

Finalist Directory

COUNTRIES, REGIONS AND TERRITORIES PARTICIPATING IN REGENERON ISEF 2023

LEGEND

- Each # next to the finalist's name indicates previous ISEF participation
- "T" precedes the name of a Teacher-Sponsor of the project
- "T" after the project ID indicates a team project

AMERICAN SAMOA

Pago Pago, American Samoa, TEAS01, American Samoa Science Fair

ANIM037 **An Improved Insecticidal Bait To Control Invasive *Technomyrmex vitiensis* (Fijian White-Footed Ants)**

Heleina Maria Lucille Willis, 17, Senior, Fa'asao Marist High School, Pago Pago, American Samoa, T: Cassandra Garcia

BCHM034 **Antipodal Algae: Energy Solution for a Tropical Island**

Amelie Ruoyi Chen, 16, Sophomore, Pacific Horizons School, Pago Pago, American Samoa, T: Karen Dizon

EAEV054 **Comparing the Effects of Fish Hydrolysate and Fish Emulsion on the Growth of Okra (*Abelmoschus esculentus*)**

Dimple Dezeree Bonhart, 17, Senior, Fa'asao Marist High School, Pago Pago, American Samoa, T: Cassandra Garcia

ARMENIA

Yerevan, Armenia, ARM002, Armenian School Science Festival

ENEV056T **A Biodegradable Revolution: An Industrial Device to Produce Biodegradable Polymer Films**

Ilona Artazyan, 17, Senior, Anzhela Matevosyan, 17, Junior, Ayb School, Yerevan, Armenia, T: Lilit Hambardzumyan

AUSTRALIA

Oatlands, Australia, AUS004, Australian Science and Engineering Fair

BMEDO50 **Running Away From Cancer: An Investigation Into the Dynamic Metabolism of Cancer Cells Under an Increase in Extracellular Lactate Concentration**

Sarah Grace Arnold, 18, Senior, Menai High School, Illawong, New South Wales, Australia, T: Ann Hanna

CHEM051 **Demystifying the Soapberry: The Effect of Concentration, Temperature and pH on Soapberry Surfactant and Its Effectiveness in Comparison to Detergent and Bio-Detergent**

Alexandra Prokhorov, 16, Sophomore, Presbyterian Ladies' College, Sydney, New South Wales, Australia, T: Maria-Luisa Gutierrez

CHEM056 **Investigating the Effectiveness of Montmorillonite-Alginate Nanocomposite Beads in the Removal of Anionic Tartrazine and Amaranth Azo Dyes From Wastewater, Quantified via UV-Visible Spectrophotometry**

Thien Tran, 18, Senior, Queensland Academies for Health Sciences, Southport, Queensland, Australia, T: Anir Lal

EAEV058 **Hydroxyapatite as a Novel, Efficacious, and Marine Friendly UV-Filter**

Stanley Hao Chen Wey, 18, Senior, Queensland Academies for Health Sciences, Southport, Queensland, Australia, T: Anir Lal

MATH039 **'String' Theory: How Long Is a Piece of String?**

Anubhav Dhruv Ammangi, 16, Junior, Redeemer Baptist School, North Parramatta, New South Wales, Australia, T: Jenelle Seaman

- PHYS054** **Analysis of Elemental Abundances in Transition Disk Post-AGB Binary Systems for Planet Formation**
Yi Wei (William) Yang, 18, Senior, James Ruse Agricultural High School, Sydney, New South Wales, Australia, T: Carina Dennis
- PHYS059** **Measuring the Dark Matter Content of NGC5102 Using Combined Observations of Gas and Stars**
Olivia Silcock, 19, Senior, William Clarke College, Kellyville, New South Wales, Australia, T: Dan Miller
- ROBO057** **Transmission-Line Assessment and Review System (TARS): An AI and Robotics Enabled Drone for the Inspection and Maintenance of High Voltage Transmission Lines**
Kai Turner, 18, Senior, Northern Beaches Secondary College Manly Campus, Sydney, New South Wales, Australia, T: Kate Farrow
- SOFT029** **EmSafe: Investigating the Emergency Call Service in Australia and the Development of a Modern and Efficient Contact System**
Rahul Kumar, 16, Junior, Brisbane Grammar School, Spring Hill, Qld, Australia, T: Tanya Neilsen

AZERBAIJAN

Baku, Azerbaijan, AZR001, Azerbaijan Science and Engineering Fair

- BCHM003** **Getting Artificial Bone From Corn-Cob Ash and Mussel Shells With Bioceramic Method**
Kamran Mirzali, 15, Sophomore, The Modern Educational Complex in Honour of Heydar Aliyev, Baku, Nasimi, Azerbaijan, T: Fuad Agayev
- EGSD009T** **Application of Hybrid Energy Systems Based on Triboelectric Nanogenerators to Intelligent Transportation Systems**
Misir Huseynli, 17, Junior, Ayshan Hajiyeva, 18, Junior, Young Talents High School, Baku, Azerbaijan, Young Talents Lyceum, Baku, Azerbaijan, T: Orkhan Gulahmadov
- ENEVO10T** **EcoRobot**
Eyyub Shenal, 15, Sophomore, Elkhan Hamidov, 17, Junior, Baku Turk Anadolu Lisesi, Baku, Nizami, Azerbaijan, Istedad High School, Sumgait, Azerbaijan, T: Sabina Isayeva
- MATH010** **Euler's Number and Its Properties**
Nurlana Alili, 16, Junior, Secondary School #17, Baku, Azerbaijan, T: Elnur Khalilov
- MATS006T** **Pure breATH**
Ayaz Omarli#, 16, Junior, Omar Ibrahimov, 15, Sophomore, Young Talents Lyceum, Baku, Azerbaijan, T: Ulviyya Hasanova
- ROBO009** **Smart Rescue and Firefighter Machine (SRFM)**
Mahammad Abbasli, 17, Junior, Lyceum Named after Academician Zarifa Aliyeva, Baku, Azerbaijan, T: Rafiga Bagirova
- ROBO018T** **Smart Pill Dispenser: Helping Patients Take Their Medication on Time**
Araz Jabrayilov, 17, Junior, Ibrahim Abdullayev, 16, Sophomore, The International School of Azerbaijan, Baku, Azerbaijan, T: Nigar Michael

BELGIUM

Brussels, Belgium, EUB001, European Union Contest for Young Scientists (EUCYS)

- CHEM048** **Optimization of the Synthesis of the Fluorescent Dye "Nile Red"**
Meda Surdokaite, 20, Senior, Kauno r. Raudondvario gimnazija, Raudondvaris, Kauno, Lithuania, T: Marta Marciulionyte
- MATH035T** **A New Method of Solving the Bernoulli Quadrisection Problem and Its Application to Other Problems in Euclidean Geometry**
Aditya Joshi, 16, Sophomore, Aditya Kumar, 16, Junior, Synge Street CBS, Dublin, Leinster, Ireland, T: John Davin

BRAZIL

Novo Hamburgo, Brazil, BRA001, International Fair of South America – MOSTRATEC

- ANIM001** **Use of an Artificial Intelligence Model for Drug Redirection Against Feline Rhinotracheitis**
Naiara Pereira Martins, 17, Senior, Instituto Federal de Educacao, Ciencia e Tecnologia do Maranhao – Unidade Imperatriz, Imperatriz, Maranhao, Brazil, T: Carlos Martins

- EBED001T** **Micro-Controlled Device for Calculation of Irregular Areas Using the Gauss Method, Phase II**
Gustavo Guimaraes de Carvalho, 19, Senior, Paulo Sergio Neves Regatieri, 19, Senior, Paulo Cesar Murata Filho, 19, Senior, Instituto Federal de Educacao, Ciencia de Tecnologia de Sao Paulo - IFSP Campus Campinas, Campinas, Sao Paulo, Brazil, T: Edson Duarte
- EBED003** **Development of a Low-Cost Network System to Monitor Landslides in Urban Hills**
Lucas Hadlich Camargo Sampaio, 17, Senior, Colegio Dante Alighieri, São Paulo, Brazil, T: Wayner Klen
- ENBM002** **Organ Box: The Use of the Technology to Aid in the Transport and Tracking of Organs in the Transplantation Process**
Rafaela Milanski Ribas, 16, Sophomore, Eureka – Escola de Tecnologia e Pesquisa, Cascavel, Parana, Brazil, T: Maycon Lourenco
- ENBM004** **The Development of an Alternative Exhalation Valve for Mechanical Ventilation by Additive Manufacturing**
Sofia Nascimento Mazin Mazin, 18, Junior, Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo, Rio Grande do Sul, Brazil, T: Sandro Auler
- ENBM008T** **Electronic Device to Aid in the Correction of Foot Drop Syndrome**
Rebeca Apolinario Goulart, 17, Senior, Eloah Marvila Padrone, 18, Senior, Escola Tecnica Estadual Henrique Lage, Niteroi, Rio de Janeiro, Brazil, T: Altair Santos
T: Altair dos Santos
- ENEV003T** **Use of Graphene Associated With Nanoporous Inorganic Membrane for Water Treatment**
Manuela Prado Machado, 19, Senior, Helena Flores Moschetta, 19, Senior, Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo, Rio Grande do Sul, Brazil, T: Schana da Silva
- PLNT010** **APPANC: Development of an Application for Scientific Dissemination of PANCs**
Heloisa Serra Rodrigues de Souza, 15, Junior, SESI School Rector Miguel Calmon, Salvador, Brazil, T: Lorena Vieira
- TMED003** **Development of Fluopisn C. Liposomal: A Bioactive Compound to Control Pathogenic Bacteria**
Luiza Nabarro Ikeda Silva, 16, Junior, Colegio Interativa, Londrina, Parana, Brazil, T: Leonardo Fernandez
- Sao Paulo, Brazil, BRA002, FEBRACE –Feira Brasileira de Ciencias e Engenharia**
- ANIM036** **Pharmacale: Larvicidal, Insecticide and Repellent Potential of Active Principles of Tucum-Mirim (*Astrocaryum acaule*) in the Control of Arthropods That Transmit Arboviruses**
Gustavo Botega Serra, 17, Senior, Escola Santa Teresinha, Imperatriz, Maranhao, Brazil, T: Zilmar Soares
- BCHM023** **Investigation of Manganese Cellular Transport Mechanisms During Cancer-Associated Metallomic Imbalance**
Juliana Do Carmo Godinho, 19, Senior, Instituto Federal de Educacao Ciencia e Tecnologia do Rio de Janeiro, Rio de Janeiro, RJ, Brazil, T: Mariana Stelling
- BEHA034** **Prevalence Protocol for Attention to Dropout Rates (PPADR): Strategies to Promote the Permanence of Students in High School**
Kamylla Gontijo de Melo, 19, Senior, Escola Alef Peretz- Unidade Paraisopolis, Sao Paulo, Sao Paulo, Brazil, T: Ednilson Aparecido Quarenta
- CHEM043T** **Nano-Emulsions From Essential Oils: A Sustainable Solution in Agriculture**
Pamela Nunes Avelar, 18, Senior, Beatriz Pires Meneghetti, 17, Senior, Yasmin Ferrari Altoe Francisco, 17, Senior, Instituto Federal de Educacao, Ciencia e Tecnologia do Espirito Santo, Vila Velha, Espirito Santo, Brazil, T: Hildegardo Franca T: Hildegardo Franca, T: Hildegardo Franca
- ENEV054** **An Alternative Design of a Rainwater Harvesting System: Mitigating the Effects of the Drought in the Semi-arid Region of Brazil**
Vitoria Sabrina Silva Leite, 17, Senior, Escola Estadual Monsenhor Raimundo Gurgel, Mossoro, Rio Grande do Norte, Brazil, T: Antonio Serginaldo Bezerra



