2022 Fort Worth Regional Science and Engineering Fair

Category Awards

Senior Division

2022 Fort Worth Regional Science and Engineering Fair

Animal Sciences

Senior Division

1st Place: The Analysis of the Synergistic Effects of Curcumin and Light Therapy in Wound Healing of D. tigrina
Project ID: 160753
School: Colleyville Heritage High School
Students: Mehreen Chowdhury

2nd Place: Analysis of the Effects of Caffeine and Caffeine-Withdrawal on Drosophila Melanogaster Activity
Project ID: 162538
School: Colleyville Heritage High School
Students: Gabrielle Love

3rd Place: Operation Chub-Bee: Comparing the Practicality of Homemade and Commercial Apis mellifera Pollen Substitutes
Project ID: 170963
School: Colleyville Heritage High School
Students: Joeun Kim, Nhi Quach

2022 Fort Worth Regional Science and Engineering Fair

Behavioral & Social Sciences

Senior Division

1st Place: Evaluating Psychological Principles through User Experience Design
Project ID: 162093
School: Colleyville Heritage High School
Students: Jenna Hassan

2nd Place: Analyzing the Effects of Bilingualism on Stroop Interference and Reaction Time
Project ID: 161315
School: Colleyville Heritage High School
Students: Jiarui Qin

3rd Place: A Comparative Gender Study Analyzing the Effect of Color on Information Retention and Memory in High School Students
Project ID: 160747
School: Colleyville Heritage High School
Students: Emily Weaver

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Biochemistry, Cellular, & Molecular Biology

Senior Division

1st Place: Elucidating the Pathways & Genomic Trajectories of Ovarian Cancer Persister Cells: Utilizing Single-Cell Transcriptomic Analysis on Patient Samples and Cell Line Models to Identify Ovarian Cancer Resistance Mechanisms
Project ID: 170111
School: Texas Academy Of Mathematics And Sciences HS
Students: Anay Gupta

2nd Place: Conversion of Specific Single-Carbon Compounds to Î³-Aminobutyric Acid (GABA) Via Native and Heterologous Expression in the Methylococcus Capsulatus Metabolic Biochemical Cascade
Project ID: 169787
School: Texas Academy Of Mathematics And Sciences HS
Students: Etash Bhat

3rd Place: Combination Therapy of Recombinant Thrombomodulin with Gemcitabine for Pancreatic Ductal Adenocarcinoma
Project ID: 169283
School: Texas Academy Of Mathematics And Sciences HS
Students: Pranavi Garlapati

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Chemistry

Senior Division

1st Place: Breaking Chemical Bonds by Force: A Computational Investigation of Metal C-H Interaction Under High Pressure
Project ID: 170100
School: Texas Academy Of Mathematics And Sciences HS
Students: Carly Yang

2nd Place: Determination of Abraham Model Solute Descriptors for Hippuric Acid from Measured Molar Solubilities in Several Organic Mono-solvents of Varying Polarity and Hydrogen-Bonding Ability
Project ID: 169887
School: Texas Academy Of Mathematics And Sciences HS
Students: Sneha Sinha, Advika Varadharajan

3rd Place: Synthesis of Morphology Dependent Antibacterial Properties of Micro- and Nanoscale Zinc Oxide (ZnO)
Project ID: 170807
School: Texas Academy Of Mathematics And Sciences HS
Students: Rohit Maheshwari

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Computer Science

Senior Division

1st Place: Novel-DTI - A Machine Learning Pipeline Created to Predict Drug-Target Interactions for Large-Scale Drug Repurposing and Drug Discovery using Multiplex, Heterogeneous Networks
Project ID: 170334
School: Texas Academy Of Mathematics And Sciences HS
Students: Shreya Amalapurapu

2nd Place: Logistic Regression Machine Learning Model for Glycemic Index Prediction
Project ID: 170812
School: Texas Academy Of Mathematics And Sciences HS
Students: Shreema Vijayakumar

3rd Place: Mass Spectrometry Proteomics
Project ID: 170806
School: Texas Academy Of Mathematics And Sciences HS
Students: Jonathan He, Olivia Liu

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Earth & Planetary Sciences

Senior Division

1st Place: Using Three Natural Polymers to Create An Efficient Hybrid Bioplastic
Project ID: 180991
School: Granbury High School
Students: Scout Skaggs

2nd Place: The Planet Needs Our Kelp! The Analysis of the Carbon Sequestration Potential of Macroalgae
Project ID: 161319
School: Colleyville Heritage High School
Students: Trinity Nguyen

3rd Place: Analyzing landfill soil bacteria under specific conditions to maximize the biodegradation of polyethylene terephthalate plastic
Project ID: 161460
School: Colleyville Heritage High School
Students: Brooklyn Rice

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Energy & Transportation

Senior Division

1st Place: Density Functional Study Determining Group 13 Periodic Trends for the More Accurate Prediction of Optimal Triel-Based Catalyst Models for Methane Activation and Functionalization
Project ID: 170108
School: Texas Academy Of Mathematics And Sciences HS
Students: Drishti Gupta

2nd Place: Comparing the Efficiency of Homemade Energy-Fueled Briquettes From Food Waste to Coal Briquettes
Project ID: 160749
School: Colleyville Heritage High School
Students: Kailey Tran

3rd Place: The Analysis on the Effect of Rich-Chlorophyll Foods on Dye-Sensitized Solar Cells and Its Voltage
Project ID: 160767
School: Colleyville Heritage High School
Students: Tiana Caotran

