

Award: ANIMAL SCIENCES

Third Place: Pietra deBoer Division: J 36636

Project: Which is More Effective, Wool Synthetic or Neoprene Saddle Pads, at Reducing Under Saddle Pad

Temperature for Hoses

School: CHRISTIAN COTTAGE PREP MIDDLE SCHOO Advisor: Teri Willis

Second Place: Ben Westbrook Division: J 39026

Project: Keystone....Dominoes? A Study of the Centrochelys Sulcate

School: North Texas Academy of Higher Learning - Middle Advisor: Linda Chisholm

First Place: Arnold Xu Division: J 18673

Project: Hot Beetle Pulling Iron

School: LIBERTY CHRISTIAN SCHOOL Advisor: Aaron Mouser



Award: BEHAVIORAL & SOCIAL SCIENCES

Third Place: Molly Monschke Division: J 22870

Project: Fonts to Remember

School: LIBERTY CHRISTIAN SCHOOL Advisor: Amy Funderburk

Second Place: Harry Black Division: J 32950

Project: Letters vs. Numbers

School: ST. JOSEPH CATHOLIC SCHOOL IN ARLINGT
Advisor: Shannon Connors

First Place: Nolan Cox Division: J 35382

Project: Chirography versus Digital Note-taking: An Experimental Analysis

School: HARMONY SCHOOL OF INNOVATION MIDD Advisor: Johnny Ha

Division: J



38607

Award: **BIOCHEMISTRY**

Third Place: Jesse Rutherford

Project: How much DNA are in a cell?

School: Sue Crouch Intermediate Advisor: Bryan Michler

Second Place: Amar Sharma Division: J 37250

Project: The Dino Glow: Starring Pyrocystis fusiformis

School: HARMONY SCHOOL OF INNOVATION MIDD Advisor: Sandi Parsons

First Place: Ruhani Ahluwalia Division: J 35923

Project: Trojan Horse Delivers Lapatinib to Cancer Cells While It Limits Damage to Normal Cells

School: HARMONY SCHOOL OF INNOVATION MIDD Advisor: Sandi Parsons



Award: CHEMISTRY

Third Place: Wafiqah Zubair Division: J 37610

Project: Antacid Effectivity

School: HARMONY ACADEMY - EULESS MIDDLE SC Advisor: Ramesh Subedi

Second Place: Itay Rekhelis Division: J 37580

Project: Endothermic vs. Exothermic Reactions

School: HARMONY SCHOOL OF INNOVATION MIDD Advisor: Johnny Ha

First Place: Tatiana Streidl Division: J 38305

Project: Transference Terror: Are You Feeding Your Family VOCs?

School: North Texas Academy of Higher Learning - Middle Advisor: Linda Chisholm



Award: **COMPUTER SCIENCE**

Third Place: Lucas Melson Division: J 15336

Project: Cell Tower Tracking

School: LIBERTY CHRISTIAN SCHOOL Advisor: Aaron Mouser

Second Place: Thomas Holt Division: J 35848

Project: Cracking the Code - How safe is your password?

School: HARMONY SCHOOL OF INNOVATION MIDD Advisor: Sandi Parsons

First Place: Nikhil Thomas Division: J 34636

Project: Learning Rubik's Cube Solver

School: Harmony Science Academy Carrollton-Middle Sch Advisor: Sukran Cakiroglu



Award: EARTH & PLANETARY SCIENCE

Third Place: Kate Morton Division: J 37811

Project: The Impact of Tree Cover on PM2.5 Levels

School: HOLY FAMILY CATHOLIC MIDDLE SCHOOL Advisor: Kimberly Pierce

Second Place: Gracie Nichols Division: J 37044

Project: Crystal Conclusions

School: NORTH JOSHUA ELEMENTARY Advisor: Patti Jones

First Place: Emma Risley Division: J 37602

Project: Will It Kill It?