 SOCIETY FOR SCIENCE

COME VISIT THE ISEF STORE

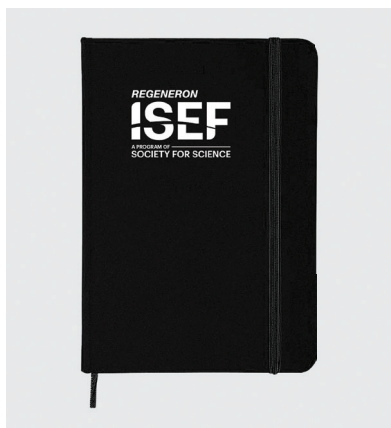
HALL B

SUNDAY: 9AM-4PM

MONDAY: 9AM-4PM

TUESDAY: 9AM-11AM

WEDNESDAY: 9AM-1PM



- ENEV055T** **Low-Cost Ecological Filter for Water Treatment, Made on the Basis of Activated Carbon From the Biomass of the Black Jurema (*Mimosa hostilis*)**
 Lauanda Vitoriano Lima, 16, Senior, Kalyne Vitoria Ferreira Falcao Pereira, 17, Senior, EEEP Antonio Rodrigues de Oliveira, Pedra Branca, Brazil, T: Francisco Renato Moreira Da Silva
- MATS039** **Developing a Novel Biodegradable Plastic Film With *Psidium guajava*' Byproduct**
 Juliana Pereira da Silva, 18, Senior, EEMTI Marconi Coelho Reis, Cascavel, Ceara, Brazil, T: Heloína Capistrano
- MATS040** **Activated Carbon Synthesized From *Pithecellobium Dulce* for Methylene Blue Removal**
 Caio Nunes Santana, 18, Senior, Instituto Federal da Bahia (IFBA)–Campus Camacari, Camacari, Bahia, Brazil, T: Luciene Carvalho
- SOFT035** **Color Filtering System for Quantifying the Percentage of Afforestation Through Satellite Images: A Statistical Analysis**
 Goncalo Ponte Leite, 16, Junior, Colegio Sao Francisco De Sales - Diocesano, Teresina–PI, Piaui (PI), Brazil, T: Victor Carvalho

BULGARIA

Sofia, Bulgaria, BGR001, Bulgarian Science and Innovation Fair

- MATH002** **Proof of the Complete Presence of a Modulo 4 Bias for the Semiprimes**
 Nikola Slavkov Gyulev, 16, Sophomore, Model High School of Mathematics "Akademik Kiril Popov", Plovdiv, Bulgaria, T: Ilian Drumev
- MATH003** **The Shape of Polynomial Map $x \hat{a}^*$ $kx^n \text{ Mod } P$**
 Stefan Milkov Gaydarov, 17, Sophomore, Model High School of Mathematics "Akademik Kiril Popov", Plovdiv, Bulgaria, T: Ilian Drumev
- ROBO001** **RSTOD: Novel Auxiliary Learning Techniques for Efficient and Controllable Task-Oriented Conversational Agents**
 # Radostin Lozanov Cholakov, 17, Junior, Model High School of Mathematics "Akademik Kiril Popov", Plovdiv, Bulgaria, T: Ilian Drumev
- SOFT004** **Increasing Computer Vision Models Interpretability**
 Delyan Lyubomirov Boychev, 17, Junior, High School of Mathematics and Natural Sciences "Vasil Drumev", Veliko Tarnovo, Veliko Tarnovo, Bulgaria, T: Lilyana Bobeva

CANADA

Hamilton, Canada, CAN001, Bay Area Science and Engineering Fair

- ENBMO65** **Sugar High!: Integrating Glucose and Ketone Testing to Improve Prevention of Diabetic Ketoacidosis**
 # Isra Galer Bashir, 18, Senior, Westdale Secondary School, Hamilton, Ontario, Canada, T: Erin Lepischak
- ROBO051** **Pothole Patrol: An Innovative Robotic Solution for Road Maintenance Using Sustainable Materials**
 # Anthony Matteo Saturnino, 17, Senior, Bishop Ryan Catholic Secondary School, Hannon, Ontario, Canada, T: Mara Gazzola
- ROBO052** **Bionic Squid-Inspired Robot Facilitating Underwater Monitorization and Preservation of Coral Reefs**
 Zixuan Li, 16, Junior, Ridley College, St. Catharines, Ontario, Canada, T: Heather Rhind
- TMED056** **The COVID Cardiac Connection: A Novel Pre-Participation Screening Tool to Identify Subclinical Cardiomyopathy After SARS-CoV-2 Infection in Young Athletes**
 Nicholas Pacifici, 14, Freshman, St. Mary Catholic Secondary School, Hamilton, Ontario, Canada, T: Natasha Grubisic
- Pickering, Canada, CAN002, Youth Science Canada–Team Canada**
- EAEV049** **Plankton Wars: An Innovative Analysis of *Daphnia* Genotype Biomanipulation for Algae Bloom Prevention**
 Annabelle Marie Rayson, 17, Senior, Saint Patrick's Catholic High School, Sarnia, Ontario, Canada, T: Diane Yurkewich

- EBED025** **Seeing Cells Without a Lens: Compact 3D Digital Lensless Holographic Microscopy for Wide-field Imaging**
Thomas Zhirui Yang, 16, Junior, University of Toronto Schools, Toronto, Ontario, Canada, T: Julie Stoyka
- ENBM050** **Detecting Hypoxia Through the Non-Invasive Monitoring of Sweat Lactate and Tissue Oxygenation**
Cindy Cheng, 16, Sophomore, Laurel Heights Secondary School, Waterloo, Ontario, Canada, T: Sarah Beaton
- ENBM051** **Pee Xylophone: A Novel Non-Invasive Bladder Pressure Measurement System**
Krish Modi, 18, Senior, Northern Collegiate Institute and Vocational School, Sarnia, Ontario, Canada, T: Melissa Mallette
- ENBM054** **HemiStride: Design of a Low-Cost and Backdrivable Lower-Limb Exoskeleton for Hemiplegic Patients**
Tara Tianru Zhan, 16, Sophomore, David Thompson Secondary, Vancouver, British Columbia, Canada, T: Susan Leong
- ENEV050** **Detection of Harmful Microorganisms in Drinking Water Using Deep Learning**
Keerthan Kamala Krishnamoorthy, 16, Junior, Fort Richmond Collegiate, Winnipeg, Manitoba, Canada, T: Jennifer Piasecki
- ROBO040** **A Novel Pre-Hospital Indoor Rescue Drone System for Cardiac Arrest Patient Emergency Assistance and Medication Delivery Through Remote EMS Surveillance**
Max Du, 15, Sophomore, Western Canada High School, Calgary, Alberta, Canada, T: Carma Cornea
- ROBO041** **SPRKD: Effective Knowledge Distillation for Deep Neural Networks via Saddle Region Approximation**
Aditya Dewan, 17, Junior, The Woodlands School - Secondary, Mississauga, Ontario, Canada, T: Trisha Raybould
- Montreal, Canada, CAN004, Montreal Regional Science and Technology Fair**
- ENBM066** **SimplyVent: A Low-Cost Mechanical Ventilator**
Kayla Joy Salasidis, 16, Junior, Herzliah High School, Montreal, Quebec, Canada, T: Patrick Elbaz
- ETSD047T** **Reconnaissance & Medical Drone**
Christos Velmachos, 16, Sophomore, Nathan Ikho Aruna, 16, Sophomore, Laval Senior Academy, Laval, Quebec, Canada, T: Heather McPherson T: Heather McPherson
- ROBO053T** **Artificial Sign Language: A Virtual Translator for American Sign Language (ASL) Users**
Xin Lei Lin, 17, Senior, Aly Shariff, 18, Senior, Marianopolis College, Westmount, Quebec, Canada, T: Angela Keane

CHILE

Santiago, Chile, CHL003, Fundacion Club Ciencias Chile

- MCRO001T** **Measurement of Antibiosis of Algae From the Chilean Intertidal Zone on Pathogenic ATCC Bacteria**
Damaris Cancino, 17, Senior, Katalina Fuentes, 17, Senior, Liceo Claudina Urrutia, Cauquenes, Maule, Chile, T: Fredy Segura

CHINA

Beijing, China, CHN001, China Adolescents Science and Technology Innovation Contest

- ANIM018** **Cracking the Code: New Genetic Link Between Sleep and Aging-slo-1 in *C. elegans***
Yunzhe Liang, 17, Junior, No.1 High School Affiliated to Tongji University, Shanghai, Shanghai, China, T: Ting Cai
- BEHA011** **Farewell, Range Anxiety: Planning Layout of Public Charging Facilities for Urban Electric Vehicles**
Ziyue Jiang, 15, Junior, The Experimental High School Attached to Beijing Normal University, Beijing, Beijing, China, T: Jin Liu
- CELL019** **A Simple, Effective Approach to Screen and Identify H2A-H2B Binding Proteins**
Yuhui Liu, 16, Junior, Beijing National Day School, Beijing, China, T: Xiangmei Dou

