



**2022 Contra Costa County Science & Engineering Fair
PROJECT PLACEMENTS & SPECIAL AWARDS**

**SENIOR DIVISION GRAND SWEEPSTAKES WINNERS (9th - 12th Grades)
and INTERNATIONAL SCIENCE & ENGINEERING FAIR FINALISTS**
These projects will represent CCCSEF at the Regeneron International Science & Engineering Fair (ISEF)
scheduled to be held as a hybrid fair May 7-13, 2022.

CATEGORY	GRADE	TITLE	STUDENT	SCHOOL	SPECIAL AWARD
Biology	10	A Deep Learning Approach to Detection of Metastasis in H&E-Stained Lymph Node Sections	Neel Kondapalli	Dougherty Valley High	International Science & Engineering Fair, California Science & Engineering Fair, Bio-Rad Laboratories (\$250)
Biology	11	Prediction of Genetic Predisposition To Isoniazid-Induced Hepatic Steatosis via Computational Analysis of Genetic Biomarkers	Shikha Kathrani	Dougherty Valley High	International Science & Engineering Fair, California Science & Engineering Fair, Bio-Rad Laboratories (\$250)
Engineering	10	Food deserts: Developing a Self-sustaining Greenhouse	Jill Seater	Campolindo High	International Science & Engineering Fair, California Science & Engineering Fair, Chevron (\$500)

JUNIOR DIVISION GRAND SWEEPSTAKES WINNERS (7th-8th Grades)
These students are eligible to compete for a place at the
Broadcom MASTERS Middle School National Science Fair Oct. 27-Nov. 2, 2022.

CATEGORY	GRADE	TITLE	STUDENT	SCHOOL	SPECIAL AWARD
Environmental	7	Shocking Mud	Rahul Gopalasetty, Soumit Buddhala	Windemere Ranch Middle	California Science & Engineering Fair, Broadcom MASTERS
Math/Computer Science	8	AI, Brute Force, or Human: Who is the best at Connect Four?	Ananya Raghu, Anisha Raghu	Windemere Ranch Middle	California Science & Engineering Fair, Broadcom MASTERS

California Science & Engineering Fair Finalists
(Only 18 are selected for this honor.)
The California Science & Engineering Fair will be held virtually April 12, 2022.

CATEGORY	GRADE	TITLE	STUDENT	SCHOOL	SPECIAL AWARD
Behavioral	8	Ready... Set... Remember!	Amelia Rollins	Northcreek Academy	California Science & Engineering Fair
Behavioral	10	Multitasking: Brain Drain or Boost	Bilva Vedamurthy	Monte Vista High	California Science & Engineering Fair
Biological	9	Making Sense of Big Data in Pharmacogenomics	Ajay Reddy	Las Lomas High	California Science & Engineering Fair
Biological	10	A Deep Learning Approach to Detection of Metastasis in H&E-Stained Lymph Node Sections	Neel Kondapalli	Dougherty Valley High	International Science & Engineering Fair, California Science & Engineering Fair, Bio-Rad Laboratories (\$250)
Biological	11	Prediction of Genetic Predisposition To Isoniazid-Induced Hepatic Steatosis via Computational Analysis of Genetic Biomarkers	Shikha Kathrani	Dougherty Valley High	International Science & Engineering Fair, California Science & Engineering Fair, Bio-Rad Laboratories (\$250)
Biological	12	CarCSPY - AI-Based Electrochemical Biosensor for Non-Invasive, Early Stage, Multi-Cancer Detection	Jyothikaa Ramann	Dougherty Valley High	California Science & Engineering Fair
Engineering	7	Personal Hoverboard	Jonas Desyatnik	Joaquin Moraga Intermediate	California Science & Engineering Fair
Engineering	8	Miniature Unmanned Surface Vessel and System to Assist With Aquatic Rescues	Lucas Katz-Carreno	Joaquin Moraga Intermediate	California Science & Engineering Fair, Mt. Diablo Amateur Radio Club (\$200), Naval Science Award (certificate & medallion)
Engineering	9	TrueDetect: A Wearable Machine Learning-Based Diagnostic and Evaluation System for Stress, Anxiety, and Depression Detection	Krishna Singhani	Monte Vista High	California Science & Engineering Fair
Engineering	10	Food deserts: Developing a Self-sustaining Greenhouse	Jill Seater	Campolindo High	International Science & Engineering Fair, California Science & Engineering Fair, Chevron (\$500)
Environmental	7	Shocking Mud	Rahul Gopalasetty, Soumit Buddhala	Windemere Ranch Middle	California Science & Engineering Fair, Broadcom MASTERS
Environmental	9	How do you optimize your water usage during a drought?	Kellen Hurrey	California High	California Science & Engineering Fair, Contra Costa Water/Waste Water Agencies (\$100)
Environmental	10	Fast and Accurate Detection of Crown-of-Thorns Starfish (COTS) in the Great Barrier Reef	Harsha Pillarisetti	Dougherty Valley High	California Science & Engineering Fair, National Oceanic and Atmospheric Administration (certificate), U.S. Agency for International Development (USAID) (certificate)