School: ST. JOHN APOSTLE CATHOLIC MIDDLE SCH
Advisor: Sally Tice



Award: ENERGY & TRANSPORTATION

Third Place: Rory Sumien Division: J 36420

Project: FROZEN FUN

School: Loflin Middle School Advisor: Toni Worden

Second Place: Zach Salter Division: J 16286

Project: Mirror, Mirror

School: LIBERTY CHRISTIAN SCHOOL Advisor: Aaron Mouser

First Place: Brandon Sauceda Division: J 37874

Project: Which detergent whitens the most?

School: HARMONY SCHOOL OF INNOVATION MIDD

Advisor: Johnny Ha



Award: ENGINEERING: ELECTRICAL & MECHANICAL

Third Place: Avery Hutka Division: J 14917

Project: Bombs Away! A Ball Catapult

School: ST. ELIZABETH ANN SETON CATHOLIC MID Advisor: Katherine Arnold

Third Place: Ava Roberts Division: J 14917

Project: Bombs Away! A Ball Catapult

School: ST. ELIZABETH ANN SETON CATHOLIC MID Advisor: Katherine Arnold

Second Place: Israel Cartagena Division: J 35156

Project: Off the Radar

School: ST. JOHN APOSTLE CATHOLIC MIDDLE SCH
Advisor: Sally Tice

First Place: Rajveer Sagoo Division: J 36994

Project: Fuse Rockets 2

School: HARMONY SCHOOL OF INNOVATION MIDD Advisor: Johnny Ha



Award: ENGINEERING: MATERIALS & BIOENGINEERING

Third Place: Aidan Weller Division: J 16801

Project: Which Metal Corrodes the Fastest in Tap Water with Salt Added

School: LIBERTY CHRISTIAN SCHOOL Advisor: Kate Daggett

Second Place: Thu Le Division: J 34908

Project: Absorption of Radiant Energy

School: Harmony Science Academy Carrollton-Middle Sch Advisor: Fatma Ince

First Place: Michael Clark Division: J 35518

Project: Bioplastic Decompostition

School: HARMONY SCHOOL OF INNOVATION MIDD Advisor: Sandi Parsons



Award: ENVIRONMENTAL SCIENCES

Third Place: Johann Elano Division: J 37779

Project: U'v Been Blocked

School: HARMONY SCHOOL OF INNOVATION MIDD Advisor: Sandi Parsons

Second Place: Guangshun Chen Division: J 35353

Project: Dry Ice Electricity

School: HARMONY SCHOOL OF INNOVATION MIDD Advisor: Sandi Parsons

First Place: Ashar Khazi-Syed Division: J 36120

Project: Microbes: Giants of Power

School: HARMONY SCHOOL OF INNOVATION MIDD Advisor: Johnny Ha



Award: MATHEMATICAL SCIENCES

Third Place: Jonathan Rositas Division: J 20104

Project: Dice Rolls & Probability

School: ACTON MIDDLE SCHOOL Advisor: Scott Carpenter

Second Place: Sarra Khan Division: J 38097

Project: The Golden Ratio Effect

School: HARMONY ACADEMY - EULESS MIDDLE SC Advisor: Mary Dunn

First Place: Irene Strzhemechny Division: J 37454

Project: Does the function in the logistic equation change the Feigenbaum portrait?

School: HARMONY SCHOOL OF INNOVATION MIDD Advisor: Sandi Parsons



Award: MEDICINE AND HEALTH SCIENCES

Third Place: Margaret Cordero Division: J 28027

Project: Go Turmeric! Fight Bacteria and Fungus!

School: HARMONY SCHOOL OF INNOVATION MIDD Advisor: Esen Akyol

Second Place: Kaitlin Starnes Division: J 35735

Project: Bones of Steel?

School: Irma Marsh Middle School Advisor: Shelia Connor

First Place: Rohit Rao Division: J 36770

Project: Dealing With Diabetes: Creating an Artificial Pancreas

School: Harmony Science Academy Carrollton-Middle Sch

Advisor: Fatma Ince



Award: MICROBIOLOGY

Third Place: Gianna deLeon Division: J 38673

Project: Your Berry Survival depends on it!