- CHEM021** **Green Method to Lower the 8%: Facile and Sustainable Preparation of Superhydrophobic Concrete/Brick Surface**
Yiling Zhang, 16, Junior, Shanghai Fuxing Senior High School, Shanghai, Shanghai, China, T: Gengfeng Zheng
- EAEV019** **Bioaccumulation of AgNPs of Different Sizes and Coatings Along the Aquatic Food Chain**
Jia Han, 17, Senior, The Experimental High School Attached to Beijing Normal University, Beijing, Beijing, China, T: Bo Li
- EBED016** **Make Smart Devices More Accessible: Engineering of a Novel Low-Cost, Multi-Direction Distance Sensor and Its Application in Obstacle Avoidance of UAV**
Hairong Huang, 17, Junior, Hangzhou Xuejun High School of Zhejiang Province, Hangzhou, China, T: Xiaotian Shen
- EBED017** **Designing and Engineering a Smart Robot for Collecting and Arranging Badminton Shuttlecocks**
Ziling Wang, 17, Junior, No. 2 High School of East China Normal University, Shanghai, Shanghai, China, T: Zhentang Wang
- EGSD018** **Study on the Property of LiFePO₄ Battery and Extending Its Life Span Through DMSO-SnF₂ Protection Methods**
Jiaxuan Wang, 18, Senior, Nanjing Foreign Language School, Nanjing, Jiangsu, China, T: Zhong Jin
- ENBM020** **Development of Ankle Exoskeleton Device With Complex Functions of Rehabilitation Assessment, Rehabilitation Guidance and Rehabilitation Exercise**
Yanbing Jin, 18, Junior, Shanghai Pinghe Bilingual School, Shanghai, China, T: Yinghe Lv
- ENBM033** **TremorChecker: An Affordable and Convenient Contactless Early Screener for Parkinson's Disease Based on E-field Sensing**
Yiding Tian, 18, Senior, Shenzhen Middle School, Shenzhen, Guangdong, China, T: Nan Hu
- ENEV023** **Resource Recycling of Shield Tunnel Waste Soils Improved by Industrial Waste Phosphogypsum**
Ziyi Ding, 17, Junior, Nanjing Foreign Language School, Nanjing, Jiangsu, China, T: Yongfeng Deng
- ETSD011** **How the Surrounding Multi-Scale Building Clusters Affect the Wind Loads of the Super High-Rise Building**
Zhifei Li, 17, Junior, The Experimental High School Attached to Beijing Normal University, Beijing, Beijing, China, T: Zhibin Sun
- ETSD015** **Exploring Stick-Climbing and Grabber-Wheel Hybridization: The Development of an Inchworm Robot with Integrated Skateboard Mechanism**
Yuyang Wang, 16, Sophomore, Shanghai Pinghe Bilingual School, Shanghai, China, T: Lucheng Wang
- ETSD016** **Design and Implementation of the Fish Gill Imitation Side-Window Regulator for Ducted Fan UAVs**
Zihao Liu, 16, Junior, The High School Affiliated to Beijing Normal University, Beijing, Beijing, China, T: Ya Zhang
- ETSD017T** **Preliminary Study on Overwinter Storage of Breeding Forest Frogs: A New Model of Intelligent Overwinter Storage Method for Breeding Forest Frogs**
Yuxi Shi, 17, Junior, Meiniu Song, 17, Junior, Fushun No.2 Senior High School, Fushun, Liaoning, China, T: Dewei Zhang
- ETSD019** **Spring & Sunflower: Two Flexible Grasping Machine Made of Rigid Material Based on Origami Structure**
Jiayi Shi, 18, Senior, Shanghai World Foreign Language Academy, Shanghai, China, T: Tao Lin
- MCRO016** **Little Health Guard in the Kitchen: Preliminary Application of Perilla Extract in Kitchen Supplies**
Yimeng Xu, 17, Junior, Taizhou No. 1 High School, Taizhou, Zhejiang, China, T: Jingbei Yu
- MCRO017** **The Magic Mulching Film: Effects of Lignin-Based Fully Biodegradable Mulching Film on Soil Microorganisms**
Shuyang Wu, 17, Junior, Taizhou No. 1 High School, Taizhou, Zhejiang, China, T: Zhengyan Chen

- PHYS017** **How To Brush the Ice To Score Better in Curling?: The Influence of Different Angles Between Curling Brushes and Ice Surfaces on Curling Deceleration Movements**
Minxin Wang, 16, Junior, The Experimental High School Attached to Beijing Normal University, Beijing, Beijing, China, T: Boqiang Ma
- PHYS019** **Thin-Film Lithium Niobate Bragg Grating Tunable Filter Using Femtosecond Laser Lithography**
Chengyue Jiang, 16, Junior, Shanghai Pinghe Bilingual School, Shanghai, China, T: Yinghe Lv
- PHYS020** **Which Features Contribute to Galaxy Morphology Classification?: A Novel Explainable Artificial Intelligence Approach**
Mingxuan Xie, 17, Junior, Guangzhou Zhixin High School, Guangzhou, Guangdong, China, T: Zhicheng Liang
- PLNT018T** **Exploring the Impact of *Lactobacillus rhamnosus* on Nitric Oxide Stimulation of Peanut Roots**
Zifan Zhang, 16, Junior, Mengze Hou, 16, Junior, Beijing No. 8 High School, Beijing, Beijing, China, T: Yue Hou
- PLNT020** **Elucidation of the Biosynthesis Pathway of Acylated Flavonoid Glycosides in *Pseudognaphalium affine* and Exploration of Its Key Enzymes**
Dongtian Liu, 17, Junior, Shanghai Foreign Language School Affiliated to SISU, Shanghai, China, T: Ying Xiao
- ROBO019** **The Story of the Stone: A Novel Rubbing Restoration Method Using Generative Adversarial Network**
Gongbo Sun, 18, Senior, Beijing National Day School, Beijing, China, T: Zijie Zheng
- SOFT022** **A Scoring System of Chinese Calligraphy Copy Work**
Leyao Gu, 17, Junior, No. 2 High School of East China Normal University, Shanghai, Shanghai, China, T: Xiaojin Yu
- TMED023** **Nationality, Poverty, and the Prevalence of Disease-Spreading Mosquitoes: A Longitudinal Study in Yunnan, China**
Jingquan Tao, 16, Junior, The Experimental High School Attached to Beijing Normal University, Beijing, Beijing, China, T: Wei Fang
- Chengdu, China, CHN008, Sichuan Science Fair**
- BCHM001** **A Novel Electrochemiluminescence Biosensing System Using Photonic Crystal as Luminescence-Enhanced Substrates for the Ultrasensitive Detection of Food-Borne Harmful Substances**
Harrison Hao-Tian Tang, 18, Sophomore, Shanghai High School International Division, Shanghai, China, T: Chenglei Zhang
- EBED004** **A Fully Automatic Self-Assembling Modular Robot System**
Yik Chun John Peng, 17, Junior, Shanghai American School–Puxi Campus, Shanghai, Shanghai, China, T: Gregory Rose
- EGSD002** **Energy-Free Power Saving Device for Air Conditioners**
Eugene Yi-Jin Chen, 16, Sophomore, Shanghai High School International Division, Shanghai, China, T: DongSheng Zhang
- ETSD039** **Highly Adaptable, Strong, and Flexible Biotic Robotic Arm: A Modular Gear Chain Mechanism for Single-Handed Task Mastery**
Han Wang, 16, Sophomore, BASIS International School Hangzhou, HangZhou, ZheJiang, China, T: Huajie Ke
- ROBO003** **Action-Aware Vision Language Navigation: A Novel Reinforcement Learning Framework for Dynamic Navigation in VR and Beyond**
Jasmine Ziyu Liu, 16, Junior, Shanghai American School–Pudong Campus, Shanghai, Shanghai, China, T: Ian Miller

CHINA, HONG KONG SPECIAL ADMINISTRATIVE REGION

Hong Kong, China, Hong Kong Special Administrative Region, HKG001,
Hong Kong S&T Invention Contest

- EAEV006T** **A Study on Diving Behaviors of *Macaca mulatta* in Hong Kong: Implications of Climate Change**
Shi Yao Wei, 16, Junior, Shanshan Lin, 15, Freshman, Yeuk Tong Rita Zhan, 13, Freshman, Victoria Shanghai Academy, Harrow International School Hong Kong, Chinese International School, Hong Kong, China, Hong Kong Special Administrative Region, T: Haipeng Liu
- EBED006** **Detection of Skateboarding Tricks Based on Gyroscopic Data**
Ziyue Fang, 17, Junior, Singapore International School (Hong Kong), Hong Kong, Wong Chuk Hang, China, Hong Kong Special Administrative Region, T: Paul Satish
- ENBM006** **A Pose Based Gait Analysis System for Cerebral Palsy Patients Using AI and Computer Vision**
Edward Zhu, 16, Junior, Chinese International School, Hong Kong, China, Hong Kong Special Administrative Region, T: Christine Doleman
- ENBM007** **Servo-Controlled Semi-Rigid Exoskeleton Designed for the Human Knee**
Runxing Kenneth Fu, 17, Junior, Chinese International School, Hong Kong, China, Hong Kong Special Administrative Region, T: Lijuan Chen
- MATSO05T** **Anti-Forma Chitogel From the Hydrogel of Chitosan of Shells of *Hermetia Illucens***
Guojun Wu, 17, Junior, Wai Ki Wong, 17, Junior, Carmel Pak U Secondary School, Hong Kong, China, Hong Kong Special Administrative Region, T: Yuen Yu Ip

CHINA, MACAO SPECIAL ADMINISTRATIVE REGION

Macao, China, Macao Special Administrative Region, MAC001, Macao Region Science Fair

- EAEV017T** **Synergistic Effect of Co-Exposure to SOA and Transition Metals Induces Toxicity and Developmental Defects *in vitro* and *in vivo***
Kuan I Liu, 14, Freshman, Hoi Fong Choi, 15, Sophomore, Hio Chit Ng, 15, Freshman, Yuet Wah College, Macau, China, Macao Special Administrative Region, T: Cinderella Chy Lei
- ETSD010** **Design and Development of Enhanced Fuel Tank Service Kit for Aircraft**
Lok Iao Lao, 15, Freshman, Pui Ching Middle School, Macao, China, Macao Special Administrative Region, T: Haonian Min
- MATSO09T** **Investigation of the Whitening Activity of Ginsenosides From *Panax notoginseng* and Optimization of the Dosage Form**
Ka Seong Feng, 17, Junior, Keng Cheong Chong, 16, Junior, Ka Wai Lu, 17, Junior, Pui Ching Middle School, Macao, China, Macao Special Administrative Region, T: Hio Fai Io
- PHYS016** **Shape-Dependent Oriented Meteorites: Insights From Trajectory and Surface Texture Analysis**
Si Xing Huang, 17, Junior, Kao Yip Middle School, Macao, China, Macao Special Administrative Region, T: I Ieng Ho
- SOFT008** **Comprehelp: A Reading Comprehension Question Generation System Based on Transformer**
Wai In Chu, 17, Junior, Pui Ching Middle School, Macao, China, Macao Special Administrative Region, T: Vai Vai Ho
- TMED019T** **Using Lotus (*Nelumbo nucifera*) Infusions to Ameliorate Symptoms of Neurodegenerative Diseases**
Iok Kei Ma, 17, Junior, Ngai Long Chan, 16, Junior, Shannon Cheung, 17, Junior, Pui Ching Middle School, Macao, China, Macao Special Administrative Region, Pui Ching Middle School, Macau, China, Macao Special Administrative Region, T: Leng Leng Leong

