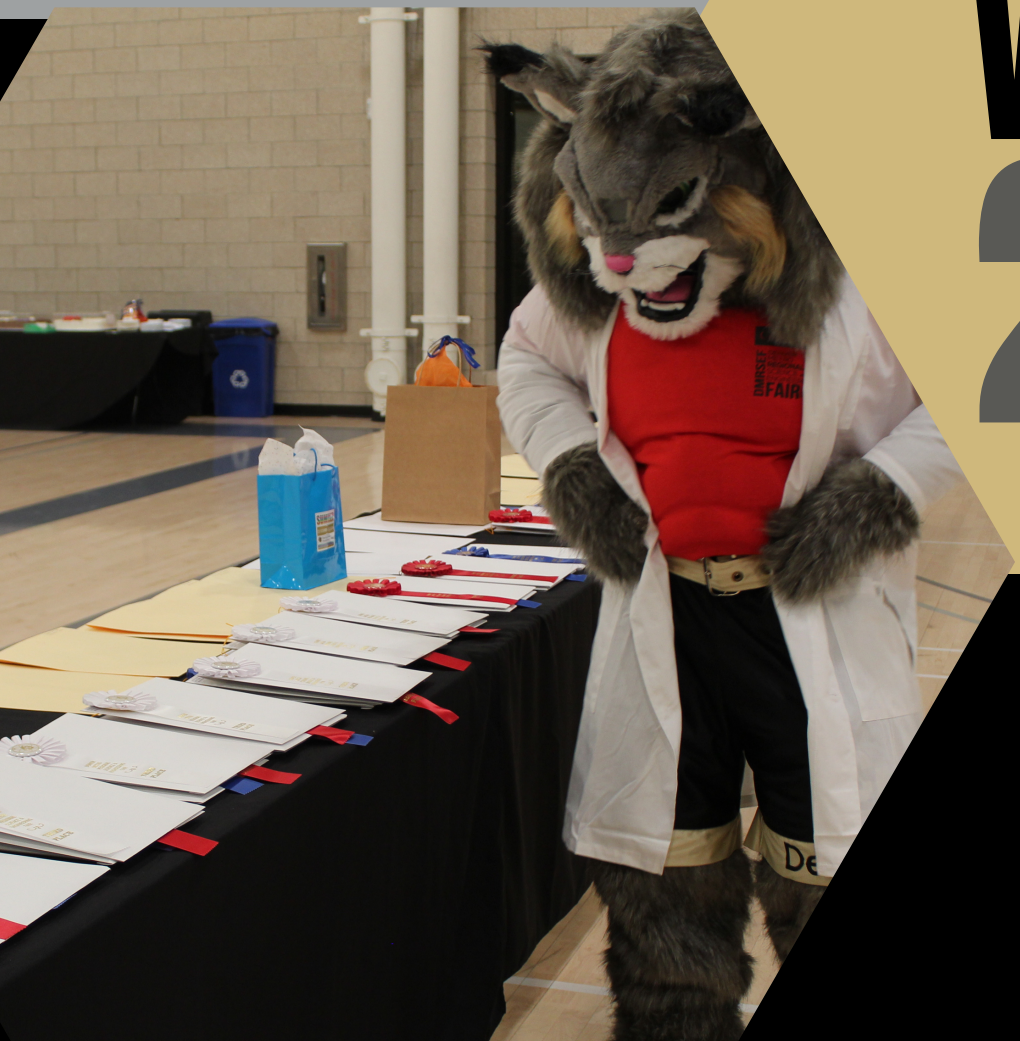
DMRSEF

DENVER METRO **REGIONAL** SCIENCE AND ENGINEERING **FAIR**

DMRSEF WINNERS 2021



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DMRSEF DENVER METRO REGIONAL SCIENCE AND ENGINEERING FAIR

We are proud to present the following students with the 58th Annual Denver Metro Regional Science and Engineering Fair **BEST IN FAIR** awards:

SENIOR DIVISION

Senior First Place: Reese Titensor
Effects of cannabidiol exposure on cortisol levels in Danio rerio embryos with heat induced stress

Senior Second Place: Tyler Burt
A Novel Mask Insert to Reduce Habitual Particle Transmission

Senior Third Place: Aditi Avinash
Breakdown of Gluten Proteins using a Newly Identified Combination of Fruit Derived Enzymes to Alleviate Symptoms of Gluten Intolerance

Senior First Alternate: Berlin Barnett & Sabine Manske
Diffusion Limitation Considerations for Alginate Hydrogels for use in a Breast Model Post-Mastectomy

Senior Second Alternate: Rachel Christensen
The Environmental Effect on Aquatic Ecosystems of Run-Off From Wildfires Where Fire Retardant Slurry Was Used

JUNIOR DIVISION

Junior First Place: Elizabeth Vossler
Blink-183: The Effect of Projected versus Reflected Light on Blinking Rate

Junior Second Place: Kanshita Dam
How do vibrations from sound waves affect plant growth?

Junior Third Place: Chloe Pennington
Would You Drink That?! The Relationship Between Batch Test and Amount of PFAS Parts Per Trillion

Junior Honorable Mention: Lucas Dunn
On Target

JUNIOR CATEGORY AWARD WINNERS

Behavioral & Social Sciences

First Place - Elizabeth Vossler
Blink-183; The Effect of Projected versus Reflected Light on Blinking Rate
Second Place - Mila Vigil
Brain Waves and Parkinson's Disease: An Early Detection?
Third Place - Lola Green & Phoebe Donovan
The Cover Up; The Relationship Between Face Masks and Perception of Facial Cues

Biological Sciences

First Place - Kanshita Dam
How do vibrations from sound waves affect plant growth?

Computer Science

First Place - Niram Nagafuji & Akhil Ayalur
Does Benford's Law match COVID-19 data?

Physics and Astronomy

First Place - Lucas Dunn
On Target
Second Place - Holden Demain
The Relationship Between Pressure and the Bounce Height of a Basketball

Earth and Environmental Sciences

First Place - Chloe Pennington
Would You Drink That?! The Relationship Between Batch Test and Amount of PFAS Parts Per Trillion
Second Place - Shrreya Sethuramalingam
Chlorophyta and Lemnoideae Components Impacting the Contaminants of H20
Third Place - Louis Calkin
Extended Use of Oil Phylic Hydrophobic Sponges in Stormwater Remediation Prove Effective and Economical

Engineering and Material Sciences

First Place - Ersel Serdar
Dust Begone: Using Arduinos to Clean Mars Rover Solar Panels
Second Place - Samuel Calkin
Biosourced Flame Retardant is a Viable Alternative to Toxic PFAS (poly/fluoro/alkyl substances)/ 'forever chemical' Retardant
Third Place - Brigid Morin
Protect-All

Medicine and Health Sciences

First Place - Julian Kramer
Don't UV Burning Me: A Comparative Study Examining Which Type of Sunscreen Blocks More UV Rays

SENIOR CATEGORY AWARD WINNERS

Animal Sciences

First Place - Reese Titensor
Effects of cannabidiol exposure on cortisol levels in *Danio rerio* embryos with heat induced stress
Second Place - Alex Ramsey
Determining if Common Waste Products, Coupled with a Simple Base, Provide Stable Nutritional Value for Mealworms

Behavioral Sciences

First Place - Akshati Vaishnav
Evaluating Anxiety Levels through a ML-based Algorithm
Second Place - Max Aronheim
What Patterns Reside Within Music Composition: What defines genres?