Environmental	11	PROMETHEUS: A Cloud-based Internet of Things Device for Early Fire Detection and Warning Using Crowdsourcing	Rohan Siva	Dougherty Valley High	California Science & Engineering Fair, U.S. Air Force (certificate & backpack)
Math/Computer Science	8	AI, Brute Force, or Human: Who is the best at Connect Four?	Ananya Raghu, Anisha Raghu	Windemere Ranch Middle	California Science & Engineering Fair, Broadcom MASTERS
Math/Computer Science	11	CarbNN: A Novel Active Transfer Learning Neural Network to Build De Novo Metal Organic Frameworks (MOFs) for Carbon Capture	Neel Redkar	Dougherty Valley High	California Science & Engineering Fair, American Meteorological Society (certificate), Chevron (\$500)
Physical	10	Fading into the Background: An analysis of neglected double star systems	William Lee	Deer Valley High	California Science & Engineering Fair
Physical	11	Waves, Particles, Light, It's all Photoelectric	Joshua Odiase	Deer Valley High	California Science & Engineering Fair, Mu Alpha Theta (certificate), Ricoh USA, Inc. (certificate)

BROADCOM MASTERS FINALISTS

These students are eligible to compete for a place at the
Broadcom MASTERS Middle School National Science Fair Oct. 27-Nov. 2, 2022, in Washington DC.

CATEGORY	GRADE	TITLE	STUDENT	SCHOOL	SPECIAL AWARD
Environmental	7	Shocking Mud	Rahul Gopalasetty, Soumit Buddhala	Windemere Ranch Middle	California Science & Engineering Fair, Broadcom MASTERS
Math/Computer Science	8	AI, Brute Force, or Human: Who is the best at Connect Four?	Ananya Raghu, Anisha Raghu	Windemere Ranch Middle	California Science & Engineering Fair, Broadcom MASTERS

FIRST PLACE AWARDS

CATEGORY	GRADE	TITLE	STUDENT	SCHOOL	SPECIAL AWARD
Behavioral	8	Ready... Set... Remember!	Amelia Rollins	Northcreek Academy	California Science & Engineering Fair
Behavioral	10	Multitasking: Brain Drain or Boost	Bilva Vedamurthy	Monte Vista High	California Science & Engineering Fair
Biology	9	Making Sense of Big Data in Pharmacogenomics	Ajay Reddy	Las Lomas High	California Science & Engineering Fair
Biology	10	A Deep Learning Approach to Detection of Metastasis in H&E-Stained Lymph Node Sections	Neel Kondapalli	Dougherty Valley High	International Science & Engineering Fair, California Science & Engineering Fair, Bio-Rad Laboratories (\$250)
Biology	11	Prediction of Genetic Predisposition To Isoniazid-Induced Hepatic Steatosis via Computational Analysis of Genetic Biomarkers	Shikha Kathrani	Dougherty Valley High	International Science & Engineering Fair, California Science & Engineering Fair, Bio-Rad Laboratories (\$250)
Biology	12	CarCSPY - AI-Based Electrochemical Biosensor for Non-Invasive, Early Stage, Multi-Cancer Detection	Jyothikaa Ramann	Dougherty Valley High	California Science & Engineering Fair