CHINESE TAIPEI

Taipei, Taiwan, TWN001, Taiwan International Science Fair

- ANIM017** **Protect Our Health by Water Bear (*Macrobiotus sp.*)**
Chien-Hung Yen, 18, Senior, Chu-Lin Private High School, New Taipei City, Taiwan, Chinese Taipei, T: Chia-Yi Yen

- BEHA026** **Investigate Cortical Activation During Motor Functions Using fNIRS in Healthy Adults**
Pei-Yun Chen, 18, Senior, Taipei First Girls High School, Taipei, Taiwan, Chinese Taipei,
T: Yan-Ci Liu
- BMED019** **Eliminating Drug Resistance of Lung Cancer Through Inducing Autophagy
by Targeting USP24**
Sin-Wei Tang, 18, Senior, National Tainan First Senior High School, Tainan City,
Chinese Taipei, T: Jan-Jong Hung
- CELL020** **Novel Function of Paxillin in Modulating RNA Splicing During Early Neuron
Development**
Guan-Zhu Pan, 17, Senior, The Affiliated Senior High School of National Taiwan Normal
University, Taipei City, Chinese Taipei, T: Pei-Lin Cheng
- CHEM018** **Inorganic-Organic-Biological Hybrid Nanocomposite for Multifunctional
Biomedical Engineering**
Tzu Tien Hsieh, 18, Senior, Taipei First Girls High School, Taipei, Taiwan, Chinese Taipei,
T: Ming Chih Hsu
- EAEV029** **Physical Disturbances Affect Food Availability To Shape Benthic Community
Structure in Submarine Canyons**
Szu-Yun Ko, 18, Senior, Taipei First Girls High School, Taipei, Taiwan, Chinese Taipei,
T: Yu-Mei Lin
- ENEV025T** **Enhanced Electrocatalytic Selective CO₂ to Syngas Production:
Road to the Carbon-Neutral Future**
Huai Wen Chang, 18, Senior, Xi Chen, 18, Senior, Taipei First Girls High School,
Taipei City, Chinese Taipei, T: Ming Chi Hsu T: Ming Chih Hsu
- ETSD021** **The Fusion of Glazes Color in Random Forest**
Jo-Ya Chen, 17, Senior, Kaohsiung Municipal Kaohsiung Girls' Senior High School,
Kaohsiung, Taiwan, Chinese Taipei, T: Hsiao Cheng Lin
- MATH016** **Power Sum Identities From Zigzag Chords**
Chun-Chi Chang, 17, Junior, Taichung First Senior High School, Taichung, Taiwan,
T: Pei-Chun Lin
- MATH017** **On Indefinite Reflection of Light Beam Off of Convex Decreasing Curves**
Da-Fu Chiu, 18, Senior, Taipei City Non-school-based Experimental Education at Senior
High School Level, Taipei City, Taiwan, Chinese Taipei, T: Kuo-Chang Chen
- PHYS023** **Condensed Fluidic Elasticity Mapping Using Resonant Vibro-Impact Nonlinear
Dynamics**
Zi-Yu Chen, 16, Junior, Taipei First Girls High School, Taipei City, Chinese Taipei,
T: Li-Hsien Chien
- PLNT031T** **Identification of Novel Drought-Resistant Genes From Gene-Environment Association
in *Arabidopsis thaliana***
Ying-Hsin Hsiao, 17, Senior, Wan-Hung Li, 18, Senior, Taipei First Girls High School,
Taipei City, Chinese Taipei, T: Hung-Hsiang Lee

CZECH REPUBLIC

Prague, Czech Republic, CZE001, Students' Professional Activities (SPA)

- BMED002** **Neuroinflammation in the Choroid Plexus During Alzheimer's Disease**
Karolina Jerabkova, 19, Junior, Gymnazium Brno-Reckovice, Brno, Jihomoravsky Kraj,
Czech Republic, T: Michal Kunak
- CELL002** **Dinucleoside Polyphosphate RNAs as Substrates for Decapping Enzyme DXO**
Zuzana Buchova, 18, Junior, Gymnazium Praha 6 Arabska 14, Prague, Czech Republic,
T: Simon Hrozinka
- CHEM004** **Using Microfluidics in Metabolic Engineering for Environmental Protection**
Lukas Drdla, 19, Junior, Gymnazium Brno, Trida Kapitana Jarose, Prispevkova
Organizace, Brno, South Moravian Region, Czech Republic, T: Veronika Kyasova
- PLNT001** **Analysis of Gene Interaction Between the Transcription Factor and Genes
That Regulates Flowering of *Arabidopsis thaliana***
Adela Uhrova, 18, Junior, Gymnazium Boticka, Praha 2, Prague, Czech Republic,
T: Vlasta Cepelova

Praha 4, Czech Republic, CZE002, AMAVET Czech Republic Science Fair

CBIO059 From LUCA to Cyanobacteria: Simulation of Prokaryotic Evolution With Geological Processes Using Software Unity

Lukas Dubsik, 19, Senior, Gymnazium Brno-Reckovice, Brno, Jihomoravsky Kraj, Czech Republic, T: Katerina Cibulkova

EAEV077 Fossil Association of the Stity Locality (Bystrice Lithofacial Development of the Bohemian Cretaceous Basin)

Ales Janderka, 19, Senior, Gymnazium Sumperk Masaryk Square 8, Sumperk, Czech Republic, T: Petr Opekar

EBED042 OriLive: A LoRa Mesh Network System for Orienteering Split Times Collection

Matej Neumann, 19, Junior, DELTA – High School of Computer Science and Economics, Pardubice, Pardubicky kraj, Czech Republic, T: Jan Koupil

DENMARK

Copenhagen, Denmark, DNK001, Unge Forskere

PHYS001 On the Aerodynamics of Snowflakes: An Experimental Study of the Relation Between the Shape and Aerodynamics of Early Aggregates

Emma Weiss Nielsen, 19, Senior, Gymnasiet HTX Lillebælt, Fredericia, Syddanmark, Denmark, T: Thomas Nielsen

PHYS003T Improving the Efficiency of Tuned Liquid Dampers by Determining the Optimal Specifications to Fit a Specific Structure

Anders Lendal Holm, 17, Junior, Theodor Anton Sivager, 18, Junior, HTX Roskilde, Roskilde, Region Sjælland, Denmark, T: Christine Lehn-Schioler

SOFT002 OSINTer: Helping Experts Tackle the Cyber Threats of Tomorrow

Bertram Madsen, 19, Senior, Bagsvaerd Kostskole og Gymnasium, Bagsvaerd, Region Hovedstaden, Denmark, T: Kirsten Thogersen

EGYPT

North Coast & West of Egypt, Egypt, EGY002, Bibliotheca Alexandrina Science and Engineering Fair – Alexandria

BCHM025 Zero Wasted *Phragmites australis*

Aya Mohamed Abd-Elmoneim Yossef Zayan, 16, Junior, STEM School of Alexandria, Alexandria, Egypt, T: Eman Mohamed Ali

EAEV071T Geothermal Energy

Yousef Ahmed Mohamed Elsheshtawy Elmahalawy, 17, Senior, Mohamed Ahmed Mohamed Elsayed Elbarraz, 18, Senior, Glory American School, Mansoura, Dakahliya, Egypt, T: Mohamed Elgohary

ENBM075T Brain Guide Application

Mentalla Mohamed Ahmed Zahab, 19, Senior, Noor Ahmed Bedeer Darwish, 18, Senior, Kafr EL-Sheikh STEM School, Kafr EL-Sheikh, Egypt, T: Hanan Hekal T: Hanan Hekal

ENEV068T Agricultural Intelligence: A Smart Farm That Solves the Causes and Consequences of Climate Change in Agriculture

Mohamed Elsayed Khalil Elhariry, 17, Senior, Kareim Wessam Ahmed Samir, 17, Junior, STEM School of Alexandria, Alexandria, Egypt, T: Eman Ali

ROBO070T Eco-Packaging

Youssef Alaa Abdelsadek Elasrag, 17, Senior, Mohamed Shawky Selim, 17, Senior, Gharbiya STEM School, Tanta, Gharbiya, Egypt, T: Hala Hassan

SOFT042 Lost in Time

Jana Mohamed Ibrahim Mohamed Ismail, 16, Junior, El Nasr Girls' College, Alexandria, Alexandria, Egypt, T: Heba Kholief

Cairo, Egypt, EGY001, Egypt Science and Engineering Fair – Cairo & Upper Egypt

BEHA043T Little Mermaid: Improving Social Communication Level for Mildly Autistic Children Using Video Call-Based Mobile Application Game

Shahd Nooh#, 17, Junior, Sama Nooh#, 17, Junior, Sharkya STEM School, Zagazig, Sharkia, Egypt, T: Mohamed El Zeftawy

BEHA049T A Sensory Room Without Room

Rahma Wael Soliman, 17, Junior, Basmala Khaled Ahmed, 18, Junior, Obour STEM School, Obour, Kalubya, Egypt, T: Eman Ahmed T: Eman Aboseif

- EBED039T** **The Smart Agriculture System (Greeno)**
Ahmed Atef Atef, 17, Senior, Fareeda Fathy Muhammad, 17, Junior, El-Sadat STEM School, El-Sadat, Menofia, Egypt, Alfarouk Islamic Language School, Cairo, Egypt, T: Doaa Tahoun
- EBED041T** **Voice Note Chair**
Yassen Moustafa Olwi, 18, Senior, Abdalah Mohamed Saad, 17, Senior, Bani Sweif STEM School, New Beni Suef, Egypt, T: Hossam Mohamed
- EBED044T** **Speaking Gloves: Cheap and Improved Wearable Gloves That Translate Sign Language Into Speech Using Velostat Based Sensors and Machine Learning**
Mohamad Hamada Fahmy, 17, Junior, Yousef Hassan Ramadan, 16, Junior, Obour STEM School, Obour, Kalubya, Egypt, T: Mohamed Fouda
- EGSD054T** **Green Transportation: Decreasing Power Consumption and Harnessing Wind Energy in Vehicles**
Ebraam Wadee Nabil, 17, Junior, Noureldin Shaban Farhana, 16, Junior, Sharkya STEM School, Zagazig, Sharkia, Egypt, T: Ahmed Ashour
- ENBM074T** **A Novel Power-Optimized CMOS sEMG Device With Ultra Low-Noise Integrated With ConvNet (VGG16) for Biomedical Applications**
Ahmed Ayman#, 17, Senior, Mohamed Sabry#, 17, Senior, El-Sadat STEM School, El-Sadat, Menofia, Egypt, T: Doaa Tahoun
- ENEV067T** **Sustainable Rice Straw**
Jana Ahmed Hassan, 16, Junior, Mohamed Ahmed Sakr, 17, Junior, Obour STEM School, Obour, Kalubya, Egypt, T: Ahmed Sayed T: Mahmoud Hassan
- ROBO061T** **EEG Sensors Detect Brain Dysfunctions and Intervene in Dangerous Driving**
Lena Walid Aly, 16, Junior, Habiba Waleed Sorour, 17, Junior, Maadi STEM School for Girls, Cairo, Egypt, T: Sameh Abobakr

