2023 Fort Worth Regional Science and Engineering Fair

Animal Sciences
Senior Division

1st Place: Mitigating the Harmful Effects of Radiation Therapy with the Synergistic Effects of Curcumin Bioavailability and Piperine on Dugesia dorotocephala
Project ID: 191546
School: Colleyville Heritage High School
Students: Aliza Tharani

2nd Place: Glucose on Early Zebrafish Embryos and Pathology
Project ID: 201114
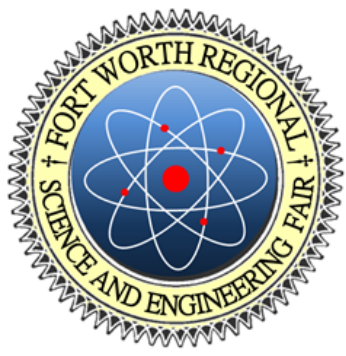**School:** Texas Academy Of Mathematics And Sciences HS
Students: Sanjana Ramineni

3rd Place: Study of Thrombocyte Production Post Knockdown of NFE2l1b in Zebrafish
Project ID: 198218
School: Texas Academy Of Mathematics And Sciences HS
Students: Vallerie Cheng

2023 Fort Worth Regional Science and Engineering Fair

Behavioral & Social Sciences
Senior Division

1st Place: Psychopathy, Intellectual Humility, and Social Media: A Strategy to Prevent School Shootings?

Project ID: 199625

School: Martin STEM School

Students: Maya Shah

2nd Place: Early Diagnosis of Post-Traumatic Stress Disorder in Nurses Based on Physical Behavior and Circadian Rhythm Modeled by a Recurrent Neural Network

Project ID: 201116

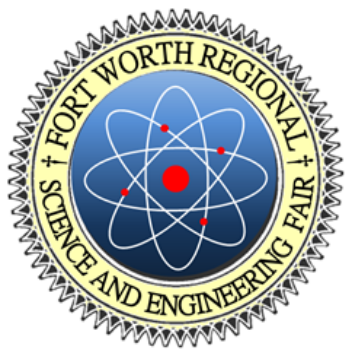**School:** Texas Academy Of Mathematics And Sciences HS

Students: Ria Garg

3rd Place: The analysis of attitudes, knowledge regarding mental illness, and relationships to personality

Project ID: 200900

School: Texas Academy Of Mathematics And Sciences HS

Students: Sruthi Bharath Kumar

2023 Fort Worth Regional Science and Engineering Fair

Biochemistry, Cellular, & Molecular Biology
Senior Division

1st Place: TNF Ligand Promotes Angiogenesis in Triple Negative Breast Cancer Through Activation of Inflammatory Regulatory Networks

Project ID: 205775

School: Marcus High School

Students: Harsh Singh

2nd Place: Drug Delivery To The Cardiac Myosin Via Lipid Nanoparticles

Project ID: 201120
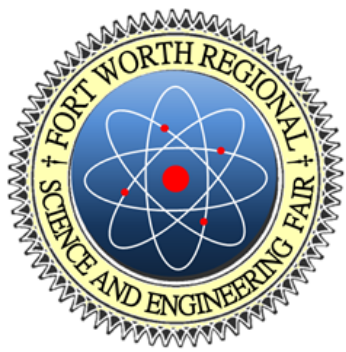
School: Texas Academy Of Mathematics And Sciences HS

Students: Nikhil Copling

3rd Place: Gotta Stay Awake! Investigating the Effects of Optimal Caffeine Alternatives on Drosophila melanogaster Circadian Cycles

Project ID: 191558

School: Colleyville Heritage High School

Students: Akshitha Yarlagadda

2023 Fort Worth Regional Science and Engineering Fair

Chemistry
Senior Division

1st Place: Identification of gamma-Hydroxbutric acid (GHB) and gamma-Butyrolactone (GBL) in an Alcoholic Beverage with the use of a Conventional Method of Esterification and Ferric Hydroxamate Mechanism.