Engineering	7	Personal Hoverboard	Jonas Desyatnik	Joaquin Moraga Intermediate	California Science & Engineering Fair
Engineering	8	Miniature Unmanned Surface Vessel and System to Assist With Aquatic Rescues	Lucas Katz-Carreno	Joaquin Moraga Intermediate	California Science & Engineering Fair, Mt. Diablo Amateur Radio Club (\$200), Naval Science Award (certificate & medallion)
Engineering	9	TrueDetect: A Wearable Machine Learning-Based Diagnostic and Evaluation System for Stress, Anxiety, and Depression Detection	Krishna Singhani	Monte Vista High	California Science & Engineering Fair
Engineering	10	Food deserts: Developing a self-sustaining greenhouse	Jill Seater	Campolindo High	International Science & Engineering Fair, California Science & Engineering Fair, Chevron (\$500)
Environmental	7	Shocking Mud	Rahul Gopalasetty, Soumit Buddhala	Windemere Ranch Middle	California Science & Engineering Fair, Broadcom MASTERS
Environmental	9	How do you optimize your water usage during a drought?	Kellen Hurrey	California High	California Science & Engineering Fair, Contra Costa Water/Waste Water Agencies (\$100)
Environmental	10	Fast and Accurate Detection of Crown-of-Thorns Starfish (COTS) in the Great Barrier Reef	Harsha Pillarisetti	Dougherty Valley High	California Science & Engineering Fair, National Oceanic and Atmospheric Administration (certificate), U.S. Agency for International Development (USAID) (certificate)
Environmental	11	PROMETHEUS: A Cloud-based Internet of Things Device for Early Fire Detection and Warning Using Crowdsourcing	Rohan Siva	Dougherty Valley High	California Science & Engineering Fair, U.S. Air Force (certificate & backpack)
Math/Computer Science	8	AI, Brute Force, or Human: Who is the best at Connect Four?	Ananya Raghu, Anisha Raghu	Windemere Ranch Middle	California Science & Engineering Fair, Broadcom MASTERS
Math/Computer Science	11	CarbNN: A Novel Active Transfer Learning Neural Network to Build De Novo Metal Organic Frameworks (MOFs) for Carbon Capture	Neel Redkar	Dougherty Valley High	California Science & Engineering Fair, American Meteorological Society (certificate), Chevron (\$500)
Physical	10	Fading into the Background: An analysis of neglected double star systems	William Lee	Deer Valley High	California Science & Engineering Fair
Physical	11	Waves, Particles, Light, It's all Photoelectric	Joshua Odiase	Deer Valley High	California Science & Engineering Fair, Mu Alpha Theta (certificate), Ricoh USA, Inc. (certificate)

SECOND PLACE AWARDS

CATEGORY	GRADE	TITLE	STUDENT	SCHOOL	SPECIAL AWARD
Behavioral	9	The effects of virtual reality on acute pain analgesia	Sai Varnika Sirasala	Dougherty Valley High	
Behavioral	11	Examining the Relationship between Adult Mental Health in the United States during COVID-19 Pandemic and Sex, Age, Race, and Educational Background	Allan Zhang	Dougherty Valley High	

Behavioral	12	Marine Mastery: What method works magic?	Indi Fulgham-Raju	Deer Valley High	
Biology	7	Neutralizing Acids in Coffee	Viviana Sanchez	Joaquin Moraga Intermediate	
Biology	10	The Effect of E-cig Vapor Juice on Drosophila melanogaster Reproductive Health and Locomotive Behavior of the F2 Generation	Akshaj Molukutla	San Ramon Valley High	
Biology	10	Bacteriophages: A Novel Solution to the Growing Antibiotic and Superbug Crisis	Christian Osbey	Clayton Valley Charter High	
Biology	10	Examining the Effects of Alcohol on the Reproductive Rate of Drosophila Melanogaster	Sreemayee Krishna	Dougherty Valley High	
Biology	11	Diet vs. Dysbiosis: The Effect of Curcumin on Gut Microbiome Diversity as a Therapeutic Target for Autoimmune IBD	Ridhi Goyal	California High	
Biology	11	Differential gene expression analysis stratified by APOE genotypes across brain regions in Alzheimer's disease	Grace Yang	Dougherty Valley High	Regeneron Biomedical Science Award (\$500)
Biology	11	Non-invasive cardiac tissue mapping: Analyzing the advantages of cardiac-function imaging in the early detection of cardiac muscle and tissue failure	Malaq Ali	California High School	Society for In Vitro Biology (certificate)
Biology	11	In Silico Study on the Effect of Selective Fluorination on the Biological Activity of Natural Products	Modakar Kurma	The Quarry Lane School	
Biology	12	Identification of Prognostic Metastasis-Associated Biomarkers for Early Prediction of Metastasis in Breast Cancer	Siya Iyer	Dougherty Valley High	
Engineering	8	System to Monitor and Alert Onset of Seizure in Epileptic Patients	Anirudh Ayyadevara	Windemere Ranch Middle	Lemelson Early Inventor Prize (\$100), The Tremsin Award of Engineering Innovation (\$100)
Engineering	8	How Efficient is your Wind Turbine?	Zoe Venetta	NorthCreek Academy	
Engineering	8	Prosthetic Hand	Maryam Kermani, Noori Kwon, Natalia Villanueva	Joaquin Moraga Intermediate	
Engineering	10	Use of Water Waves during Swim Practice to Generate Electricity	Kayven Upadhyay	De La Salle High	
Engineering	10	The New and Improved Fog Harp	Alex LeCoque	De La Salle High	Contra Costa Water/Waste Water Agencies (\$250), NASA Earth System Science Award (certificate)
Engineering	10	Mini Hydropower: Harnessing the Power of a Flush/Shower to Generate Electricity	Ila Bhimshetty	Dougherty Valley High	Contra Costa Water/Waste Water Agencies (\$250), U.S. Air Force (certificate & backpack)
Engineering	10	RoboPen: Intelligent Portable Precision 3D Tool	Aashita Krupadanam	Dougherty Valley High	
Engineering	10	A Wearable Device to Help Visually Impaired People Navigate	Sid Thakore	Dougherty Valley High	John Henry Award of Innovation in Electronics (\$100)