Computer Sciences

First Place - Emily Zhang
Fusing LiDAR and Camera Data for Advanced Context Recognition in Autonomous Navigation Sensory Systems through Multi-Dimensional Neural Network Architectures
Second Place - Aryan Roy
VR Tele-Rehabilitation and Machine Learning Techniques to better assist in cancer diagnosis and quality of life

Biological Sciences

First Place - Aditi Avinash
Breakdown of Gluten Proteins using a Newly Identified Combination of Fruit Derived Enzymes to Alleviate Symptoms of Gluten Intolerance
Second Place - Sydney George and Kevin Collins
Investigating the impact of ALS-associated point mutations on ErbB4's proteolysis
Second Place (Tie) - Kaylin Hanna
Encapsulating Bacterial Biofilms: Adapting Cyanoacrylate Skin Adhesive to Create a Bacteriostatic, Superhydrophobic Device Coating that Reduces Infection Risk

Earth and Environmental Sciences

First Place - Rachel Christensen
The Environmental Effect on Aquatic Ecosystems of Run-Off From Wildfires Where Fire Retardant Slurry Was Used
Second Place - Ibrahim Mohammad
Understanding Wildfires for Better Prevention Using an Image Classification Neural Network
Third Place - Caden Eagle
Chlorella's Effect on CO_2 Emissions from Vehicles

SENIOR CATEGORY AWARD WINNERS

Chemistry & Energy – SCHE

First Place - Ayan Vaishnav
Designing and Evaluating the Performance of Novel Airfoil Innovations Using SOLIDWORKS
Second Place - Arjun Batra
Implementation of a Copper Catalyst for Methane Hydrate Formation
Third Place - Chandler Slowik
Micro Hydro Electric Generator

Engineering and Material Sciences

First Place - Tyler Burt
A Novel Mask Insert to Reduce Habitual Particle Transmission
Second Place - Rithvik Ijju
A Human-Machine Interface That Helps Quadriplegic Patients Communicate by Translating Eye Blinks into Morse Code.

Plant Sciences – SPLT

First Place - Cora Becker and Amanda Behmer
A Peek into Plastic Pollution: The effect of irradiated PET microplastics on the culture density of *Chlamydomonas reinhardtii*

Medicine and Health Sciences

First Place - Sabine Manske and Berlin Barnett
Diffusion Limitation Considerations for Alginate Hydrogels for use in a Breast Model Post-Mastectomy
Second Place- Rohini Kompella
Quantitative Methods for Anti-glaucoma Drug Concentration-Response Relationships in the Human Eye: Single Bimatoprost Slow-Release System for Six-month Glaucoma Therapy
Third Place - Matthew Anderson
Early Diagnosis of Parkinsonism via a Smartphone Application

Plant Sciences – SPLT

First Place - Cora Becker and Amanda Behmer
A Peek into Plastic Pollution: The effect of irradiated PET microplastics on the culture density of *Chlamydomonas reinhardtii*

Social Sciences – SSSC

First Place - Siena Negron
Political Bias Assessment
Second Place - Aiden Lee
Finding an Ideal Model of Different Socioeconomic Factors that Maximize Happiness and Minimize Depression

SPECIAL AWARD WINNERS

American Meteorological Society
Maya Hunter – Senior Earth and Environmental Sciences
COVID-19 Shutdowns and Air Quality: A demographic analysis

American Psychological Association
Siena Negron -
Political Bias Assessment

ASM Materials Education Foundation
Tia Seniw & Akhniyet Makhsat -
The Effectivity of Nonwoven Fabrics for Use in Marine Oil Spill Cleanup

Association for Women Geoscientists
Bryne Knowles and Emily Lia -
Dam Break Modeling on the Cherry Creek Reservoir to Predict Potential Flood Impacts

Nugent Family Statistical Award
Akhil Ayalar & Niram Nagafuji -
Does Benford's Law match COVID-19 data?
Srinivas Arun -
Analyzing Google DataCommons and County-Level COVID-19 Data

DMRSEF Teacher of the Year
Kevin Nugent – Friends School, Second Year DMRSEF teacher

Cherry Creek Basin Water Quality Authority
Tia Seniw &Akhniyet Makhsat
The Effectivity of Nonwoven Fabrics for Use in Marine Oil Spill Cleanup

City of Aurora Stormwater Education
Kabir Srivastava -
No More Royal Oil

CO/WY American Statistical Association
Akber Shaikh -
High throughput neural tissue drug delivery and correlation with molecular descriptors
Akhil Ayalar & Niram Nagafuji -
Does Benford's Law match COVID-19 data?