School: ST. JOHN APOSTLE CATHOLIC MIDDLE SCH Advisor: Sally Tice

Second Place: Scout Skaggs Division: J 34696

Project: Rx Success

School: ACTON MIDDLE SCHOOL Advisor: Scott Carpenter

Second Place: Marissa Ward Division: J 34696

Project: Rx Success

School: ACTON MIDDLE SCHOOL Advisor: Scott Carpenter

First Place: Sydney Reardon Division: J 19731

Project: What's Lurking at Liberty?

School: LIBERTY CHRISTIAN SCHOOL Advisor: Amy Funderburk



Award: PHYSICS AND ASTRONOMY

Third Place: Zane Sheffield Division: J 39425

Project: Repelled: Diamagnetic Personality

School: Sheffield Academy Advisor: Alison Sheffield

Second Place: Tibor Hollmann Division: J 37705

Project: How airplanes fly?

School: NORTH JOSHUA ELEMENTARY Advisor: Patti Jones

First Place: Aleena Teresa Division: J 33277

Project: Rocket Science 2.0

School: HARMONY SCHOOL OF INNOVATION MIDD Advisor: Sandi Parsons

First Place: Kritisha Sharma Division: J 33277

Project: Rocket Science 2.0

School: HARMONY SCHOOL OF INNOVATION MIDD Advisor: Sandi Parsons



Award: PLANT SCIENCES

Third Place: Tori Lain Division: J 16607

Project: FRUIT WITH STRANDS

School: LIBERTY CHRISTIAN SCHOOL Advisor: Aaron Mouser

Second Place: Esha Patel Division: J 35347

Project: Hydroponics

School: Harmony Science Academy Carrollton-Middle Sch Advisor: Sukran Cakiroglu

First Place: Blaine McCoy Division: J 36246

Project: Which Has Most Efficacy on Leaf Count Production of Basil Plants: Miracle Gro Potting Soil with Tap
Water or Miracle Gro Potting Soil with Epsom Salt or Miracle Gro Potting Soil with Miracle Gro Liquafeed

School: CHRISTIAN COTTAGE PREP MIDDLE SCHOO Advisor: Teri Willis



Award: ANIMAL SCIENCES

Third Place: Thomas Maina Division: S 37694

Project: Fish S.T.E.W: Swimming Through the Electromagnetic Waves

School: HARMONY SCHOOL OF INNOVATION HIGH Advisor: Bilal Yildirim

Third Place: Sean Lee Division: S 37694

Project: Fish S.T.E.W: Swimming Through the Electromagnetic Waves

School: HARMONY SCHOOL OF INNOVATION HIGH Advisor: Bilal Yildirim

Second Place: Kasey Jones Division: S 36772

Project: Powering up Artogeia Rapae with Ultraviolet Light

School: EVERMAN HIGH SCHOOL Advisor: Angela Collinsworth

First Place: Blake Pope Division: S 22366

Project: De Novo Assembly and Characterization of Holbrookia Transcriptome

School: SUMMIT INTERNATIONAL HIGH SCHOOL Advisor: Omeshia Moffett

First Place: Jose Alcala Division: S 22366

Project: De Novo Assembly and Characterization of Holbrookia Transcriptome

School: SUMMIT INTERNATIONAL HIGH SCHOOL Advisor: Gary Nicholson



Award: BEHAVIORAL & SOCIAL SCIENCES

Third Place: Alexander Evans Division: S 39382

Project: What's that Taste?

School: NORTHSTAR HIGH SCHOOL Advisor: Erin Jezek

Second Place: Mitchell Meyers Division: S 33121

Project: Effect of Written Misdirection on Perception of Abstract Direction Symbols

School: Texas Academy of BioMedical Science Advisor: Kathy Elliott

Second Place: Khalid Al-Radaideh Division: S 33121

Project: Effect of Written Misdirection on Perception of Abstract Direction Symbols

School: Texas Academy of BioMedical Science Advisor: Kathy Elliott

Second Place: Ethan Zuniga Division: S 33121

Project: Effect of Written Misdirection on Perception of Abstract Direction Symbols

