Place		Project Title	Grade	e School	Teacher/Advisor	
SENIOR D	DIVISION	ANIMAL SCIENCES				
1st	Aaron Huang	Anxiety Hierarchy: Testing the Priority of Genes in C. Elegans	11	Canyon Crest Academy	A. Haas	
3rd	Asael Garcia	What Genre of Music Affects a Mammal's Productivity the Best?	11	Central Union High School	L. Rueda	
SENIOR D	DIVISION	BEHAVIORAL & SOCIAL SCIENCES				
1st	Hari Krishnamurthy	AsylumIndicator.Al - Predictive Behavioral Modeling of United States Asylum Adjudication to Help Refugees	9	Canyon Crest Academy	A. Haas	
1st	Anjana Shriram	Prepotent Response Inhibition in ASL vs. non-ASL Multilinguals- A Correlative Study	10	Canyon Crest Academy	A. Haas	
2nd	Abdullahi Ismail	The Gym or the Field?	10	Bright Horizon Academy	N. Naserelddin	
2nd	Abdirahman Kariye	Repetition Makes Perfect	9	Bright Horizon Academy	N. Naserelddin	
2nd	Sean Kim	Gender Roles and Portrait Values in Relation to the Progression of Gender Equality	11	The Bishop's School	L. Keller	
2nd	Mustafa Mohamed	Will Brain Games Increase IQ	10	Bright Horizon Academy	N. Naserelddin	
3rd	Brian Lee	How Age and Social Experience Dictate Beliefs on Ease of Social Mobility	11	Scripps Ranch High School	P. Fowler	
3rd	Grace Li Albert Liu	What Affects the Probability of School Shootings?	9 9	Scripps Ranch High School	P. Fowler	
3rd	Priscila Munoz	Correlation Between Recurring Dream Themes and Anxiety Disorders	10	Central Union High School	L. Rueda	
3rd	Daniella Padilla Kayla Stallworth	The Effect of Talking Versus Texting on Human Reaction Time	10 11	Central Union High School	L. Rueda	
3rd	Anaid Perez	The Environmental Factors That Triggers the Development of Persistent Asthma	11	Central Union High School	L. Rueda	
3rd	Miriam Quijada	Effect of Organization on Short-Term	10	Central Union High School	L. Rueda	
SENIOR D	DIVISION	BIOCHEMISTRY				
1st	Jessie Gan	Application of a Novel Cell-Adhesion Force Quantification Technique to Predict Metastasis	11	San Diego Jewish Academy	C. Eisen	
1st	Daniel Wang	Lock Them Up: Capture Proteins in Action Using Covalent Bonds	10	Torrey Pines High School	B. Belyea	
1st	Kate Wang	Machine Learning and Pharmacophore- Based Drug Discovery for Treating Duchenne Muscular Dystrophy	11	Canyon Crest Academy	A. Haas	

Place		Project Title	Grade	School	Teacher/Advisor
1st	Kyra Wu	Identification of Natural and Synthetic Inhibitors of E. Coli fabl through Virtual Screening	11	Canyon Crest Academy	A. Haas
2nd	Juyoung Han	Genome Editing For All Students	11	Canyon Crest Academy	A. Haas
2nd	Aditya Hegde	The Effects of Carbon Nanomaterials on the Effectiveness of Phage Therapy	10	Canyon Crest Academy	A. Haas
3rd	Vivian Li	The Impact of Diet Upon Metabolism in Fish	10	La Jolla Country Day School	D. Padgett
SENIOR D	DIVISION	CHEMISTRY			
2nd	Audrey Vargas	Photocatalytic Treatment of Wastewater and Hydrogen Production	11	Sweetwater High School	J. Chase
2nd	lan Xu	The Detection and Discrimination of Volatile Organic Vapors in a Thermally Cycled Porous Silicon Photonic Crystal Nanosensor	11	Del Norte High School	F. Liao
2nd	Kane Xu	Copper Catalyzed Hydroboration of Benzylidenecyclobutanes	11	Del Norte High School	F. Liao
4th	Jasmine Magana	How a Decrease in Temperature Affects an Oscillating Reaction	10	Central Union High School	L. Rueda
SENIOR E	DIVISION	COMPUTER SCIENCE			
1st	Andrew Kuang	Simplified Asthma Diagnosis Through Neural Networks	10	Canyon Crest Academy	A. Haas
1st	Raj Pabari	DNA Storage - Novel, Cloud-Based Solution to Archive Digital Data Using Synthetic Nucleotides	10	Classical Academy High School	D. Bower
1st	Christopher Um	Improving Complexity of Grover's Algorithm Using Qutrits Manipulation and a Novel Two-Dimensional System of the Oracle	11	Torrey Pines High School	B. Belyea