Colorado Chapter of the Soil and Water Conservation Society
Cora Becker, Amanda Behmer -
A Peek into Plastic Pollution: The effect of irradiated PET microplastics on the culture density of Chlamydomonas reinhardtii
Rachel Christensen –
The Environmental Effect on Aquatic Ecosystems of Run-Off From Wildfires Where Fire Retardant Slurry Was Used
Louis Calkin -
Extended Use of Oil Phylic Hydrophobic Sponges in Stormwater Remediation Prove Effective and Economical
Shrreya Sethuramalingam -
Chlorophyta and Lemnoideae Components Impacting the Contaminants of H20

CoorsTek
Nikhila Narayana -
Catching the Sun: Harnessing Stokes Shift to Increase Solar Cell Efficiency
Rithvik Ijju -
A Human-Machine Interface That Helps Quadriplegic Patients Communicate by Translating Eye Blinks into Morse Code.

CU Science Discovery Anschutz
Mila Vigil –
Brain Waves and Parkinson's Disease: An Early Detection?

CU-Anschutz, Neuroscience Program
Matthew Anderson -
Early Diagnosis of Parkinsonism via a Smartphone Application
Mila Vigil -
Brain Waves and Parkinson's Disease: An Early Detection?

Denver Mensa
Santiago Castillo -
Influence of Mars's Gravity and Seismicity on Mining Waste Dumps Facilities
Elizabeth Vossler -
Blink-183: The Effect of Projected versus Reflected Light on Blinking Rate

SPECIAL AWARD WINNERS

Denver Museum of Nature and Science
Aditi Avinash -
Breakdown of Gluten Proteins using a Newly Identified Combination of Fruit Derived Enzymes to Alleviate Symptoms of Gluten Intolerance
Holden Demain -
The Relationship Between Pressure and the Bounce Height of a Basketball

Denver Water Quality Team
Louis Calkin -
Extended Use of Oil Phylic Hydrophobic Sponges in Stormwater Remediation Prove Effective and Economical

Ferrara Family Award for Scientific Advancement of Social and Environmental Justice
Akhil Ayalar & Niram Nagafuji -
Does Benford's Law match COVID-19 data?
Maya Hunter –
COVID-19 Shutdowns and Air Quality: A demographic analysis
Srinivas Arun -
Analyzing Google Data Commons and County-Level COVID-19 Data

Innovation in Water and Wastewater Award
Gitanjali Rao -
Novel Detection of *C. parvum* Transposons in Potable Water Using Genetically Engineered Bioelectric Sensors

Junior Student Choice Award
Elizabeth Vossler -
Blink-183; The Effect of Projected versus Reflected Light on Blinking Rate

Mu Alpha Theta
Roshan Klein-Seetharaman, Jacob Ellis -
Evolution of Multi-Step Traits in Different Social Structures

NASA Earth System Science Award
Nikhila Narayana -
Catching the Sun: Harnessing Stokes Shift to Increase Solar Cell Efficiency

National Oceanic and Atmospheric Administration
Bryne Knowles, Emily Lai -
Dam Break Modeling on the Cherry Creek Reservoir to Predict Potential Flood Impacts

NSA Colorado
Emily Zhang -
Fusing LiDAR and Camera Data for Advanced Context Recognition in Autonomous Navigation Sensory Systems through Multi-Dimensional Neural Network Architectures
Abbas Shaikh -
A Deep Learning Framework for Automated Brain Tumor Segmentation and Survival Prediction Using Multimodal MRI Scans
Rithvik Ijju -
A Human-Machine Interface That Helps Quadriplegic Patients Communicate by Translating Eye Blinks into Morse Code.
Esrel Serdar -
Dust Begone: Using Arduinos to Clean Mars Rover Solar Panels
Akhil Ayalur, Niram Nagafuji -
Does Benford's Law match COVID-19 data?