Engineering	10	Fever Receiver	Sayam De, Adarsh Danda, Akash Danda	Dougherty Valley High	
Engineering	10	Viability of Remote Monitoring Technologies	Ansh Maroo	Dougherty Valley High	
Engineering	11	BioIndex: Diagnosing Ligaments Tears in the Knee	Pratik Nudurupati, Sai Chebrolu	Dougherty Valley High	
Engineering	12	Hydrogen Battery	Colby Ye, Jerusalem Tekeba, Ellie Yin	Deer Valley High	Henkel Aerospace Highflyer Science & Engineering Award (\$250 & medallion)
Environmental	7	Implementing Effective Soils into Home Gardening	Zachary Cheng, Rohan Goyal	Diablo Vista Middle	
Environmental	8	Assessing Alternatives to Plastic Straws: Observing Biodegradation After Exposure to Outdoor Environmental Conditions	Andrea Rosmarin	Tilden Preparatory School	
Environmental	9	Demonstrating Metal Organic Framework's (MOF) efficiency by Reducing immense amounts of pollutants and attain Healthy Drinkable Water	Pranav Saravanan	Dougherty Valley High	ASM Materials Education Foundation (certificate), Contra Costa Water/Waste Water Agencies (\$100), U.S. Stockholm Junior Water Prize (certificate)
Environmental	10	Methane Madness: Landfilling vs. Composting	Zachary Gile	De La Salle High	
Environmental	10	Toxicity of Fire Retardant to Soil Bacteria and Field Mustard	Diego Vazquez	De La Salle High	
Environmental	10	Vinyl Erasers Emit Polyvinyl Chloride, A Hazardous Substance	Isaiah Daco	De La Salle High	
Environmental	10	Sunscreen Pollution of Our Oceans: Analyzing the Relative Abundance of Oxybenzone in Salt Water	Matthew Baur	De La Salle High	Contra Costa Water/Waste Water Agencies (\$300), U.S. Metric Association (certificate)
Environmental	10	Algae's Response to Projected CO2 Levels (2100 CE)	Aiden Burgham	De La Salle High	American Meteorological Society (certificate)
Environmental	11	Marine Oil Spill Cleanup Using Sustainable Polymers Made From Repurposed Waste	Allison Quan	Las Lomas High	Association for Women Geoscientists (certificate), Chevron (\$1,000), Contra Costa Water/Waste Water Agencies (\$300), U.S. Stockholm Junior Water Prize (certificate)
Environmental	11	A Comprehensive Evaluation of Heat Sinks for Implementation in Solar Panels through Analyzation of Material Composition and Microscopic Texturization	Rhea Master, Niya Suravarapu	Dougherty Valley High	
Environmental	11	Analyzing the prevalence and the spread of natural and artificial soil-found arsenic in San Ramon	Anshul Chennavaram, Sriram Rajagopal	California High	National Geographic Society (\$100)
Math/Computer Science	10	Air-Gapped Devices: How can Non-Internet Connected Devices Be Hacked?	Siddharth Chander	Dougherty Valley High	

Math/Computer Science	11	Aiding Disaster Relief in Remote Areas with Novel Map Generation using Machine Learning	Isaac Liu	Dougherty Valley High	U.S. Air Force (certificate & backpack), Yale Science and Engineering Association (certificate)
Math/Computer Science	11	Virtually There – An AI Teacher to Help Novices Practice a Stringed Instrument at Home	Aditya Satish	Dougherty Valley High	
Math/Computer Science	11	A novel deep learning model for dimensionality reduction of environmental factors to isolate critical subjects in real-time video of autonomous vehicles	Omansh Bainsla, Aniket Dey	Dougherty Valley High	
Math/Computer Science	11	Caret: A Sentiment Analysis Journaling App for Detecting Signs of Depression	Riyanka Narasimhan	Dougherty Valley High	American Psychological Association (certificate)
Physical	7	A clean way to make plastic	Arnav Shinde	Joaquin Moraga Intermediate	
Physical	10	Color and Heat Absorption Affecting Lift in Helium Balloons	Stephen Mulcahy	De La Salle High	U.S. Air Force (certificate & backpack)