1st	Dustin Wu	Deep Learning Jazz Ensemble	12	Pacific Ridge High School	R. Mudaliar
1st	Ellen Xu	Artificial Intelligence Based Kawasaki Disease Early Diagnosis	9	Del Norte High School	A. Callicott
2nd	Nolan Bowyer Prescott Grigsby	An Application to Calculate Individual Percent Risk of Specific Cancers	11 11	Scripps Ranch High School	P. Fowler
2nd	Petunia Rizo	Using Musical Notation to Encrypt Messages in Python	9	Mt. Everest Academy	N. Negus
2nd	Maya Rosenbaum	Game-Based Gratitude Journal App for Android	10	Canyon Crest Academy	A. Haas
3rd	Livia Liu	No Texting While Driving App	9	Olympian High School	M. Claudio
3rd	Kayla Stevenson Aditi Telang	SocialCue: Breaking Down Communication Barriers	10 10	Olympian High School	M. Claudio

Place		Project Title	Grade	School	Teacher/Advisor
4th	Jose Arias	Password Security	9	Gompers Preparatory Academy	J. Ullyott
SENIOR I	DIVISION	ENGINEERING: ELECTRICAL & MECHANICAL			
1st	Christopher Caligiuri	Novel Stimulation of Stem-Cell Derived Brains to Model Neurodevelopmental and Neurodegenerative Diseases	11	Canyon Crest Academy	A. Haas
1st	Marc Kuo	Read My Mind: Morse Code Communication By Measuring Electrical Activity From Eye Blinking	10	La Jolla High School	J. Coggan
1st	Michael Zeng	For the Deaf to "Hear" - An Experimentation of Augmented Reality	10	The Bishop's School	B. Heldt
2nd	Solaiman Alwazir	Alzheimer's Aid	9	Bright Horizon Academy	N. Naserelddin
3rd	Eva Garcia	Renewable Energy Produced by Solar Tracking	10	Central Union High School	L. Rueda
3rd	Adrian Isabelle	A Low Cost Motion Detector Using Modern Engineering Technologies	12	Olympian High School	M. Claudio
3rd	Diego Monroy	Winds of Change	9	Vincent Memorial Catholic High School	R. Lizarraga
3rd	Ziyad Soliman	Stop That Car!	10	Classical Academy High School	N. Naserelddin
SENIOR D	DIVISION	ENGINEERING: ENERGY & TRANSPORT			
1st	Bella Rose Schremmer	Powered Piers and Beaches by the Rise and Fall of Waves A Novel Wave Energy Conversion Application	9	University City High School	M. Quessenberry
		Powered Piers and Beaches by the Rise and Fall of Waves A Novel Wave Energy Conversion	9	University City High School Gompers Preparatory Academy	M. Quessenberry J. Ulloytt
1st	Bella Rose Schremmer Jose Vallejo	Powered Piers and Beaches by the Rise and Fall of Waves A Novel Wave Energy Conversion Application	9	Gompers Preparatory	,
1st 3rd	Bella Rose Schremmer Jose Vallejo	Powered Piers and Beaches by the Rise and Fall of Waves A Novel Wave Energy Conversion Application Aerodynamics & Bridge Design	9 IG	Gompers Preparatory	,
1st 3rd SENIOR I	Bella Rose Schremmer Jose Vallejo DIVISION	Powered Piers and Beaches by the Rise and Fall of Waves A Novel Wave Energy Conversion Application Aerodynamics & Bridge Design ENGINEERING: MATERIALS & BIOENGINEERIN Engineering an Affordable and Sustainable Water	9 IG	Gompers Preparatory Academy	J. Ulloytt
1st 3rd SENIOR I	Bella Rose Schremmer Jose Vallejo DIVISION Aurora Czajkowski	Powered Piers and Beaches by the Rise and Fall of Waves A Novel Wave Energy Conversion Application Aerodynamics & Bridge Design ENGINEERING: MATERIALS & BIOENGINEERIN Engineering an Affordable and Sustainable Water Filtration Device Atmospheric Moisture Harvesting Device:	9 IG	Gompers Preparatory Academy Bonita Vista High School The Cambridge School High	J. Ulloytt M. Mardahl-Dumesnil