Office of Naval Research
Reese Titensor -
Effects of cannabidiol exposure on cortisol levels in Danio rerio embryos with heat induced stress
Louis Calkin -
Extended Use of Oil Phylic Hydrophobic Sponges in Stormwater Remediation Prove Effective and Economical
Aryan Roy -
VR Tele-Rehabilitation and Machine Learning Techniques to better assist in cancer diagnosis and quality of life
Gitanjali Rao -
Novel Detection of *C. parvum* Transposons in Potable Water Using Genetically Engineered Bioelectric Sensors

One World One Water Center at MSU
Louis Calkin -
Extended Use of Oil Phylic Hydrophobic Sponges in Stormwater Remediation Prove Effective and Economical

SPECIAL AWARD WINNERS

Parker Water and Sanitation District
Shrreya Sthuramalingam -
Chlorophyta and Lemnoideae Components Impacting the Contaminants of H20
Gitanjali Rao -
Novel Detection of *C. parvum* Transposons in Potable Water Using Genetically Engineered Bioelectric Sensors
Reese Titensor -
Effects of cannabidiol exposure on cortisol levels in *Danio rerio* embryos with heat induced stress

Ricoh USA, Inc.
Samuel Calkin -
Biosourced Flame Retardant is a Viable Alternative to Toxic PFAS (poly/fluoro/alkyl substances)/ 'forever chemical' Retardant

Rocky Mountain Section of the American Water Works Association
Chloe Pennington -
Would You Drink That?! The Relationship Between Batch Test and Amount of PFAS Parts Per Trillion

Rocky Mountain Water Environment Federation
Rachel Christensen -
The Environmental Effect on Aquatic Ecosystems of Run-Off From Wildfires Where Fire Retardant Slurry Was Used

Senior Student Choice Award
Cedar Wine -
Determining the Correlation between Blood Sugar Metabolism and Ubiquinone-10: A Survey of Existing Research and a Proposed Design for Medical Experimentation

Sigma Alpha Lambda
Shriya Sriram and Mahi Mehta -
Testing the effect of age and gender on body image perception

Society for Petroleum Engineers
Nikhila Narayana-
Catching the Sun: Harnessing Stokes Shift to Increase Solar Cell Efficiency
Stefan Zehnacker -
Watch it Wash!

Society for In Vitro Biology
Tia Abraham -
Predictive Analysis of Transcription Factors to Directly Reprogram Human Cells

Stormwater Permittees for Local Awareness of Stream Health (SPLASH)
Caden Eagle
Chlorella's Effect on CO2 Emissions from Vehicles

U.S. Agency for International Development
Gitanjali Rao –
Novel Detection of *C. parvum* Transposons in Potable Water Using Genetically Engineered Bioelectric Sensors

U.S. Metric Association
Reese Titensor -
Effects of cannabidiol exposure on cortisol levels in *Danio rerio* embryos with heat induced stress

U.S. Stockholm Junior Water Prize
Gitanjali Rao -
Novel Detection of *C. parvum* Transposons in Potable Water Using Genetically Engineered Bioelectric Sensors
Chloe Pennington -
Would You Drink That?! The Relationship Between Batch Test and Amount of PFAS Parts Per Trillion
Shrreya Sethuramalingam -
Chlorophyta and Lemnoideae Components Impacting the Contaminants of H20

Yale Science and Engineering Association
Gitanjali Rao -
Novel Detection of *C. parvum* Transposons in Potable Water Using Genetically Engineered Bioelectric Sensors