Project ID: 199327

School: Colleyville Heritage High School

Students: Arshvi Patel

2nd Place: Non-Addictive Opioid Delivery via Metal-Organic Frameworks

Project ID: 201094

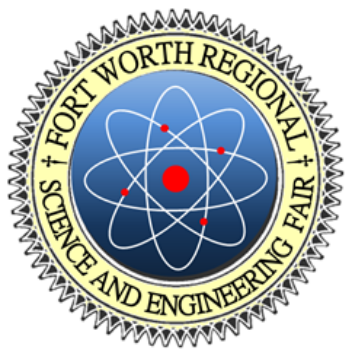**School:** Texas Academy Of Mathematics And Sciences HS

Students: Shreyas Sailesh

3rd Place: Prediction of nitrogen fixation activity of organometallic complexes

Project ID: 201098

School: Texas Academy Of Mathematics And Sciences HS

Students: Nathan Beard

2023 Fort Worth Regional Science and Engineering Fair

Computer Science
Senior Division

1st Place: ENStaDTI: Predicting Drug-Target Interaction Using Ensemble of Node Embedding and Stacking Ensemble Machine Learning Classifier for Drug Repurposing

Project ID: 204031

School: Texas Academy Of Mathematics And Sciences HS

Students: Shreya Amalapurapu

2nd Place: A Novel Semi-Automatic EEG Pre-Processing Pipeline for Optimizing Studies of Deep Brain Signals & Seizure Prediction

Project ID: 204190

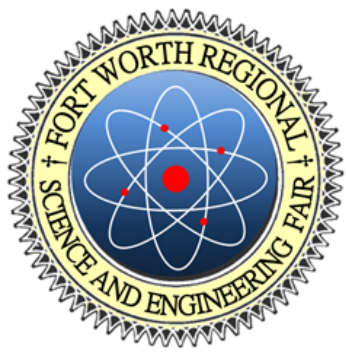**School:** Texas Academy Of Mathematics And Sciences HS

Students: Brandy Xie

3rd Place: Novel Pipeline to Detect and Correct Cyberbullying

Project ID: 201134

School: Texas Academy Of Mathematics And Sciences HS

Students: Nehal Singh

2023 Fort Worth Regional Science and Engineering Fair

Earth & Planetary Sciences
Senior Division

1st Place: The Study and Synthesis of Agarose-predicated Hydrogels and their Effect on the Proliferation of Nannochloropsis Oculata and the Phenotypic Integrity of Lemna Minor

Project ID: 207874

School: Flower Mound High School

Students: David Trujillo

2nd Place: Bioassay Test -Part 2- What is the amount of adsorbent for each lead concentration that helps early seedling growth?

Project ID: 198513

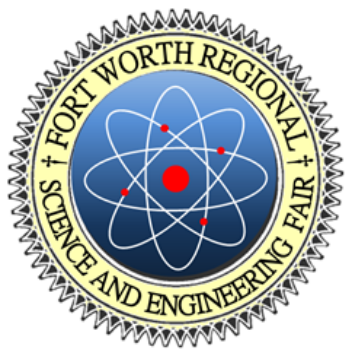**School:** Harmony School Of Innovation High School (Fort Worth)

Students: Shriya Menon

3rd Place: Comprehensive Dataset Utilizing Meteorological and Topographical Feature Data for Next-Day Wildfire Spread Prediction

Project ID: 200941

School: Texas Academy Of Mathematics And Sciences HS

Students: Anish Goel, Aditya Singirikonda

2023 Fort Worth Regional Science and Engineering Fair

Energy & Transportation
Senior Division

1st Place: Evaluating electrolytic additives for their ability to inhibit the dendritic growth of deposits in zinc-based flow batteries

Project ID: 191550

School: Colleyville Heritage High School

Students: Patrick Bullock

2nd Place: Carbohydrate Fueled Microbial Fuel Cells

Project ID: 206200

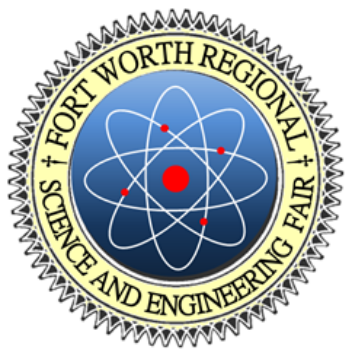**School:** Summit International High School

Students: Denise Rios Ramirez

3rd Place: Utilizing Anaerobic Pyrolyzation to Reduce the Organic Contents of Compact Waste to Produce a Renewable Energy Source

Project ID: 191544

School: Colleyville Heritage High School

Students: Tyler Payne

2023 Fort Worth Regional Science and Engineering Fair

Engineering: Electrical & Mechanical
Senior Division

1st Place: IVY: An Intelligent Vision System for the Visually Impaired
Project ID: 201121
School: Texas Academy Of Mathematics And Sciences HS
Students: Sarang Goel