1st 3rd SENIOR I 1st	Bella Rose Schremmer Jose Vallejo DIVISION Aurora Czajkowski Emily Tianshi	Powered Piers and Beaches by the Rise and Fall of Waves A Novel Wave Energy Conversion Application Aerodynamics & Bridge Design ENGINEERING: MATERIALS & BIOENGINEERIN Engineering an Affordable and Sustainable Water Filtration Device Atmospheric Moisture Harvesting Device: Biomimicking Torrey Pine Needles The Effect of Salt and Sugar on a Microbial Fuel	9 12 11	Gompers Preparatory Academy Bonita Vista High School The Cambridge School High School	J. Ulloytt M. Mardahl-Dumesnil M. Mayne
1st 3rd SENIOR I 1st 1st 2nd	Bella Rose Schremmer Jose Vallejo DIVISION Aurora Czajkowski Emily Tianshi Issael Montoya	Powered Piers and Beaches by the Rise and Fall of Waves A Novel Wave Energy Conversion Application Aerodynamics & Bridge Design ENGINEERING: MATERIALS & BIOENGINEERIN Engineering an Affordable and Sustainable Water Filtration Device Atmospheric Moisture Harvesting Device: Biomimicking Torrey Pine Needles The Effect of Salt and Sugar on a Microbial Fuel Cell Saving Habitats and Water Via Controlled Plant	9 12 11 10	Gompers Preparatory Academy Bonita Vista High School The Cambridge School High School Central Union High School	M. Mardahl-Dumesnil M. Mayne L. Rueda
1st 3rd SENIOR I 1st 1st 2nd 2nd	Bella Rose Schremmer Jose Vallejo DIVISION Aurora Czajkowski Emily Tianshi Issael Montoya Ann Palayur	Powered Piers and Beaches by the Rise and Fall of Waves A Novel Wave Energy Conversion Application Aerodynamics & Bridge Design ENGINEERING: MATERIALS & BIOENGINEERIN Engineering an Affordable and Sustainable Water Filtration Device Atmospheric Moisture Harvesting Device: Biomimicking Torrey Pine Needles The Effect of Salt and Sugar on a Microbial Fuel Cell Saving Habitats and Water Via Controlled Plant Environments Finding an Effective, Self-Cleaning Water	9 12 11 10 12	Gompers Preparatory Academy Bonita Vista High School The Cambridge School High School Central Union High School St. Joseph Academy	M. Mardahl-Dumesnil M. Mayne L. Rueda R. Sjogren

Place		Project Title	Grade	School	Teacher/Advisor
SENIOR [DIVISION	ENVIRONMENTAL SCIENCES & MANAGEMEN	т		
1st	Rina Cao	Effect of Cities on Normalized Differences of Land	11	University City High School	S. Stevenson
1st	Kavya Gupta Dagny Whall	A Device to Detect GenX Contaminated Water Using Chemical Indication and Colorimetry	9 10	Westview High School La Jolla High School	H. Eaton
1st	Sanjana Gurram	Optimizing Plant Cellulose for Cost-effective and Environmentally Benign Oil Spill Mitigation	11	Westview High School	My-N. Ingram
2nd	Mason Holmes	Fluorescent Reporter Under MerR-like Receptors for Metallic Ion Contaminant Recognition	10	Canyon Crest Academy	A. Haas
2nd	Grace Oualline	Determining the Efficacy of Mycelium Water Filtration Systems	11	La Jolla Country Day School	D. Padgett
2nd	Sabrina Sanchez	One Man's Trash Is Another Worm's Treasure	12	Bonita Vista High School	M. Mardahl-Dumesnil
3rd	Anika Krutzik	Exploring the Biodiversity of the New River Using Molecular Six Techniques Techniques	9	Vincent Memorial Catholic High School	R. Lizarraga
SENIOR E	DIVISION	MATHEMATICAL SCIENCES			
1st	Benjamin Faktor	Mathematical Analysis of A Fluid in a Polyhedral Domain	11	Canyon Crest Academy	A. Haas
2nd	Lou Fowler	A User-Friendly Statistics Calculator Including Regression Analysis and 14 Statistical Tests	10	Academy of Our Lady of Peace	T. Paluso
2nd	Siddhant Ranka	Measurement of Correlation and Randomness in Irrational Numbers	11	Del Norte High School	A. Callicott
SENIOR I	DIVISION	MEDICINE & HEALTH SCIENCES			
1st	Andrew Gao	Scan, Sequence, Save: Early Lung Cancer Detection via Novel DNA Methylation Liquid Biopsy and Deep Learning Assisted Imaging Analysis	10	Canyon Crest Academy	A. Haas
1st	Ryan Huang	Manipulation of Gut Microbiome by Prebiotic to Combat Alcoholic Liver Diseases	10	Canyon Crest Academy	A. Haas
