2014 ExxonMobil Texas Science and Engineering Fair Awards

2014 SENIOR DIVISION GRAND AWARDS

1st Place Grand Life Sciences and “BEST OF SHOW” Winner
Lindsay Northcut, Christ the King
The Effect of Nitrogen-Rich Fertilizers on the Growth and Yield of Cotton Plants

2nd Place Grand Life Sciences
Christopher Botello, John Jay Science and Engineering Academy
The Cooling of Solar Panels to Increase Power Output

1st Place Grand Physical Sciences
Riddhi Kumar, Johnson High School
Lamp Black Carbon Films: Supercapacitors of the Future

2nd Place Grand Physical Sciences
Roma Pradhan, Friendswood High School
Train the Artificial Brain II
2014 ExxonMobil Texas Science and Engineering Fair Awards

2014 SENIOR DIVISION CATEGORY AWARDS

1st Place Animal Sciences
Monisha Veerapaneni, Plano Senior High
Identification of Hoxc11 in Inducing Thrombocytosis using the Zebrafish Model: Paving the Pathway Towards Gene Therapies

2nd Place Animal Sciences
Kyle Ramsey, Navasota High School
Improving Survivability and Viability of Frozen and Chilled Ram Semen

3rd Place Animal Sciences
Dominique Mellone, Jasper High School
Cryptobiosis of Tardigrades-Water Bears in Suspended Animation

4th Place Animal Sciences
Laura Pang, Texas Academy of Math and Science
Use of microsatellites to identify cryptic lineages of the sunflower fly- Strauzia longipennis

5th Place Animal Sciences
Megan Van De Walle, Academy for Science and Health Professions
Trainable Chickens III

1st Place Behavioral and Social Sciences
Shweta Julka, Plano West Senior High
ALL EYES AND EARS: A Study of Ear Dominance’s Effect on Young Dyslexic Patients

2nd Place Behavioral and Social Sciences
Katelynne Marsan, Dripping Springs High School
Effects of Biased Verbal Instructions on Student Performance and Motivation

3rd Place Behavioral and Social Sciences
Sophie Druffner, John Paul II High School
Hiding in the Shadows: The Curious Response of Physarum Polycephul to Blue Light

4th Place Behavioral and Social Sciences
Yingyan Ho, Jasper High School
Keystroke Dynamics: Improving Information Security and User Authentication with the Application of Biometric Identifiers

5th Place Behavioral and Social Sciences
Timothy Pham, Health Careers HS
OCT Blockade to Restore Sociability to Socially Impaired Mice in Preference Tests

1st Place Biochemistry
Jierui Fang, Anagha Krishnan and Jierui Fang, Jasper
Testing for the Presence of Harmful Free Radicals in Sunscreens Containing Zinc and Titanium Dioxide Nanoparticles

2nd Place Biochemistry
Shazma Khan, Renaissance Academy
Targeting the Ubiquitin-Proteasome System for Cancer Therapy: Novel Combinations for treatment of Renal Cell Carcinoma

3rd Place Biochemistry
Grace Ranft-Garcia, STEM Academy
The Impacts of Catalase and Peroxidase on Bacterial Growth

4th Place Biochemistry
Dhruv Puri, LASA
In Search of Novel Biomarkers in Breast Cancer: A comparative study of differential gene expression of cancerous tissues and normal adjacent tissues

5th Place Biochemistry
Jessica Anthony, Young Women's Leadership Academy
Ursolic Acid Analogs
2014 ExxonMobil Texas Science and Engineering Fair Awards

1st Place Cellular and Molecular Biology
Alex White, Uplift North Hills Prep
_Inhibition of Host-Cell Endosomal Acidification by H1N1 Influenza_

2nd Place Cellular and Molecular Biology
Ying Liu and Jessica Wang, Liberal Arts and Science Academy
_Utilizing Homologous Simplicial Complexes to Model Genomic Data_

3rd Place Cellular and Molecular Biology
Pranav Sudheendra and Pranav Harathi, Plano Senior High School
_Fuzzy Logic Determination of an Accurate Genetic Regulatory Network of Cancer Cell Conception and Proliferation_

4th Place Cellular and Molecular Biology
Phillip Yu, Plano West Senior High School
_Using HDAC Inhibitor CI-994 to Regulate Progranulin Expression for Dementia Therapy_

5th Place Cellular and Molecular Biology
Qianqian Yang, Plano West Senior High
_Investigating hypoxia on chemoresistance and mitotic delay_

1st Place Chemistry
Zijun Yu, Texas Academy of Mathematics and Science
_Benchmark of Density Functional Methods for Lanthanide Compounds_

2nd Place Chemistry
Sairaj Sajjath, Plano West Senior High School
_Synthesis of a Novel Buckminsterfullerene-Aptamer Conjugate for Targeted Therapeutics and Diagnostics_

3rd Place Chemistry
Jessica Hong and Alicia Dsouza, Plano Senior High School
_Synthesis of Periodic Mesoporous Organosilicas (PMOs) for Radiotherapeutic and Chemotherapeutic Treatments_