ESTONIA

Tartu, Estonia, **EST001, Estonian Young Scientist Contest**

- CHEM001** **The Utilization of Platinum Catalysts Deposited on Carbon Support Synthesized From Coffee Grounds in a Polymer Electrolyte Membrane Fuel Cell**
Sander Simson, 19, Senior, Tallinn Secondary School of Science, Tallinn, Harjumaa, Estonia, T: Jaak Nerut
- ENEV001** **Decomposition of Artificial Materials With Oyster Mushroom (*Pleurotus ostreatus*) Culture**
Ketly Ilvest, 18, Junior, Saaremaa Upper Secondary School, Kuressaare, Saaremaa, Estonia, T: Irja Truuma

GERMANY

Hamburg, Germany, **DEU001, Jugend Forscht**

- ANIM003** **Land-based Aquaculture — Sustainable!**
Tonya Avemarg, 16, Junior, Gymnasium Altenholz, Altenholz, Schleswig-Holstein, Germany, T: Annika Oeverdiek
- CHEM015T** **Best Practice in Wastewater Technology: Phosphorus Recycling by Electroflotation**
Hannah Amrhein, 18, Junior, Hanna Fries, 17, Junior, Lena Fries, 17, Junior, Julius-Echter-Gymnasium Elsenfeld, Elsenfeld, Bavaria, Germany, T: Roland Full
- EAEV004** **SMS | Sphagnum MicroSpheres: The Fast Moor Renaturation**
Cornelius-Agidian Damian-Magnus Quint, 19, Senior, Hermann-Tast-Schule, Husum, Nordfriesland, Germany, T: Thomas Adler
- ENEV006** **The MiPlaFi 2.0: Washing Clothes With a Clear Conscience**
Luise Florentine Mast, 19, Senior, Kerschensteinerschule, Stuttgart, Baden-Wuerttemberg, Germany, T: Heinz Weippert
- ETSD013** **RLP: Fully Automated Rocket Launch Pad (Including Mobile App Control, Weather Evaluation and Live Video)**
Hendrik Ridder, 16, Junior, Gymnasium Vegesack, Bremen, Germany, T: Matthias Wachtendorf

- MCRO014T** **Computer-Aided Investigation of the Influence of Microplastics on *Paramecia***
Emil August Botezatu, 17, Senior, Josua Zehner, 19, Senior, Dascha Dobrozki, 19, Senior, CJD Christophorusschule Rostock, Rostock, Mecklenburg-Vorpommern, Germany, T: Thomas Borowitz
- PHYS004T** **Let's Twist Again: The Physics of a Rotational Pendulum**
Florian Frederik Bauer, 16, Senior, Verona Miftari, 17, Senior, Hans Thoma Gymnasium, Lorrach, Germany, T: Pirmin Gohn
- PLNT003** **Crop Meshing Method (CMM): Drought Resilience Through Intentional Soil Development**
Rufus Wegner, 19, Senior, St. Michael Gymnasium, Bad Munstereifel, Germany, T: Nikolaus Weiler
- ROBO006T** **Development of Optical Varroa Mite Detection on Bees With Neural Networks**
Albert Dehne, 19, Senior, Daniel Friedrich Cermann, 19, Senior, Richard Ueltzen, 18, Senior, Albert-Schweitzer-Gymnasium, Erfurt, Thuringen, Germany, T: Frank Paulig

GHANA

- Accra, Ghana, GHA001, MISE Research Program**
- CBIO004T** **Using Machine Learning to Discover Novel Drug Combinations Against Malaria**
David Wiredu Antwi, 18, Junior, Anoushka De, 17, Junior, Saint Adelaide International Schools, Accra, Greater Accra, Ghana, Lincoln Community School, Accra, Greater Accra, Ghana, T: Prudencio Tossou
- ROBO005T** **Boundary Based Anomaly Detection in Deep Neural Networks**
Priscilla Seyram Ahiakpor, 17, Junior, Ridaan Gupta, 16, Junior, Lincoln Community School, Accra, Greater Accra, Ghana, T: Will Pamperin T: Mostafa El Araby

GUAM

- Piti, Guam, TEGU01, Guam Island-Wide Science Fair**
- ANIM045** **Understanding the Role of Coral Pigmentation in Response to Coral Bleaching**
Angel Gabrielle Payumo, 17, Junior, George Washington High School, Hagatna, Guam, T: Darlene Quichocho
- EAEV061** **Invisible Groundwater Discharge Patterns Across Tumon Bay, Guam: Discovery of Vital Habitats Sustained by Tumon Bay Karst Watershed Discharges From an Uplifted Carbonate Aquifer**
Andrew Gio Kang, 15, Sophomore, John F. Kennedy High School, Tamuning, Guam, T: Colette Beausoliel

HAITI

- Port-au-Prince, Haiti, HTI001, Expo-Sciences Haiti**
- EAEV044T** **ECOHUB: A Rewarding Ecological Platform**
Angie-Reyna Leddycia Saint-Vil, 19, Senior, Djeika Ketsia Lafortune, 18, Senior, Adjael Joannie Marshall Paul, 18, Senior, College Marie-Anne, Port-au-Prince, Ouest, Haiti, T: Wilson Porportte
- EGSD030T** **Affordable and Readily Accessible Solar Dehydrator**
Marc Lesly Lesly Morency, 17, Senior, Witchy Rosemane, 18, Senior, Olivier Rolles Louis Marie, 17, Senior, College Saint-Jeseph Du Cap-Haitien, Cap-Haïtien, Nord, Cap-Haïtien, Haiti, T: Andrallé Cherfils
- MATS054T** **Optimum**
Djelessane (Annie) Dorothe Flygneau, 17, Senior, Wenshley Jn Baptiste, 18, Senior, Abigaëlle Belizaire, 19, Senior, College Dominique Savio, Petion-Ville, Port-au-Prince, Haiti, Collège Dominique Savio, Pétiön-ville, Ouest, Haiti, T: Darnley Begin

HUNGARY

- Budapest, Hungary, HUN001, Innovation Contest for Young Scientists**
- ENEV005** **Rusty: The Social Mirror Technology**
Nora Anna Kovacs, 18, Senior, Janos Zsigmond Unitarian High School, Cluj-Napoca, Cluj, Romania, T: Ervin Gyenge

ETSD004 **Developing a Motorized UV Illuminator Device for Photochemical Ligand-Binding**
Benedek Laszlo Barna, 18, Senior, Szent Istvan High School, Budapest, Hungary,
T: Susanne Prokop

INDIA

New Delhi, India, IND001, IRIS (Initiative for Research and Innovation in STEM)

BCHM010T **HepaEase: Development of an Instigating Risk Assessment Tool and xLFIA Validating Potential Urinary Biomarkers for Early Detection of NAFLD**

Ishan Choudhary, 15, Sophomore, Aditya Kumar Jha, 14, Sophomore, Bharatiya Vidya Bhavan's R.K. Sarda Vidya Mandir, Raipur, Chhattisgarh, India, T: Sushil Pandey

BEHA014 **Brain-Wave Stimulation as a Technique for Preventing and Treating Alzheimer's, Parkinson's and Other Movement Disorders and Improving Cognitive Abilities**

Samarth Pandey, 17, Junior, DBMS English School, Jamshedpur, Jharkhand, India,
T: HIRAK BISWAS

BEHA021 **DysDiag: A Novel Risk Assessment and Screening Tool for Learning Disorders in Children**

Spurti Nimbali, 16, Junior, Delhi Public School, R. K. Puram, Delhi, New Delhi, India,
T: Shalini Harisukh

CBIO015T **Curalgia: A Novel Deep-Learning Based Framework for the Risk Assessment of Differentially Diagnosed Disease Such as Fibromyalgia**

Sneha Pandey, 18, Senior, Vineet Narayan Prajapati, 17, Senior, Bharatiya Vidya Bhavan's R.K. Sarda Vidya Mandir, Raipur, Chhattisgarh, India, T: Sushil Pandey

CBIO016T **Machine Learning Augmented Histopathological Diagnosis of an Aggressive Variant of Liver Cancer**

Shashvat Rastogi, 16, Junior, Vivasvat Rastogi, 16, Junior, Vasant Valley School, New Delhi, Delhi, India, T: Swaty Nag

CELL010 **Cytotoxicity and Pro-Apoptosis on MCF-7 Breast Cancer Cells Using Polyherbal Formulation (PHF), MAT20**

Sohan Tarigopula, 16, Junior, The International School of Bangalore (TISB), Bangalore, Karnataka, India, T: Jyothsna Rao

CELL027 **Enhancing Beta Carotene Production in Yeast Cells**

Tejas Gupta, 18, Senior, Head Start Educational Academy, Bengaluru, Karnataka, India,
T: Nesil Baby

CELL053 **In vitro Characterization of Umbilical Cord Mesenchymal Stem Cells (UC-MSCs) in a Novel Xeno-Free, Human Blood-Derived Supplement**

Vedant Rajashekhar Lakkundi, 17, Senior, Indus International School Bangalore, Bangalore, Karnataka, India, T: Jyothsna Rao

CHEM019 **Study of the Phytochemical Composition of *Averrhoa carambola* Extract and Its Effect on Water Biopollutants**

Sarvesh Prabhu, 17, Senior, FIITJEE Junior College, Hyderabad, Telangana, India,
T: Subha Prabhu

CHEM022 **Innovative Use of Nanoparticles Against Industrial CO₂ Emissions**

Tanmay Vikram Parikh, 17, Senior, Centre Point School Katol Road, Nagpur, Maharashtra, India, T: Vikram Parikh

EGSD040T **Smart Solution for Eco Pollution**

Mohan Durga Manikanta Nalla, 15, Freshman, Vinay Kumar Varada, 18, Freshman, BGK ZPH School, Pedana, Andhra Pradesh, India, T: Lakshmi Devi Kollati

ENBM028 **Measuring Progression of Parkinson's Disease Using Wearables and Sensors**

Jui Abhijit Keskar, 17, Junior, Indus International School, Pune, Maharashtra, India,
T: Anupriya Dhooli