1st	Atulya Mandyam	SCH 23390 Inhibits Cell-Death Produced by Methamphetamine in Human Neuronal Progenitor Cells	10	Westview High School	My-N. Ingram
1st	Alexis Negrete	ADHD in a Stratified Pediatric Sample: A Study of Prevalence, Comorbid Conditions, & Impairments	12	Central Union High School	L. Rueda
1st	Jason Tang	Understanding the Function of Novel Tumor Suppression Gene UBE1L in Melanoma	11	Canyon Crest Academy	A. Haas
1st	Jeffrey Wang	Multiple Factor Analysis Methods Elucidate Genome Expression Changes Across Cell Types	11	The Bishop's School	A. Pelletier

Place		Project Title	Grade	School	Teacher/Advisor
1st	Lynne Xu	Develop a Human Brain Organoid Model to Investigate Neuroinflammation in Neurological Diseases	11	Torrey Pines High School	B. Belyea
1st	Wanyi Zhu	Molecular Mechanisms of an HTLV Infection	11	Canyon Crest Academy	A. Haas
2nd	Pranav Bantval Rishi Chiniga	The Efficacy of Topical Curcumin 5% Gel for Knee Osteoarthritis: A Pilot Study	9 10	Canyon Crest Academy Francis Parker School	A. Haas
2nd	Emily Feldstein	Oxidized Metabolites of Dietary Fats Induce Liver Cell Death	11	Canyon Crest Academy	A. Haas
2nd	Morgan Feng	A New Efficient Approach to Monitor Cell Response to Viral Infection	10	Westview High School	M. Christopher
2nd	Irene Huang	Assessing Tennis Players' Physiological Responses Using Wearable Devices Under Different Score Scenarios	11	Canyon Crest Academy	A. Haas
2nd	Kainath Kamil	Analyzing Protein Production and Gene Expression of Neurostimulant-addicted Drosophila Melanogaster	10	Mission Vista High School	N. German
2nd	Maxwell Yao	Effect of a Combinatory RNAi Transfection on Kras-mutant Colorectal Cancer	11	Canyon Crest Academy	A. Haas
3rd	Dylan Feldstein	Do Induced Pluripotent Stem Cell-Derived Extracellular Vesicles Reduce Macrophage Activation and Induce Anti-Inflammatory Effects?	11	Canyon Crest Academy	A. Haas
3rd	Briana Gonzales	The Effect of Age on the Ability to Hear High Frequencies	11	Central Union High School	L. Rueda
3rd	Nanditha Krishnan	Optimization of UV nm Spectroscopy for Protein Concentration for Therapeutic Applications	10	Torrey Pines High School	B. Belyea
3rd	Sebastian Mendoza	Sleep Deprivation on Human Deep Tendon Reflexes	12	Bonita Vista High School	M. Mardahl-Dumesnil
3rd	Andres Morales	Fast Food VS Homemade Food	9	Gompers Preparatory Academy	J. Ullyott
3rd	Jadyn Ramirez	NSAIDs: The Fastest Pain Relief	10	Central Union High School	L. Rueda
SENIOR D	IVISION	MICROBIOLOGY			
1st	Haya Belbese	The Road to the Cure of Alzheimer's	9	Bright Horizon Academy	N. Naserelddin
1st	Kara Fan	Antibacterial Polymer: Aloe Vera Synthesis of Nano-silver Polymer and its Application	9	Westview High School	M. Christopher
1st	Eleanor Jung	A Novel Approach to Killing Klebsiella Pneumoniae Using Endolysins and Polycationic Peptides	9	Mt. Carmel High School	A. Klingborg
1st	Edward Liu	Pathogenic Bacteria Disrupts Skin Barrier in Atopic Dermatitis	11	Canyon Crest Academy	A. Haas

Place		Project Title	Grade	School	Teacher/Advisor
1st	Shukriya Osman	Antioxidants: A Potential Key In Preventing Radiotherapy Cell Toxicity	9	Bright Horizon Academy	N. Naserelddin
2nd	Ryan Clairmont	Proteus Mirabilis Exhibits Increased Susceptibility to Erythromycin During Swarming	10	Canyon Crest Academy	A. Haas
2nd	Samuel Dimmock	Does Capsaicin Decrease Quorum Sensing in Important Human Pathogen Pseudomonas aerugionsa?	11	Canyon Crest Academy	A. Haas
2nd	Raymond Li	Sensitivity of Bacteria to Metals During Lag Phase VS Growth Phase	10	Canyon Crest Academy	A. Haas
2nd	Sidharth Udata	Phage Phases: How Stress Affects Bacteriophage Transition from Lysogenic to Lytic Pathways	10	Canyon Crest Academy	A. Haas