4th Place Chemistry
Alex Doyle, John Jay Science and Engineering Academy
_Saving lives through applied chemistry: Controlling the exothermic reaction in iron powder compound_

5th Place Chemistry
Lily Xu, Liberal Arts and Science Academy
Caroline Gao, Plano West Senior High School
Susan Xu, Kingwood High School
_On the Synthesis and Predictive Modeling of Thermostable Pigments Utilizing Silica Extracted From Rice Husk Biowastes_

1st Place Computer Science
London Bolsius, Round Rock High School
_Mobile Virtual Reality System_

2nd Place Computer Science
Jiacheng Jason He, Texas Academy of Math and Science
_Detecting Heart Disease Faster_

3rd Place Computer Science
Brian Maule and Nicholas Hemstreet, Vista Ridge High School
_Cars that Hook Up: Applications of Collaborative Assisted Driving_

4th Place Computer Science
Divya Prabhakaran, Plano East Senior High School
_Benchmarking Watermarking Methods to Facilitate Tamper Detection in an Encoded Medical Image_

5th Place Computer Science
Christopher Mao, Williams High School
_The Emplaning Program Plan_
**1st Place Earth Science**  
William Wu, Clear Lake High School  
*Geographic Belts for Hurricane Landfall Location Prediction*

**2nd Place Earth Science**  
Joanne Shang, Texas Academy of Mathematics and Science  
*Geothermal Study of Archaeal Glycerol Dialkyl Glycerol Tetraether Lipids in Yunnan- China*

**3rd Place Earth Science**  
Lauren Hall, School of Science and Technology  
*Pleistocene Rancholabrean Large Mammalian Fauna From Aransas River- San Patricio County- Texas*

**4th Place Earth Science**  
Jasmin Gildert, Clear Lake High School  
*Bubbling Barricades*

**5th Place Earth Science**  
Brian Wei, Clark High School  
*Wave Erosion Away: Using Wave Power to Reduce Beach Erosion*

**1st Place Energy and Transportation**  
Matthew Caffet, The Academy of Science and Technology  
*Riding the Wave: Energy in Motion*

**2nd Place Energy and Transportation**  
Mokshin Suri, Plano West Senior High School  
*Dye Sensitized Solar Cells: New Structures and Components for Greater Efficiency*

**3rd Place Energy and Transportation**  
Marissa Gorena and Lucas Cardenas, Weslaco East High School  
*Synthesis of Carbonaceous Material for Hydrogen Storage*

**4th Place Energy and Transportation**  
Nicholas Esposito, The Academy of Science and Technology  
*Optical Frequency Monitor*

**5th Place Energy and Transportation**  
Tiasha Joardar, Shepton High School  
*Development of A Novel Eco-Friendly Thermoelectric Air Conditioning System*

**1st Place Engineering: Electrical/Mechanical**  
Sarah Palmer, Friendswood High School  
*Watts in the Wind/Water II*

**2nd Place Engineering: Electrical/Mechanical**  
Brian Kang, Bowie High School  
*Water Conservation through a Conductivity-Controlled Drainage System*

**3rd Place Engineering: Electrical/Mechanical**  
Constantine Tzouanas, Clear Lake High School  
*Terrific Tank Tuning*

**4th Place Engineering: Electrical/Mechanical**  
Sunny Tian and Linda Zhang, Westwood High School  
*Determining the Existence of Delayed Energy Consumption for Accurate GPU Power Modeling*

**5th Place Engineering: Electrical/Mechanical**  
Lea Gustafson, New Home ISD  
*Wave Power*
1st Place Engineering: Materials/Bioengineering
Isuru Somawardana, Keystone School
*Evaluating Feasibility of Using Microbial Fuel Cells as Power Supply for Implantable Medical Devices*

2nd Place Engineering: Materials/Bioengineering
Victoria Lee, Vista Ridge High School
*Comparison of Transformation Efficiency between Chitosan-Nucleic Acid Complexes and Standard Protocols*

3rd Place Engineering: Materials/Bioengineering
Michelle Park, R.L. Turner High School
*pH-iguring Out the Basics: Preemptive Diagnosis through Nano-Sensors for Malignant Tissue Growth*

4th Place Engineering: Materials/Bioengineering
Jisoo Min and Jae Sohn, Texas Academy of Mathematics and Science
*Nanoscale Pipette Sensor Fabrication for Cancer Cell Temperature Characterization*

5th Place Engineering: Materials/Bioengineering
Reagan Spexarth and Maya Patel, Academy of Science and Technology
*Targeting the Cell*

1st Place Environmental Management
Karan Jerath, Friendswood High School
*Oil Spill Remediation: The Numerical Simulation of an In-Situ Subsea Separator*

2nd Place Environmental Management
Sai Sameer Pusapaty, Liberal Arts and Science Academy
*Separation of Biodegradables: An Effective Waste Management Approach*

3rd Place Environmental Management
John Derry, Bandera High School
*Recycled Remediation: An analysis of bacterial bioremediation through recycled mediums*

4th Place Environmental Management
Layne Garza, James Madison Agriscience Magnet Program
*Killer Mulch: A study comparing tannin levels in Juniperus ashei and its effect on seed germination and seedling development.*