ENBM034 **EyeShift: Eye Care and Posture Control Device With an Intuitive Interface for Glasses**

Shaurya Khosla, 17, Junior, Saint John's High School, Chandigarh, India, T: Bharat Kakkar

ENEVO65 **Electrical Power Generation From Contrasting Interfacial Activities of Boron and Nitrogen Doped Graphene Extracted From Plastic Waste**

Ahitagni Das, 18, Senior, Delhi Public School Siliguri, Siliguri, West Bengal, India,
T: Rajib Roy

- MATH020** **On Enumeration of Semigroup Ideals**
Parth Prashant Chavan, 18, Senior, Aditya English Medium School, Pune, Maharashtra, India, T: Jeffery Yu
- MATH023** **Elementary Proofs of the Properties of the Sierpinski Gasket Graph**
Anushka Tonapi, 14, Freshman, Sri Kumaran Children's Home – CBSE, Bangalore, Karnataka, India, T: Vishnupriya Giridharan
- ROBO022** **Gradient Boosting Based Optimization Algorithm Using Model Selection to Reduce Overfitting**
Agnij Moitra, 15, Sophomore, Birla Vidya Niketan, New Delhi, Delhi, India, T: Deepika Pareek
- ROBO028** **A Data-Driven Diagnosis and Prognosis Method for Machinery Tools Based on EMD and Dual-Task Deep Neural Networks**
Nandika Auluck, 17, Senior, Sat Paul Mittal School, Ludhiana, Punjab, India, T: Seetaram Maurya
- TMEDO21T** **Ovydrome's Catch: A Biosensor for the Early Detection of Polycystic Ovarian Syndrome With and Approach to Prevent Further Gynecological Cancers**
Soumya Agrawal, 16, Sophomore, Vanshika Digania, 16, Sophomore, Bharatiya Vidya Bhavan's R.K. Sarda Vidya Mandir, Raipur, Chhattisgarh, India, T: Sushil Pandey
- TMEDO22** **LCNN: Deep Convolutional Network (CNN) for Early Detection of Stage of Liver Disease**
Aarna Shekhar, 15, Sophomore, Shri Ram School - DLF Campus, Gurugram, Haryana, India, T: Babita Chahal

IRAQ

Erbil, Iraq, IRQ001, INPO (Iraq National Project Olympiad)

- BMEDO63T** **Fever Care**
Balla Peshtivan Sedeeq#, 15, Sophomore, Ghandi Abdulrahman Mahmood#, 16, Sophomore, Kirkuk Cag Boys College, Kirkuk, Iraq, T: Ibrahim Mohammed
- EAEV079T** **Smart Chilly Water Tank System**
Liya Hawkar Askandar, 16, Junior, Nina Halgurd Jalal, 16, Junior, Slemani Girls' High School, Slemani, Iraq, T: Lanya Tofiq
- SOFT048** **Shining Me**
Nvar Nawrol Ali, 17, Junior, Halabjay Shaheed Communal Boys' College, Halabja, Iraq, T: Mabast Mohsin

IRELAND

Dublin, Ireland, IRL001, BT Young Scientist & Technology Exhibition

- ENEVO22T** **Developing an Economically Viable Desalination Device for Individuals in Developing Countries**
Oisin Patrick O'Neill, 16, Sophomore, Darragh James Henderson, 16, Sophomore, Oatlands College, Dublin, Leinster, Ireland, T: Avril Gaynor
- Dublin 16, Ireland, IRL002, SciFest**
- MATH007T** **A Group-Theoretic Generalization of Pythagoras' Theorem**
Liam Timothy Waldron, 18, Senior, Luke O'Sullivan, 18, Senior, Rachel Brenda Griffin, 18, Senior, Killarney Community College, Killarney, Kerry, Ireland, T: Maire Spillane

ISRAEL

Jerusalem, Israel, ISRO01, The Israeli Young Scientists Contest

- BMEDO34** **From Gene to Syndrome: Understanding the Relationship Between Alternative Splicing in Elastin and ASD Development**
Tamar Tzohari, 17, Senior, Israel Arts and Science Academy, Jerusalem, Israel, T: Israel Rappaport
- CELL032** **B Cells Genetic Engineering With a Gene for HIV Antibodies Production, by an Innovative Method Based on the Class-Switch Recombination Process and by CRISPR/Cas9**
Lior Lubek, 18, Senior, Ilan Ramon, Hod Hasharon, Central District, Israel, T: Dalia Gal

- EBED028** **FBC: A Robotic System Designed to Prevent Avian Nesting on Residential Balconies**
Lior Rogov, 18, Senior, Ahad HaAm High School, Petah Tikva, Israel, T: Zafrir Mor
- ETSD033** **Could Future Supersonic Aircraft Engines Be More Fuel Efficient? Proof of Concept for a Dual-Mode Supersonic Propulsion System**
Daniel Shafir, 17, Senior, Galili High School, Kefar Sava, Central District–Hamerkaz, Israel, T: Zafrir Mor
- ROBO037** **A Single Usage Is All You Need: Generating an Entire Text by Using a Causal Language Model Once**
Yoni Kremer, 18, Senior, Ironi Dalet, Tel Aviv-Yafo, Tel-Aviv-Jaffa, Israel, T: Ido Goodis

ITALY

Milano, Italy, **ITA001, I Giovani e le Scienze**

- CHEMO40T** **LURING: Periodic Precipitations for the Controlled Release of Drugs**
Marco Zecchin#, 16, Sophomore, Alessia Facchinetti, 16, Sophomore, Istituto Tecnico Industriale G. Omar, Novara, Italy, T: Celestino Fontaneto
- MATSO33T** **Bio-Sustainable, Water-Soluble and Antimicrobial Film Derived From Citrus Waste**
Lisa Pantanali, 17, Senior, Edoardo Paron, 17, Senior, ISIS Arturo Malignani Udine, Italy, T: Elena Scrazzolo
- PHYS038** **Analyzing the Viability of Primordial Black Holes as a Significant Component of Cosmological Dark Matter**
Federico Stanzani, 17, Senior, Liceo Steam International, Bologna, Italy, T: Riccardo Schiavi

JAPAN

Tokyo, Japan, **JPNO01, Japan Students Science Awards**

- ANIM022T** **Growth of Tidal Snail *Cerithidea moerchii* Depends on Submergence Rate and Height of Reed Stem in Brackish Mud Flats**
Harune Omori, 17, Junior, Daiki Urakawa, 18, Junior, Nagasaki Prefectural Nagasaki Hokuyodai High School, Nishisonogi-gun, Nagasaki, Japan, T: Hikaru Miyazaki
- PHYS022** **How Ants Climb Smooth, Vertical and Overhanging Walls**
Hana Blundell, 18, Senior, Osaka Prefectural Tennoji High School, Osaka, Japan, T: Toshiyuki Morinaka
- ROBO023** **Michishirube: AI Assist Cane for Visually Impaired**
Haruki Takada, 17, Junior, Gunma Prefecture Takasaki High School, Takasaki, Gunma, Japan, T: Naoyuki Okada
- Tokyo, Japan, **JPNO02, Japan Science & Engineering Challenge**
- BEHA010** **Performing Pleasant Music With Mathematics**
Yumi Ogasawara, 17, Junior, Otsuma Tama Senior High School, Tama, Tokyo, Japan, T: Yazawa Hironori
- EGSD017T** **Novel Ammonia Production Method Using Both Microbubbles and Iron Electrodes for Seawater Electrolysis**
Mitsuki Ishigaki, 17, Junior, Yuka Ando#, 17, Junior, Erena Aihara, 17, Junior, Shizuoka Kita High School, Shizuoka-City, Shizuoka-Pref., Japan, T: Yuji Takagi
- ENEV017** **Measuring and Visualizing the Concentration of Aerosol Particles Using Flame Photometry**
Sasara Mizutani, 17, Junior, Tokyo Metropolitan Koishikawa Secondary School, Honkomagome, Bunkyo-ku, Tokyo, Japan, T: Yuta Kato
- MATSO15T** **Analyzing a 400-Year-Old Mystery, the Makeup Method of Producing Green With Charcoal and Beni**
Yuri Minoura, 17, Junior, Otoha Mitsuyoshi, 17, Junior, Bunkyo Gakuin University Girl's Senior High School, Komagome, Tokyo, Japan, T: Nobuzumi Iwakawa
- PHYS009** **A Mathematical Study About the Sustaining Phenomenon of Overtone in Flageolet Harmonics on Bowed String Instruments**
Shodai Tanaka, 18, Junior, Sapporo Kaisei Secondary School, Sapporo, Hokkaido, Japan, T: Keita Inoue

- PHYS010T** **Ninja Had the Noise Canceling Technology: Mechanisms and Application of Saoto-Kikigane**
Michiru Tsurumaru, 17, Junior, Yamaguchi Prefectural Tokuyama Senior Highschool, Shunan, Yamaguchi, Japan, T: Takeshi Suetani
- PLNT015** **Discovery of Light-Induced Acquisition of Photosynthetic Capacity in Plant Roots and the Examination of Its Evolutionary Advantages**
Momoha Kono, 19, Senior, Secondary School attached to the Faculty of Education, the University of Tokyo, Tokyo, Japan, T: Haruka Mitsuhori
- PLNT016T** **Wouldn't Hurt a Fly: The Efficacy of Plant Latex as an Insect Repellent**
Reno Yokoyama, 17, Junior, Haruka Sakate, 18, Senior, Yuna Watari, 17, Junior, Shimane Prefectural Hamada High School, Hamada, Shimane, Japan, T: Susumu Fukumitsu