2nd	Yashasvi Vangala	Investigation Into the Rate of Development of Phage Resistance in E.coli	11	Canyon Crest Academy	A. Haas
2nd	Justin Vaughn	Effect of Different Media on Synthesis of Silver Nanoparticles by Aspergillus niger	10	Canyon Crest Academy	A. Haas
3rd	Adhithi Narayana Murthy	Identification, Cloning, and Expression of Desaturase Enzyme in E.coli Bacteria	10	Del Norte High School	A. Callicott
3rd	Nicholas Unpingco	How Does Stress Affect Bacterial Susceptibility to Bacteriophage Infection in E. Coli?	11	Canyon Crest Academy	A. Haas
3rd	Grace Yardley	Phage Stability		Canyon Crest Academy	A. Haas
_	5 141 1: :	The Effect of Venine on Luna Calle	40	Pright Harizon Acadamy	N. Naserelddin
4th	Daud Abdinasir	The Effect of Vaping on Lung Cells	10	Bright Horizon Academy	N. Nasereidulli
4th SENIOR D		PHYSICS & ASTRONOMY	10	bright Horizon Academy	N. Nasel eluulii
			11	Cathedral Catholic High School	M. Rafie
SENIOR D	IVISION	PHYSICS & ASTRONOMY		Cathedral Catholic High	
SENIOR D	PIVISION Francisco Catanzaro	PHYSICS & ASTRONOMY Determining Plastics with a Grating Spectrometer Characterizing the Pulsations of Delta Scuti Stars	11	Cathedral Catholic High School	M. Rafie
SENIOR D 1st 1st	Francisco Catanzaro Vivek Vijayakumar Efrain Tanori	PHYSICS & ASTRONOMY Determining Plastics with a Grating Spectrometer Characterizing the Pulsations of Delta Scuti Stars Using the Mg I b Triplet Effect of Down Force of the Best Beyblades using	11	Cathedral Catholic High School San Marcos High School	M. Rafie R. Terrill
1st 1st 3rd	Francisco Catanzaro Vivek Vijayakumar Efrain Tanori	PHYSICS & ASTRONOMY Determining Plastics with a Grating Spectrometer Characterizing the Pulsations of Delta Scuti Stars Using the Mg I b Triplet Effect of Down Force of the Best Beyblades using a MainStays Fan	11	Cathedral Catholic High School San Marcos High School	M. Rafie R. Terrill
SENIOR D 1st 1st 3rd SENIOR D	Francisco Catanzaro Vivek Vijayakumar Efrain Tanori	PHYSICS & ASTRONOMY Determining Plastics with a Grating Spectrometer Characterizing the Pulsations of Delta Scuti Stars Using the Mg I b Triplet Effect of Down Force of the Best Beyblades using a MainStays Fan PLANT SCIENCES Effects of Mycorrhizal Networks on Carbon Flow	11 11 11	Cathedral Catholic High School San Marcos High School Central Union High School	M. Rafie R. Terrill L. Rueda
SENIOR D 1st 1st 3rd SENIOR D 1st	Francisco Catanzaro Vivek Vijayakumar Efrain Tanori OIVISION Malvyn Lai	PHYSICS & ASTRONOMY Determining Plastics with a Grating Spectrometer Characterizing the Pulsations of Delta Scuti Stars Using the Mg I b Triplet Effect of Down Force of the Best Beyblades using a MainStays Fan PLANT SCIENCES Effects of Mycorrhizal Networks on Carbon Flow Between Plants The Role of Increased Flavonoid Accumulation in	11 11 11	Cathedral Catholic High School San Marcos High School Central Union High School Mt. Everest Academy	M. Rafie R. Terrill L. Rueda R. Pachon
SENIOR D 1st 1st 3rd SENIOR D 1st 1st	Francisco Catanzaro Vivek Vijayakumar Efrain Tanori VIVISION Malvyn Lai Skyler Williams	PHYSICS & ASTRONOMY Determining Plastics with a Grating Spectrometer Characterizing the Pulsations of Delta Scuti Stars Using the Mg I b Triplet Effect of Down Force of the Best Beyblades using a MainStays Fan PLANT SCIENCES Effects of Mycorrhizal Networks on Carbon Flow Between Plants The Role of Increased Flavonoid Accumulation in Protection of Pollen from Ultraviolet Radiation B The Effect of Ferrous Iron Gluconate on Chloroplast Biosynthesis and Anthocyanin	11 11 11 9 11	Cathedral Catholic High School San Marcos High School Central Union High School Mt. Everest Academy Canyon Crest Academy	M. Rafie R. Terrill L. Rueda R. Pachon A. Haas