2nd Place: Orchestrating Architecture's Demolition
Project ID: 190798
School: Harmony School Of Innovation High School (Fort Worth)
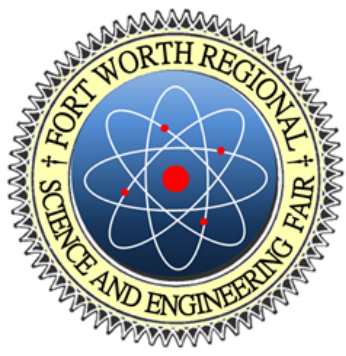**Students:** Sydney Cox, Silas Shortes

2nd Place: The Typing Test: An Analysis of the Potential Applications of Piezoelectricity
Project ID: 207013
School: Harmony School Of Innovation High School (Fort Worth)
Students: Isabella Ahuactzin, Elizabeth Hoskins

2023 Fort Worth Regional Science and Engineering Fair

Engineering: Materials & Bioengineering
Senior Division

1st Place: Synthesizing Curcumin-Infused Hydrogel to Inhibit Oral Fungal Formation Caused by Asthma Inhalers

Project ID: 191538

School: Colleyville Heritage High School

Students: Abbie Ha

2nd Place: Enhancing nanoparticle uptake in cancerous cells using gradient hydrogels to mimic the stiff extracellular matrix

Project ID: 201128

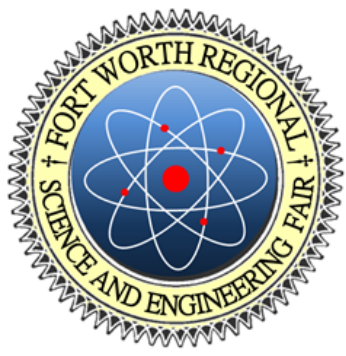**School:** Texas Academy Of Mathematics And Sciences HS

Students: Allison Chau, Nikhil Sunkavalli, Manan Patel

3rd Place: The Developmental Process and Optimal Applications of a Bi-layer Alveolar Organ Chip

Project ID: 197960

School: Texas Academy Of Mathematics And Sciences HS

Students: Olivia Wang, Zadie Guo, Joanna Fang

2023 Fort Worth Regional Science and Engineering Fair

Environmental Management & Sciences
Senior Division

1st Place: Analysis and Prediction of Energy Usage for a State-based Appliance: Washing Machine Case Study
Project ID: 202874
School: The Oakridge School
Students: Eshan Singhal

2nd Place: Spored of E-coli? Mycofiltration: Utilizing Mycellium to Filter Contaminated Drinking Water
Project ID: 191336
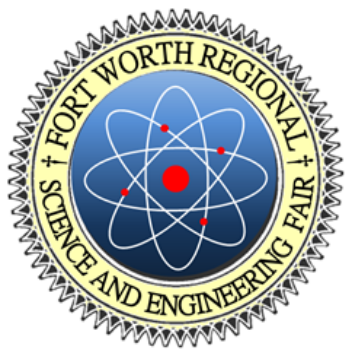**School:** Colleyville Heritage High School
Students: Brianna Salaices

3rd Place: Enhancing the Efficiency and Sustainability of Green Roof Gardening Systems
Project ID: 191545
School: Colleyville Heritage High School
Students: Lily Heilhecker

2023 Fort Worth Regional Science and Engineering Fair

Mathematical Sciences
Senior Division

1st Place: Using Mathematical Modeling to create Non-Gerrymandered Congressional Voting Maps

Project ID: 200531

School: Texas Academy Of Mathematics And Sciences HS

Students: Jayanth Pandit, Ethan Rebello, Zachary Li

2nd Place: RSA Algorithm

Project ID: 201389

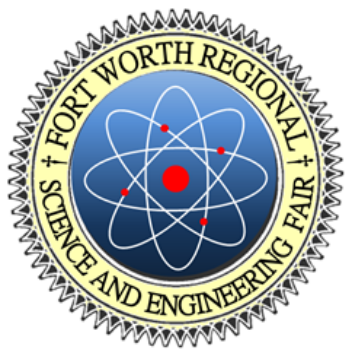**School:** Harmony School Of Innovation High School (Fort Worth)

Students: Anya Usman

3rd Place: Are Our Brains Better Than Nothing?