School: Texas Academy of BioMedical Science Advisor: Kathy Elliott

First Place: Ainsley McDonald-Boyer Division: S 32607

Project: Diagnostic Test for Dyslexia

School: AZLE HIGH SCHOOL Advisor: Monica Amyett



Award: **BIOCHEMISTRY**

Third Place: Jagath Vytheeswaran Division: S 27401

Project: Effects of Beta-Amyloid on Neuronal Primary Cilia in Alzheimer's Brain

School: TEXAS ACADEMY OF MATHEMATICS AND S Advisor: Samuel Earls

Third Place: Carolyn Huynh Division: S 27401

Project: Effects of Beta-Amyloid on Neuronal Primary Cilia in Alzheimer's Brain

School: TEXAS ACADEMY OF MATHEMATICS AND S

Advisor: Samuel Earls

Third Place: Maya Xia Division: S 27401

Project: Effects of Beta-Amyloid on Neuronal Primary Cilia in Alzheimer's Brain

School: TEXAS ACADEMY OF MATHEMATICS AND S Advisor: Samuel Earls

Second Place: Pranay Murugan Division: S 27524

Project: Comparative Deformability and Microfluidic Perfusion of Human and Nonhuman Red Blood Cells

School: TEXAS ACADEMY OF MATHEMATICS AND S Advisor: Samuel Earls

First Place: Abhishek Shah Division: S 35265

Project: The effects of Glucose on the Behavior and Nervous System of C. elegans

School: John H Guyer High School Advisor: Brandy Guilford



Award: CHEMISTRY

Third Place: Kireet Pajjur Division: S 37603

Project: Fluorescence Nanoparticles

School: Flower Mound High School Advisor: Kireet Pajjur

Second Place: Liesl Krone Division: S 35479

Project: Analyzing Spent Grains as a Sustainable Source of Feed

School: GRANBURY HIGH SCHOOL Advisor: Kayli Morris

First Place: Mary Harshfield Division: S 32590

Project: C the Difference

School: LIBERTY CHRISTIAN HIGH SCHOOL Advisor: Jamie Michalek

First Place: Lindsay Tito Division: S 32590

Project: C the Difference

School: LIBERTY CHRISTIAN HIGH SCHOOL Advisor: Jamie Michalek

First Place: Kambryn Vera Division: S 32590

Project: C the Difference

School: LIBERTY CHRISTIAN HIGH SCHOOL Advisor: Jamie Michalek



Award: **COMPUTER SCIENCE**

Third Place: Rick Zhang Division: S 28260

Project: Machine Learning Data Analysis and Language Prediction Models

School: TEXAS ACADEMY OF MATHEMATICS AND S
Advisor: Samuel Earls

Second Place: Michael Shen Division: S 28010

Project: Modeling the Spread of Epidemics through Contact Networks

School: TEXAS ACADEMY OF MATHEMATICS AND S Advisor: Samuel Earls

Second Place: Billy Qian Division: S 28010

Project: Modeling the Spread of Epidemics through Contact Networks

School: TEXAS ACADEMY OF MATHEMATICS AND S Advisor: Samuel Earls

First Place: Michelle Yakubek Division: S 27933

Project: Learning to Parse a Lower-Resource Language, Meitei, through Alignment with a Higher-Resource

Language, Burmese



Award: EARTH & PLANETARY SCIENCE

Third Place: Isabella Solis Division: S 30293

Project: Stabalizing the Red Tide Dinoflagellate Karenia Brevis

School: HARMONY SCHOOL OF INNOVATION HIGH Advisor: Bilal Yildirim

Third Place: Gerrell Haynes Division: S 30293

Project: Stabalizing the Red Tide Dinoflagellate Karenia Brevis

School: HARMONY SCHOOL OF INNOVATION HIGH Advisor: Bilal Yildirim

Second Place: Ajay Panda Division: S 28315

Project: Eco-morphology of Trinity River

School: TEXAS ACADEMY OF MATHEMATICS AND S

Advisor: Samuel Earls

First Place: Abhishek Mohan Division: S 25885

Project: Development of a Rapid, Reusable Sensing Mechanism for the Selective Identification of Heavy Metal

Contaminants in Water: An Implementation of Functionalized Isotropic Silver Nanoparticles for Toxic Ion



Award: ENERGY & TRANSPORTATION

Third Place: Elaine Lee Division: S 28395

Project: A Novel Inquiry: DFT Modeling of the Oxidation of Methane-to-Methanol via First-Row Transition Metal

Catalysts

School: TEXAS ACADEMY OF MATHEMATICS AND S Advisor: Samuel Earls

Second Place: Maahir Babwani Division: S 15237

Project: Ox-static: Determining how varying levels of oxygen concentration will affect the voltage of an

electrochemical cell.