JORDAN

Amman, Jordan, JOR001, Science Fair of The Jordanian Ministry of Education

- BEHA005** **Developing a Non-Invasive Eye Tracking Screening Tool for Early Detection of Alzheimer's Disease**
Saher Aloran, 17, Junior, Jubilee School, Amman, Jordan, T: Sawsan Abu-jama'ah
- BEHA006** **The Power of When: The Influence of Different Chronotypes on Students' Academic Performance**
Leen Hamadeh Allouh, 16, Junior, Tabariah, Irbid, Jordan, Jordan, T: Rasha Zoubi
- CHEM010** **Adsorption of Dyes and Heavy Metals From Water Using a Mixture of Jordanian Diatomite and Bentonite**
Sewar Sadi Alsallal, 16, Junior, Arwa Bint Abdul Muttalib School, Aqaba, Aqaba, Jordan, T: Rania Alfuqara
- CHEM014T** **Designing an Approach for Recovering Energy From Waste Polyethylene Terephthalate (PET) Bottles and Fibers**
Rama Yousef Hodaib, 17, Junior, Lina Kamal Abd-Al Hafiz, 17, Junior, Jubilee School, Amman, Jordan, T: Sawsan Abujammaah
- EGSD015T** **EVault: For the Advancement of Energy Storage Technology**
Adham Hesham Alqasem, 16, Junior, Ahmad Awni Al-Dalaeen, 17, Junior, Hussein Awad Hussein Attia, 17, Junior, Al-Hassad Al-Tarbawi Schools, Amman, Jordan, AlHassad AlTarbawi Schools, Amman, Amman, Jordan, T: Abdullah Harb T: Abdallah Harb
- ENBMO14T** **Using Analyzed Data From EEG Readings for Electrical Stimulation of Limb Muscles: An Innovative Approach to Neurorehabilitation**
Rashed Abdullah, 17, Junior, Rayyan Theeb, 16, Junior, Saleh Al-Hinti, 16, Junior, Islamic Educational College, Amman, Jubieha, Jordan, Islamic Educational College-Jubeiha, Amman, Jordan, T: Ashraf Abu Khait
- ENEVO15T** **A New Concept of ECO-Friendly Material That Can Replace Plastic**
Shahd Omar Daoud, 17, Junior, Mera Alkasassbeh, 16, Junior, Jubilee School, Amman, Jordan, T: Sawsan Abujammaah T: Sawsan Abujammaah
- ENEVO16T** **Efficient Removal of Ca and Mg Ions From Water Using Jordanian Zeolite: A Low-Cost and Recyclable Environmental Solution**
Areen Rami Alashmawy#, 16, Junior, Sara Iyad Altarawneh#, 17, Junior, King Abdullah II School for Excellence, Aqaba, Aqaba, Jordan, T: Rania Alfugara
- MATSO14** **Analyzing the Effects of Metal Oxides on the Electrical Properties of Polymers With and Without the Presence of Multi-Walled Carbon Nano-Tubes**
Firas Khalil, 17, Junior, Jubilee School, Amman, Jordan, T: Sawsan Abu-jama'ah

KAZAKHSTAN

Astana City, Kazakhstan, KAZ001, DARYN National Junior Science Projects Competition

- CHEM061** **Study of the Processes of Purification of Aqueous Media From Arsenic Ions Using Membrane Sorbents**
Aldiyar Erlanovich Suleimbekov, 16, Sophomore, High School No. 60, Astana, Astana, Kazakhstan, T: Anastasiya Mashentseva

- MATH042** **L-Tromino Tilings for Portions of Square Lattice**
Sagyn Jumadildayev, 15, Sophomore, Nazarbayev Intellectual School of Physics and Math, Almaty, Kazakhstan, T: Ramazan Sultan
- ROBO073** **Aq Zhol: Multifunctional Device With Advanced Road Safety Monitoring System**
Asylkhan Kali, 18, Junior, Nazarbayev Intellectual School of Physics and Mathematics in Kokshetau, Kokshetau, Aqmola Region, Kazakhstan, T: Laura Shegirova

KENYA

- Nairobi, Kenya, KEN001, Kenya Science and Engineering Fair**
- ENBM035T** **Biomarkers Based Technology for Detecting Respiratory Infections Using Resin-B-Testing Kit**
Musa Latifa Juma, 17, Junior, Casadra Muthoni Waitherero, 17, Senior, Saint Thomas Girls Secondary School, Kilifi, Mombasa, Kenya, T: Bonface Keya
- ENBM043T** **A Solar Powered Portable Ventilator for Use in Remote Areas**
Grace Tassy, 18, Junior, Wakajuma Obanda Abiero, 17, Senior, Maryhill Girls' High School, Thika, Kiambu, Kenya, Maryhill Girls' High School, Thika, Kiambu, Kenya, T: George Mwangi
- ENEV044T** **IoT Based Dynamic Solid Waste Collection and Management System**
Victorene Obanda Obanda, 18, Senior, Sharon Obanda Ndirangu, 15, Senior, Maryhill Girls' High School, Thika, Kiambu, Kenya, T: George Mwangi
- ENEV081T** **Biochar: An Environmentally Friendly Fuel Source**
Esther Osiago, 16, Weda Mitchellle Odero, 18, Senior, Moi Girls School Nairobi, Nairobi, Nairobi, Kenya, T: Charles Odero
- MATS023T** **Design of a Continuous Penta-Membrane Hybrid Filter for Absolute Filtration Water**
Shylah Jepchirchir Mutai, 17, Junior, Olyviah Jepkoech Mutai, 17, Junior, Machakos Girls High School, Machakos, Kenya, T: Harryson Kiyingo T: Harryson Kiyingo

LATVIA

- Riga, Latvia, LVA001, National Centre for Education of the Republic of Latvia**
- BMED060** **Wastewater Surveillance for the Identification of the Presence of SARS-CoV-2 and the Observation of Mutations of the Virus Variants**
Dora Berta Dumpe, 18, Senior, Riga Secondary School No. 64, Riga, Riga, Latvia, T: Inese Petere
- ETSD060** **Creation of a Prototype Ion Engine and Improvement of Its Performance**
Kristers Tomsons, 18, Junior, Oskars Kalpaks Liepaja 15th Secondary School, Liepaja, Latvia, T: Anna Galina

LUXEMBOURG

- Luxembourg, Luxembourg, LUX001, National Contest "Jonk Fuerscher"**
- PHYS063** **Analysis of the Method of Compressed Air Propulsion and Its Application to Model Rockets**
Moritz Nils Rohner, 16, Freshman, Lycee de Garcons Esch, Esch-sur-Alzette, Luxembourg, T: Jonathan Mengozzi
- SOFT046** **A VR Puzzle Game With Hand-Tracking Mechanics**
Maxime Buck, 16, Sophomore, Lycee Michel Rodange Luxembourg, Luxembourg City, Luxembourg, T: Serge Quazzoti

MALAYSIA

- Putrajaya, Malaysia, MYS001, National Schools Science Innovation and Engineering Competition**
- CHEMO26T** **Peanut Oil and Lemongrass Essential Oil Spray: A Novel, Cost-Effective and Eco-Friendly *Paederus fuscipes* Control Agent**
Wayne Ng, 17, Junior, Lucas John Teo, 17, Junior, Chung Ling High School Penang, Georgetown, Penang, Malaysia, T: Whey Cheng Heah
- CHEMO30T** **Solving a Menace to Rice? TCCE Repellent: An Effective and Eco-friendly Turmeric and Clove Combined Extract as *Nilaparvata lugens* Repellent**
Samuel Wen Xuan Lee, 16, Junior, Zhi Han Khoo, 17, Junior, Elaine Koay, 17, Junior, Heng Ee High School, Georgetown, Penang, Malaysia, T: Sze Hui Chung

- EBED022T** **Blind Swimmer Sensory Device 2.0**
Nik Mifdzal Nik Nubhan, 16, Sophomore, Irfan Darwisy Mat Suhaimi, 16, Sophomore, Sekolah Sultan Alam Shah, Putrajaya, Wilayah Persekutuan, Malaysia, T: Samsiah Radiman
- ENEV036T** **Bio-Rean (A Biodegradable Planting Pot)**
Durratul Aisyah Muhammad Zainudi, 16, Sophomore, Saidatus Syakirah Ibrahim, 16, Sophomore, Muhammad Zahirul Afiq Muhammad Zahid, 17, Junior, Sekolah Menengah Sains Sultan Mohamad Jiwa, Sungai Petani, Kedah, Malaysia, T: Noorsalawati Ahmad
- MATH024T** **On a New Variant of Prime Factorization Algorithm**
Zhi Ping Ooi, 16, Junior, Jin Xian Tee, 17, Junior, Chung Ling High School Penang, Georgetown, Penang, Malaysia, T: Whey Cheng Heah
- MATS025T** **Organic Wastes as an Additive in Artificial Asphalt Production**
Muhammad Faiz Ikhwan Ismail, 17, Junior, Nur Anisha Md Rodi, 16, Junior, Nursyadzliana Syadzlin Muhamadzlin, 17, Junior, Sekolah Menengah Kebangsaan Kampong Selamat, Sebrang Pera Utara, Pulau Pinang, Malaysia, T: Siti Suria Shafie

MEXICO

Puebla, Mexico, MEX003, Mexico National Science Cup

- BEHA036T** **Design, Construction and Implementation of Educational Games Such as Learning Strategy for the Subject of Biology**
Yurida Gamez, 17, Junior, Fernanda Asomoza, 17, Junior, Escuela Preparatoria Oficial No. 208, Axapusco, Estado de Mexico, Mexico, T: Jesus Bautista
- ENEV071T** **Resiblock Based by Marble Powder**
Mayte Lopez Galeana, 15, Sophomore, Jesica Romero Romero, 15, Sophomore, Colegio de Bachilleres del Estado de Puebla Plantel 6, Puebla, Mexico, T: Felix Bernabe Romero

NORTHERN IRELAND

Lisburn, Northern Ireland, NFK001, Sentinus Young Innovators

- SOFT005** **Virtual Academic Insight Aid**
Michael Owen McMahon, 17, Senior, Lagan College, Belfast, United Kingdom, T: Sean Connolly

NORTHERN MARIANA ISLANDS

- Saipan, Northern Mariana Islands, NMI001, Northern Mariana Islands Science & Engineering Fair**
- CBIO019** **Comparison Bioinformatics Study: Novel Machine Learning Algorithms for Detecting Zoonanthellae Expulsion for Insight Into Coral Conservation Efforts**
Yelin Park, 17, Junior, Saipan International School, Saipan, Northern Mariana Islands, T: Tony Flores

OMAN

Muscat, Oman, OMN001, The Omani National Science Faire

- BMEDO37T** **Antimicrobial Activity of Organic Herbal Extracts Infused With Ozone as a Combination Therapy on *Helicobacter pylori***
Basma Khalid Al uwaisi, 17, Junior, Aalaa Yousuf AlAufi#, 16, Junior, Al Amal School, Muscat, Oman, T: Fakhria Al Shibani
- CHEM038** **Natural-Based Post-Harvest Elongation**
Ahlam Salim Al hinai, 16, Sophomore, AL Wadi AL Alaa, Bahla, AD Dakhiliyah, Oman, T: Tahani AlShuaili
- ENEV052T** **Valorization of Using Animal Bones to Produce 3D Printer Filament**
Maryam Wahab Al Rahbi, 16, Junior, Shether Abdul Salam Al Kharusi, 17, Junior, Dohat al Adab, Bousher, Muscat, Oman, T: Iman Al Rahbi

PAKISTAN

Islamabad, Pakistan, PAK001, National Science and Engineering Fair Pakistan

- BCHM031** **Targeting Drug Resistant Cancer Cells by Plant Based Bio-Active Compounds**
Manahil Moazzam, 16, Junior, Lahore Grammar School, OPF Senior Girls Campus, Lahore, Punjab, Pakistan, T: Saima Sarfaraz