Project ID: 205543

School: Harmony School Of Innovation High School (Fort Worth)

Students: Levi Johanon

2023 Fort Worth Regional Science and Engineering Fair

Medicine & Health Sciences
Senior Division

1st Place: Leveraging State-of-the-art AI and Machine Learning Methods to Personalize Clinical Management, Therapeutic Strategies, and Prognostication

Project ID: 201153

School: Texas Academy Of Mathematics And Sciences HS

Students: Rifa Gowani

2nd Place: Effect of Antioxidants on Bromelains activity in Gelatin

Project ID: 207619

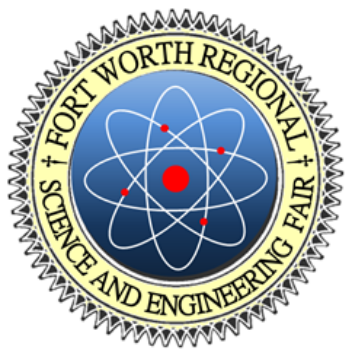**School:** Harmony Science Academy Carrollton - High School

Students: Arwa Siddiqui, Hiba Mahmood

3rd Place: DeepLig: A Novel, de-novo Drug Design Platform to Generate Multi-Targeted Drugs Against Glioblastoma

Project ID: 201143

School: Texas Academy Of Mathematics And Sciences HS

Students: Anika Chebrolu

2023 Fort Worth Regional Science and Engineering Fair

Microbiology
Senior Division

1st Place: Investigating the Gut-Brain-Microbiota Axis: The Effect of Prebiotics and Probiotics on Appetite in Drosophila Melanogaster

Project ID: 196274

School: Colleyville Heritage High School

Students: Benjamin Ding

2nd Place: An Analysis of the Effect of Acid and Heat Treatment on the Antibacterial Activity of Low Molecular Weight Chitosan

Project ID: 191337

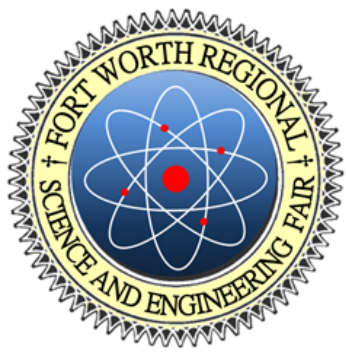**School:** Colleyville Heritage High School

Students: Abbey Chen

3rd Place: Synthesizing an In-Vitro Transcribing Vector for the Development of a Novel RNA Vaccine Against the ARAH1 Peanut Allergy with the R255A cGAS Protein

Project ID: 207462

School: Harmony School Of Innovation High School (Fort Worth)

Students: Enzo Sagun

2023 Fort Worth Regional Science and Engineering Fair

Physics & Astronomy
Senior Division

1st Place: Kinematic Controller of a Soft Continuum Robot Using Learned Forward Models
Project ID: 208240
School: Colleyville Heritage High School
Students: Anirudh Mazumder

2nd Place: Space and Time Periodic Metamaterials
Project ID: 201131
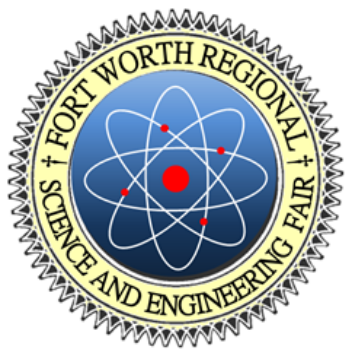**School:** Texas Academy Of Mathematics And Sciences HS
Students: Matthew Li

3rd Place: Using Missing Momentum to Select Higgs Decay to Charm Quarks in a Muon-Ion Collider
Project ID: 190978
School: Harmony School Of Innovation High School (Fort Worth)
Students: Pavan Ahluwalia

2023 Fort Worth Regional Science and Engineering Fair

Plant Sciences
Senior Division

1st Place: Understanding The Mechanism of Resistance Against Green Peach Aphid in Arabidopsis Imparted by a Newly Identified Gene - HR4

Project ID: 198822

School: Texas Academy Of Mathematics And Sciences HS

Students: Shreya Nair

2nd Place: Think PINK: Examining the effects of Ayurvedic herbs on locomotor behavior in a D.melanogaster Parkison's Disease Model (PINK1)

Project ID: 198728

School: Colleyville Heritage High School

Students: Maaha Hashmani

3rd Place: Using Regional Resources to Engineer an Effective Edible Coating for Mangos

Project ID: 194974

School: Colleyville Heritage High School

Students: Grayson Champlin