School: Colleyville Heritage High School Advisor: Sonya Loughran

First Place: Bihan Jiang Division: S 25595

Project: Intelligent Design of Green Ionic Liquid Solvents for Pre- and Post-Combustion Removal of Nitrogen and

Sulfur Containing Compounds from Fossil Fuels



Award: ENGINEERING: ELECTRICAL & MECHANICAL

Third Place: Connor Menckhoff Division: S 32487

Project: Make Your Own Low-Power AM Radio Transmitter

School: LIBERTY CHRISTIAN HIGH SCHOOL Advisor: Jamie Michalek

Third Place: Talib Kante Division: S 32487

Project: Make Your Own Low-Power AM Radio Transmitter

School: LIBERTY CHRISTIAN HIGH SCHOOL Advisor: Jamie Michalek

Third Place: Matthew Jones Division: S 32487

Project: Make Your Own Low-Power AM Radio Transmitter

School: LIBERTY CHRISTIAN HIGH SCHOOL Advisor: Jamie Michalek

Second Place: Landon Lewis Division: S 32532

Project: Penetration Nation

School: LIBERTY CHRISTIAN HIGH SCHOOL Advisor: Jamie Michalek

Second Place: Luke Lewis Division: S 32532

Project: Penetration Nation

School: LIBERTY CHRISTIAN HIGH SCHOOL Advisor: Jamie Michalek

Second Place: Breck Ortiz Division: S 32532

Project: Penetration Nation

School: LIBERTY CHRISTIAN HIGH SCHOOL Advisor: Jamie Michalek

First Place: Ria Upreti Division: S 15411

Project: Burning Up: The Effects of Multiple Mirror Alignments on Heat Production

School: Colleyville Heritage High School Advisor: Sonya Loughran



Award: ENGINEERING: MATERIALS & BIOENGINEERING

Third Place: Michael Lee Division: S 28252

Project: Multi-Principal Alloys: A Paradigm Shift in Alloy Design

School: TEXAS ACADEMY OF MATHEMATICS AND S Advisor: Samuel Earls

Third Place: Sanket Sane Division: S 28252

Project: Multi-Principal Alloys: A Paradigm Shift in Alloy Design

School: TEXAS ACADEMY OF MATHEMATICS AND S Advisor: Samuel Earls

Second Place: Sahil Patel Division: S 28318

Project: The Synthesis of Novel Thermally Conductive, yet Electrically Insulative Ceramic Coatings

School: TEXAS ACADEMY OF MATHEMATICS AND S Advisor: Samuel Earls

First Place: Ashwin Kumar Division: S 27920

Project: RSM model optimization of the laser processing parameters on Ti-6Al-4V alloys to improve bio-

compatibility



Award: ENVIRONMENTAL SCIENCES

Third Place: Margaret Cheng Division: S 15437

Project: DeCOMPOSTing: Assessing the Speed At Which Various Compostable Materials Decompose