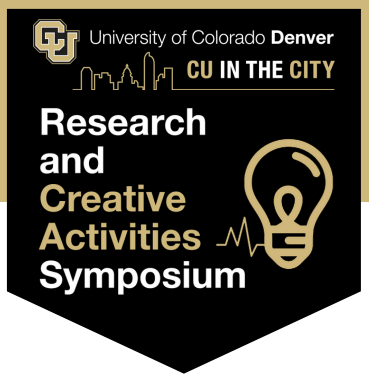
THE FOLLOWING STUDENTS HAVE BEEN NOMINATED TO PARTICIPATE AT THE COLORADO SCIENCE AND ENGINEERING FAIR (CSEF)

ABBAS SHAIKH
ADITI AVINASH
AIDEN LEE
AKBER SHAIKH
AKHIL AYALUR
AKHNIYET MAKHSAT
AKSHATI VAISHNAV
ALEX RAMSEY
AMANDA BEHMER
ARJUN BATRA
ARYAN ROY
AYAN VAISHNAV
BERLIN BARNETT
BRIGID MORIN
BRYNE KNOWLES
CADEN EAGLE
CEDAR WINE
CHANDLER SLOWIK
CHLOE PENNINGTON
CORA BECKER
ELIZABETH VOSSLER
EMILY LAI
EMILY ZHANG
ERSEL SERDAR
GITANJALI RAO
HOLDEN DEMAIN
IBRAHIM MOHAMMED
JACOB ELLIS
JULIAN KRAMER
KABIR SRIVASTAVA
KANSHITA DAM
KAYLIN HANNA
KEVIN COLLINS
LOLA GREEN
LOUIS CALKIN
LUCAS DUNN
MAHI MEHTA
MATTHEW ANDERSON
MAX ARONHEIM
MAYA HUNTER
MILA VIGIL
NIKHILA NARAYANA
NIRAM NAGAFUJI
PHOEBE DONOVAN
RACHEL CHRISTENSEN
REESE TITENSOR
RITHVIK IJJU
ROHINI KOMPELLA
ROSHAN KLEIN-SEETHARAMAN
SABINE MANSKE
SAMUEL CALKIN
SANTIAGO CASTILLO
SHRIYA SRIRAM
SHRREYA SETHURAMALINGAM
SIENA NEGRON
SRINIVAS ARUN
STEFAN ZEHNACKER
SYDNEY GEORGE
TIA ABRAHAM
TIA SENIW
TYLER BURT

THE FOLLOWING STUDENTS HAVE BEEN NOMINATED TO PARTICIPATE IN FUTURE COMPETITIONS INCLUDING...

ELIZABETH VOSSLER
MILA VIGIL
PHOEBE DONOVAN
LOLA GREEN
KANSHITA DAM
AKHIL AYALUR
NIRAM NAGAFUJI
CHLOE PENNINGTON
SHRREYA SETHURAMALINGAM
LOUIS CALKIN
ERSEL SERDAR
SAMUEL CALKIN
BRIGID MORIN
JULIAN KRAMER
LUCAS DUNN
HOLDEN DEMAIN
KABIR SRIVASTAVA
SHRIYA SRIRAM
MAHI MEHTA
STEFAN ZEHNACKER

REESE TITENSOR
TYLER BURT
ADITI AVINASH



ADITI AVINASH
AKSHATI VAISHNAV
AYAN VAISHNAV
CHLOE PENNINGTON
CORA BECKER
AMANDA BEHMER
ELIZABETH VOSSLER
EMILY ZHANG
ERSEL SERDAR
JULIAN KRAMER
KANSHITA DAM
LUCAS DUNN
NIRAM NAGAFUJI
AKHIL AYALUR
RACHEL CHRISTENSEN
REESE TITENSOR
SABINE MANSKE
BERLIN BARNETT
SIENA NEGRON
TYLER BURT