2022 Fort Worth Regional Science and Engineering Fair

Engineering: Electrical & Mechanical

Senior Division

1st Place: Microfluidic Fabrication of Photonic Microlasers
Project ID: 169925
School: Texas Academy Of Mathematics And Sciences HS
Students: Jayanth Pandit, Bhanuprakash Kunam

2nd Place: Autonomously Controlling Unmanned Aerial Vehicles (UAVs) Through Machine Vision Algorithms
Project ID: 170107
School: Texas Academy Of Mathematics And Sciences HS
Students: Belinda Dong, Adam Chen

3rd Place: Analyzing and Identifying Optimal Meshing Structures For Laminar Flows in Various Pipes
Project ID: 173272
School: Texas Academy Of Mathematics And Sciences HS
Students: Vishal Sathish

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Engineering: Materials & Bioengineering

Senior Division

1st Place: SIDS Mattress: Determining Infant Physiological Parameters with PVDF Sensors and Microphones to Detect SIDS with OCC Modeling
Project ID: 179867
School: The Oakridge School
Students: Eshan Singhal

2nd Place: A Frugal Method of Identifying Basal Cell Carcinoma and Various Diseases with the Application of Machine Learning in Histological Analysis.
Project ID: 170458
School: Texas Academy Of Mathematics And Sciences HS
Students: Emmanuel Roy, Dhiraj Bijinepally, Kevin Zheng

3rd Place: Preventing Bacterial Formation Through the Application of Cationic Polymers to Electrospun Polyvinyl Alcohol
Project ID: 161318
School: Colleyville Heritage High School
Students: Amie Ha

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Environmental Management & Sciences

Senior Division

1st Place: Abraham Model Description of the Solubilising Properties of the Isopropyl Acetate Organic Mono-solvent
Project ID: 175000
School: Texas Academy Of Mathematics And Sciences HS
Students: Sophia Cai

2nd Place: Testing the efficiency of varying renewable energy sourcesâ€™ rates of power conversion.
Project ID: 175459
School: Summit International High School
Students: Tabitha Hare

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Mathematical Sciences

Senior Division

1st Place: Optimizing Micro-Computer Architecture in the Arithmetic Logic Unit
Project ID: 174949
School: Texas Academy Of Mathematics And Sciences HS
Students: Emily Troutman

2nd Place: A Graph-Theoretic Approach Using Monte Carlo Simulations to Model the Progression of Mental Health in Social Networks
Project ID: 174431
School: Texas Academy Of Mathematics And Sciences HS
Students: Ria Garg, Nora Xiao

3rd Place: Improving the Grocery Store Shopping Experience for the Older Population
Project ID: 169084
School: Texas Academy Of Mathematics And Sciences HS
Students: Daisy Gan, Manya Trisha

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Medicine & Health Sciences

Senior Division

1st Place: An Investigation In Fabricating A Technological Solution That Identifies External Skin Conditions Using Machine Learning
Project ID: 170773
School: Texas Academy Of Mathematics And Sciences HS
Students: Vineeth Murugan

2nd Place: Evaluating Electrocardiograms and Diagnosing Various Heart Conditions via Convolutional Neural Networks
Project ID: 170779
School: Texas Academy Of Mathematics And Sciences HS
Students: Sophia Zhang

3rd Place: Masking Policy and Covid-19 Positivity Rate in Texas School Districts
Project ID: 179721
School: Martin Stem School
Students: Maya Shah

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Microbiology

Senior Division

1st Place: Identifying Metabolites in A. Heteromorphus and Magnaporthe Grissea and Overproduction of Cytochalasins
Project ID: 169776
School: Texas Academy Of Mathematics And Sciences HS
Students: Arianna Fa, Neha Singaravelan

2nd Place: The Analysis of Essential Oils, Plant Extracts, and the Synergistic Effects Against Gram-Negative Bacteria
Project ID: 160750
School: Colleyville Heritage High School
Students: Makayla Jang

3rd Place: The Effect of Antiseptics on E-coli Growth
Project ID: 163089
School: Summit International High School
Students: Helena Smith, Jardyn Waldon

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Physics & Astronomy

Senior Division

1st Place: The Application of Geometric Optics and Photosensitivity in Detection of Water Soluble Heavy Metal Ions
Project ID: 163735
School: Colleyville Heritage High School
Students: Ayush Bindal

2nd Place: Earth to Mars: Growing Photosynthetic Anaerobic Bacteria on Stimulant Martian Soil Under Anaerobic Conditions.
Project ID: 163438
School: Colleyville Heritage High School
Students: Mouktika Sripati

3rd Place: Temperature Torpedo
Project ID: 179728
School: Northstar High School
Students: Keegan Vogel

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Plant Sciences

Senior Division

1st Place: Using a Yeast-2-Hybrid Screen to Identify Interactors of RGPA1: A Gene That Induces Plant Defense Responses Against Green Peach Aphid (GPA) in Arabidopsis thaliana
Project ID: 171232
School: Texas Academy Of Mathematics And Sciences HS
Students: Shreya Nair, Siddhartha Shah

2nd Place: A Study of the Role of Dehydroabietinal and its Related Metabolites on Plant Development and Defense Mechanisms
Project ID: 170109
School: Texas Academy Of Mathematics And Sciences HS
Students: Simali Shah

3rd Place: Prediction of Plant Cuticle Pollutant Uptake Using the Abraham Model
Project ID: 170784
School: Texas Academy Of Mathematics And Sciences HS
Students: Angelina Xu