School: Colleyville Heritage High School Advisor: Sonya Loughran

Second Place: Kendall Jones Division: S 32587

Project: Wind Turbine Blades Effect On Energy Output

School: LIBERTY CHRISTIAN HIGH SCHOOL Advisor: Jamie Michalek

Second Place: Kelly Becker Division: S 32587

Project: Wind Turbine Blades Effect On Energy Output

School: LIBERTY CHRISTIAN HIGH SCHOOL Advisor: Jamie Michalek

First Place: Sarah Zou Division: S 27213

Project: Sustainable Activated Carbon in Supercapacitors



Award: MATHEMATICAL SCIENCES

Third Place: Tayler Pham Division: S 20207

Project: Consequences of External Pressures on Population

School: SUMMIT INTERNATIONAL HIGH SCHOOL Advisor: Gary Nicholson

Third Place: Lauren Pham Division: S 20207

Project: Consequences of External Pressures on Population

School: SUMMIT INTERNATIONAL HIGH SCHOOL Advisor: Gary Nicholson

Second Place: Alexander Moore Division: S 15421

Project: Baseball: The Correlation Between Statistics and Winning Percentage

School: Colleyville Heritage High School Advisor: Sonya Loughran

First Place: Amber Lu Division: S 25805

Project: Signed Path Matrices and Oriented Hypergraphic Generalizations



Award: MEDICINE AND HEALTH SCIENCES

Third Place: Alex Wu Division: S 29220

Project: A Noninvasive Glucose Biosensor Based on High Quality 2-D WS2 Nanoparticles for in situ perspiration

analysis

School: TEXAS ACADEMY OF MATHEMATICS AND S
Advisor: Samuel Earls

Second Place: Taylor-Jade Higgins Division: S 33651

Project: Veto the Mosquito

School: SUMMIT INTERNATIONAL HIGH SCHOOL Advisor: Gary Nicholson

Second Place: Mercy Obanigba Division: S 33651

Project: Veto the Mosquito

School: SUMMIT INTERNATIONAL HIGH SCHOOL Advisor: Gary Nicholson

Second Place: Brittany Chapman Division: S 33651

Project: Veto the Mosquito

School: SUMMIT INTERNATIONAL HIGH SCHOOL Advisor: Gary Nicholson

First Place: Amy Liu Division: S 25864

Project: A New Candidate Target Gene for Breast Cancer Therapy: Identifying the Role of CISD3 in Cancer Cell

Growth and Resistance to Oxidative Stress



Award: MICROBIOLOGY

Third Place: Anela Gabeljic Division: S 37972

Project: All Natural

School: HARMONY SCHOOL OF INNOVATION HIGH Advisor: Omer Dogan

Third Place: Shrasta Timalsina Division: S 37972

Project: All Natural

School: HARMONY SCHOOL OF INNOVATION HIGH Advisor: Omer Dogan

Second Place: Jennifer Covington Division: S 15229

Project: The War You Cannot See: the interactions between E. coli and T4r bacteriophages in an environment

involving raw meat

School: Colleyville Heritage High School Advisor: Sonya Loughran

First Place: Afeefah Khazi-Syed Division: S 36177

Project: Nano Today, Huge Tomorrow: Improving Antibiotic Drug Delivery for S. epidermidis Strains with a Novel

CNT Dispersion

School: HARMONY SCHOOL OF INNOVATION HIGH Advisor: Omer Dogan



Award: PHYSICS AND ASTRONOMY

Third Place: Ronaldo Flores Division: S 37937

Project: Tesla Coil

School: EVERMAN HIGH SCHOOL Advisor: Angela Collinsworth

Second Place: Hannah Taylor Division: S 31420

Project: The Length of Light??

School: LIBERTY CHRISTIAN HIGH SCHOOL Advisor: Jamie Michalek

Second Place: Addison Hudelson Division: S 31420

Project: The Length of Light??

School: LIBERTY CHRISTIAN HIGH SCHOOL Advisor: Jamie Michalek

First Place: Chloe Ayers Division: S 16143

Project: Foiled: Testing Lift and Drag on Airfoils in a Wind Tunnel

School: Colleyville Heritage High School Advisor: Sonya Loughran



Award: PLANT SCIENCES

Third Place: Dave Hernandez Division: S 38047

Project: Planting Fuel

School: HARMONY SCHOOL OF INNOVATION HIGH Advisor: Omer Dogan

Second Place: Hunter Meroney Division: S 31452

Project: THERMAL SHOCK and the effects on aquatic plants

School: GRANBURY HIGH SCHOOL Advisor: Kayli Morris

First Place: Michael Geng Division: S 31409

Project: The Analysis of a Novel Lignin Synthesized from Caffeyl Alcohol