THIRD PLACE AWARDS

CATEGORY	GRADE	TITLE	STUDENT	SCHOOL	SPECIAL AWARD
Biology	9	Effects of Synthetic vs Natural Rooting Hormones on Lavender	Amisha Reddy	The Quarry Lane School	
Biology	10	Bullseye!: The Importance of Making Sure a Drug Hits its Targeted Protein	Adviti Aleti	Dougherty Valley High	
Biology	10	Mysterious Mutations	Anjali Mistry	Dougherty Valley High	
Biology	10	Optimizing Conditions For OCPC Assay of Calcium	Zara Alam	The Athenian School	
Biology	12	Testing the impact of pharmaceutical pollutants on plant growth	Mahika Arya	Dougherty Valley High	Contra Costa Water/Waste Water Agencies (\$300)
Engineering	7	Greenhouse Gas Models	Angele Tseng, Madeline Carpenter, Jeevan Dhaliwal	Joaquin Moraga Intermediate	
Engineering	8	Exploring Perpetual Motion	Liam Harju, Sifat Sarang	Joaquin Moraga Intermediate	
Engineering	8	How Agriculture Will Change Because of Climate Change	Avyay Ramaswamy, Akshaj Challa, Jibran Haris	Windemere Ranch Middle	
Environmental	10	Macroplastics and Microplastics on the Shoreline	Franklin Enkhmandakh	De La Salle High	
Math/Computer Science	10	Malaria SpyGlass: A Convolutional Neural Network to Predict Malaria Infection Using Blood Smear Images	Aayush Asthana	Dougherty Valley High	
Math/Computer Science	10	NFL Predictive Analytics and the Automation of Matchup-Based Simulations	Ashray Pamula	Dougherty Valley High	

Math/Computer Science	10	Brain Tumor Detection Using Deep Learning	Rayna Jindal	California High	Katherine Johnson Award (\$100)
Math/Computer Science	10	Protein Folding as Proof-of-Work for Securing Cryptocurrency	Michael Lan, Tristan Needham, Cyril Russell	Campolindo High	
Math/Computer Science	10	Real time translation of ASL to English using smartphone camera	Pragati Mettu	Dougherty Valley High	
Math/Computer Science	11	Helmet Detection	Shripad Akumalla	Dougherty Valley High	
Math/Computer Science	11	A Machine Learning Prediction Model for Strokes	Iris Zheng	Dougherty Valley High	
Math/Computer Science	11	Stroke Predictor	Ananyashree Seetharaman	The Quarry Lane School	Katherine Johnson Award (\$100)
Physical	10	Is the Radiation from Cell Phones Harmful?	Rishi Gopalasetty	Dougherty Valley High	
Physical	10	Evaluating the Use of Mechanochemistry as an Environmentally Friendly Technique to Carry Out Chemical Reactions by Avoiding the Use of Toxic Solvents	Siddarth Nagapudi, Ishaan Saraswat	Dougherty Valley High	
Physical	12	Accessible production of Electricity using Kinetic and Heat Energy	Aadity Sharma	Dougherty Valley High	Katherine Johnson Award (\$100)

FOURTH PLACE AWARDS

CATEGORY	GRADE	TITLE	STUDENT	SCHOOL	SPECIAL AWARD
Biology	9	Healing Cracked Lips with Nature	Sriya Veerapaneni	Dougherty Valley	
Math/Computer Science	9	An Algorithmic Approach to Wildfire Maintenance	Rishav Saravanan	Dougherty Valley High	
Math/Computer Science	9	"The Probability Of Getting The Same Color 4 Times In A Row In A Uno Deck"	Jax Truong	California High	
Math/Computer Science	9	iRobo: A Robot Engineered to Sort Trash	Shivam Mohapatra	Dougherty Valley High	
Math/Computer Science	9	A Novel Solution to Increasing the Survival Rates of Those Struck by Sudden Cardiac Arrest	Surya Duraivenkatesh	Dougherty Valley High	
Math/Computer Science	11	Using AI Image Recognition to Detect Depression	Sriram Kudamala	Aquinas International Academy	Chevron (\$500)

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