5th Place Environmental Management
Ethan Trotter, Andrews High School
*Reclaiming the Desert*

1st Place Environmental Sciences/Analysis
Perry Alagappan, Clear Lake High School
*Novel Renewable Filter for Heavy Metal Removal*

2nd Place Environmental Sciences/Analysis
Analaura Trevino, Weslaco East High School
*Efficacy of selected biopesticides against the Sweet potato whitefly- Bemisia tabaci (Genadius) biotype B on tomato under laboratory and greenhouse conditions*

3rd Place Environmental Sciences/Analysis
Kaitlyn Ramirez, The John Cooper School
*Mississippi Nitrogen: A Dead Zone Culprit!*

4th Place Environmental Sciences/Analysis
Kushal Kadakia, Clear Lake High School
*Heavy Metal Removal Using Fe3O4 Nanoparticles III*

5th Place Environmental Sciences/Analysis
Roman Cruz and Mark Barbosa, Weslaco East High School
*Heavy Metal*
1st Place Mathematical Sciences
Niranjan Balachandar, Texas Academy of Mathematics and Science
A Monte Carlo Protein Folding Simulation using Energy Optimization with Novel Applications to Alzheimer's Disease Research

2nd Place Mathematical Sciences
Alexander Whatley, North Houston Academy
Bounding Solutions of Laurent Polynomials

3rd Place Mathematical Sciences
Shanika Silva, Friendswood High School
Genetic Forecast 2!

4th Place Mathematical Sciences
Claire Hsu, Americas High School
Polygon Puzzle

5th Place Mathematical Sciences
Vishal Rajesh and Nisha Rajesh, Jasper High School
Fire Fighting at Work: A Simulation of Envelope Fire Fronts and Locational Fuel Treatment

1st Place Medicine and Health Sciences
Tanya Kumar, Clear Brook High School
A Novel Egg Timer Test on the Horizon: Changing Women's Lives

2nd Place Medicine and Health Sciences
Trisha Mulamreddy, Keystone School
Natural Remedy for Pancreatic Cancer

3rd Place Medicine and Health Sciences
Amy Cox, James Bowie High School
The Effects of Sports and Gender on Reflexes

4th Place Medicine and Health Sciences
Joshua Singer, International School of the Americas & STEM Academy
A Novel Way To Diagnose Glaucoma Through the Use of Optical Coherence Tomography

5th Place Medicine and Health Sciences
Michael Yuan, Jasper High School
Simulation Study of the Number of Positive Cores in a Prostate Cancer Biopsy Session

1st Place Microbiology
Swapnav Deka, Plano East Senior High School
What’s on the Menu: Identification of the Hydrocarbon Transport Systems as a first step in Marine Oil-Degradation by Alcanivorax borkumensis

2nd Place Microbiology
Pia Sen, LASA
A Novel Response to Antibiotic Resistance- Application of Microparticles and AC currents

3rd Place Microbiology
Avni Nandu and Stephanie Vu, Clark High School
Project Runway: Creating an Antibacterial/Antifungal Fabric for Military Personnel and Athletes.

4th Place Microbiology
Andrew Cothrell, Vista Ridge High School
Observations of competitive differences-from the selection of hyper-swarming traits within bio-film forming bacteria.

5th Place Microbiology
Lucy Cai, Texas Academy of Math and Science
The Inception of Infection II: The Antimicrobial and Synergistic Efficiency of Antibiotic Isoniazid and Bacteriophage D29 in Treating a Model Organism for Tuberculosis
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1st Place Physics and Astronomy
Piper Reid, Dripping Springs High School
Nova Delphini 2013: Backyard Analysis of a Classical Nova

2nd Place Physics and Astronomy
Aditya Mohile, Friendswood High School
The Discovery of a 9.1K Superconducting Phase containing Sr-Pt and P

3rd Place Physics and Astronomy
Vivianne Tu and Claire Goeckner-wald, Plano Senior High School
Rockets and Pressure: The Study of Rocket Fin Sizes and Their Effect on the Center of Pressure on a Rocket

4th Place Physics and Astronomy
Kavita Selva, Clear Lake High School
Trapped-Field Superconducting Magnets

5th Place Physics and Astronomy
Jamie McCullough, Friendswood High School
Optimization of Rocket Nozzle Performance

1st Place Plant Sciences
Angela Kang, James Bowie High School
The Effect of Aspirin Tablet Application on Plant Resistance to Luminescence-Tagged Pseudomonas

2nd Place Plant Sciences
Wenjia Li and Anoop Vemulapalli, Jasper High School
Enhanced Third-Generation Biofuel Production from Genetically Modified Algae

3rd Place Plant Sciences
Kriti Gaur, Plano West Senior High School
A Study of Metal Nanoparticle Toxicity on Algae

4th Place Plant Sciences
Christopher Welch, Brazos County Home Schoolers HS
American Beautyberry: A Native Plant Solution for an Imported Problem

5th Place Plant Sciences
Hina Akbar, Academy of Science and Technology
Rice Solution Effects on Seed Germination