- EAEV022T** **An Experimental Approach to Make Paper From Aquaculture By-Product**
Fatima Haque, 18, Junior, Areebah Babar, 17, Junior, PakTurk International Schools and Colleges, Gulshan-e-Iqbal Girls Campus, Karachi, Sindh, Pakistan, T: Asifa Shahid
- EGSD019** **Fully Automatic Solar Panel Cleaning System**
Mahad Ahmed, 14, Freshman, Scarsdale International School, Lahore, Punjab, Pakistan, T: Salma Afroz
- EGSD028** **FOURDUST: Turning Green Waste Into Energy**
Hasan Raheel, 18, Senior, Aga Khan Higher Secondary School, Karachi, Sindh, Pakistan, T: Erum Jabeen
- MCRO024** **Development of Molecular Diagnostic Tool for Cotton Leaf Curl Disease (CLCuD) Using Betasatellite-Based Molecular Marker**
Umer Sohail Meer, 17, Junior, International School Lahore, Lahore, Punjab, Pakistan, T: Mohammad Ali Amiruddin
- SOFT037** **Orchid Crop Advisor**
Moazzam Mansoor, 14, Freshman, Engro Grammar School, Daharki, Sindh, Pakistan, T: Mehr un Nisa Sheikh

PALESTINE

Ramallah, Palestine, PSE001, Palestine Science and Technology Fair

- BEHA057T** **Integrated Care Platform That Utilizes Artificial Intelligence, and Extended Reality With Principles of Gamification to Integrate Palliative Care Services Into the Rehabilitation Journey**
Anas Saud Abuamar, 16, Junior, Ayham Mohammad Khleif, 17, Junior, Bethlehem Secondary School for Boys, Bethlehem, Bethlehem, Palestine, T: Khalid Rashid
T: Khalid Rashid
- CBIO065T** **Parallel: A High-Level Programming Language for Efficient Bioinformatics Scientific and Mathematical Built-In Functions With an Easy and Flexible Syntax**
Ameed Eshtaya, 15, Sophomore, Osaid Samer Abuomar, 16, Sophomore, Islamiya Secondary School, Nablus, Palestine, T: Ahmad Abu Arra
- ENBM082** **Test Yourself by Yourself**
Israa Shawabka, 15, Sophomore, Fawwar Girls Secondary School, Hebron, West Bank, Palestine, T: Sajedah Talahmeh
- ENEV079** **Electronic Waste Management System**
Sadeel Jamal Odi, 15, Sophomore, Alawda Secondary School for Girls, Bethlehem, Bethlehem, Palestine, T: Rana Khair
- ENEV080** **Investor of Greenhouse Gases**
Leen Khaldoun Hussein, 15, Sophomore, Ramallah Girls High School, Ramallah, West Bank, Palestine, T: Kifah Khundaqji
- PLNT056** **Smart Agricultural Soil Management**
Yamen Samir Bsharat, 15, Sophomore, Muscat Secondary School for Boys, Tulkarm, Palestine, T: Raef Bsharat
- SOFT047** **Derma X**
Mesk Abdalsalam, 15, Sophomore, Talae' Al-Amal Secondary Schools, Nablus, West Bank, Palestine, T: Laila Omar

PANAMA

Panama City, Panama, PAN001, Feria Cientifica del Ingenio Juvenil

- BMED013** **Prevalence of Registered Cases for Chronic Kidney Disease in 2019 and March 2022 in Panama**

Missel De Los Angeles Camano, 15, Sophomore, Instituto Urraca, Panama, Veraguas, Panama, T: Karen Castrejo
- EAEV016** **Estimation of Carbon Sequestration in Urban Parks in the Rufina Alfaro Township, Panama City**
Isabella Victoria Garcia, 16, Junior, Colegio San Agustin, Panama, Panama, T: Nathalia Tejedor

POLAND

Warsaw, Poland, PLD001, E(x)plory Science Fair

- EAEVO21T** **Can Anthropogenic Pollutants (Microplastics and Fertilizers) Really Be Dangerous to Freshwater Zooplankton?**
Karolina Markiewicz, 16, Junior, Oliwia Gorska, 16, Junior, XL Liceum Ogólnokształcące z Oddziałami Dwujęzycznymi im. Stefana Żeromskiego w Warszawie, Warsaw, Mazowieckie, Poland, T: Kamil Kwiecieri
- EBED019** **ZHELTA: Contactless, Programmable Keyboards for People With Disabilities**
Filip Wojciech Piekos, 16, Junior, Zespół Szkół Technicznych i Ogólnokształcących im. Stefana Banacha w Jarosławiu, Jarosław, Podkarpackie, Poland, T: Artur Tutka
- MCRO023** **Studies on the Effect of Propolis on Cutibacterium Acnes in Overcoming Bacterial Resistance and Reducing Environmental Pollution Caused by Overuse of Antibiotics**
Katarzyna Furmanek, 16, Sophomore, IX Liceum Ogólnokształcące im. Klementyny Hoffmanowej, Warsaw, Masovian voivodeship, Poland, T: Jolanta Nawrocka-Furmanek

PORTUGAL

Porto, Portugal, PRT001, Portuguese Contest for Young Scientists

- ENEVO58T** **E-Drone: Assessing Cargo Ship Exhaust Emissions Using Low-Cost Multi-Copter Unmanned Aerial Vehicles**
Mariana Santos Ferreira Varajao Goncalves, 19, Senior, Joao Pedro Guimaraes Amorim Cunha, 18, Senior, Colegio Luso-Frances, Porto, Portugal, T: Rita Rocha
- MCRO045T** **Degradation of Polyethylene by Fungi**
Valentina Vitoria Gomes, 18, Senior, Sarah Finck Macieira Condeixa, 18, Senior, Escola Secundaria Dr. Manuel Candeias Goncalves, Odemira, Baixo Alentejo, Portugal, T: Paula Canha

PUERTO RICO

Mayaguez, Puerto Rico, TEPRO1, Puerto Rico Math Fair

- MATH025** **New P Formula To Calculate the Determinants of 3x3 Matrices in a More Algebraic Way**
Karellen Velazquez, 17, Senior, Dr. Pedro Albizu Campus, Ponce, Puerto Rico, T: Esperanza Soto-Rivera
- MATH030** **Fractal Based Time Series Forecasting**
Ana Sofia Cabrera-Isaza, 16, Junior, CROEM HS, Mayaguez, Puerto Rico, T: Edwin Benvenuti
- MATH032** **Using Primes, Real, and Complex Numbers To Prove That Two Matrices Are Similar**
Karina Alanis Miranda, 16, Junior, CROEM HS, Mayaguez, Puerto Rico, T: Edwin Benvenuti

Ponce, Puerto Rico, TEPRO2, Arecibo Regional Science Fair

- ANIM035** **The Effect of a Diet on the Life Span of the *Danaus plexippus portoricensis* Butterfly**
Kamila Oliveras, 14, Freshman, Brigida Alvarez Rodriguez Mathematics and Science High School, Vega Baja, Puerto Rico, T: Abigail Rivera
- ETSD040** **Integration of Technology in the NMD Surfboard Prototype for Greater Safety**
Noeliz Sophia Cordero, 17, Senior, Abelardo Martinez Otero, Arecibo, Puerto Rico, T: Michael Gutierrez
- ETSD046** **The Creation of a Dog Treat Dispenser That Activates With Water**
Camila Cristina Gomez, 14, Freshman, Brigida Alvarez Rodriguez Mathematics and Science High School, Vega Baja, Puerto Rico, T: Abigail Rivera

Ponce, Puerto Rico, TEPRO3, Bayamon Regional Science Fair I

- ENEVO51** **Irrigation System for Tropical Climate**
Angelica Alicea Ortiz, 16, Junior, Escuela Bilingue Especializada en Ciencias y Matematicas Papa Juan XXIII Secundaria, Bayamon, Puerto Rico, T: Natcha Leon
- ETSD041** **Improvements to the Design of Bridges for Resilience During Atmospheric Events in Puerto Rico**
Admarie Alondra Rosario, 17, Junior, Escuela Bilingue Especializada en Ciencias y Matematicas Papa Juan XXIII Secundaria, Bayamon, Puerto Rico, T: Natcha Leon

- SOFT034** **Development of an Intelligent System for Rainwater Collection, Storage, and Irrigation With Arduino UNO**
Sebastian Rivera Ayala, 18, Senior, Escuela Bilingue Especializada en Ciencias y Matematicas Papa Juan XXIII Secundaria, Bayamon, Puerto Rico, T: Natcha Leon Hugo
- Ponce, Puerto Rico, TEPR04, Caguas Regional Science Fair**
- BEHA039** **Conditioning the Work Environment for the Community of Patients With Neurological Disorders**
Adriana V. Valeria Rivera Perez, 17, Junior, Specialized School of Science and Mathematics Genaro Cautino Vazquez, Guayama, Puerto Rico, T: Haydee Laporte Berrios
- EGSD046** **Disused Tires: An Alternative To Produce Biogas**
Adielys Dinguis Garcia, 17, Senior, Superior Vocacional Benjamin Harrison, Cayey, Puerto Rico, T: Charles Marzant-Ortiz
- MCRO047** **Sargassum fluitans as Substrate and Nutrient Source de novo Culture Media to Growth Marine Microorganisms**
Layza Minnellis Alicea Lopez, 18, Senior, Superior Vocacional Benjamin Harrison, Cayey, Puerto Rico, T: Charles Marzant-Ortiz
- Sabana Grande, Puerto Rico, TEPR05, Humacao Regional Science Fair**
- EAEV056** **Abundance and Distribution of Mosquitoes in Two Areas of an Educational Institution in the Municipality of Rio Grande, Puerto Rico**
Wilfred Emil Rivera, 15, Sophomore, Escuela Pedro Falu Orellano, Rio Grande, Puerto Rico, T: Elizabeth Bonano
- ETSD045** **Designing Mechanical Arms to Use on Flood-Prone Bridges to Save Lives**
Eduardo Luis Sanchez, 17, Senior, Jose Collazo Colon, Juncos, Puerto Rico, T: Pamela Rivera
- PHYS044** **On TESS Demographics and Data Mining of Prospect Earth-Twins via Habitability Constraints**
Emily Nicole Aleman, 16, Junior, Centro Residencial de Oportunidades Educativas de Ceiba, Ceiba, Puerto Rico, T: Wilmayris Alvira
- Ponce, Puerto Rico, TEPR06, Ponce Regional Science Fair**
- CELL050** **Effect of Osmotic Stress on the Expression of the Beta Amyloid 1-42 Gene of Alzheimer's Disease in Transgenic *C. elegans* Model**
Adrian Noel Escalera Rivera, 17, Senior, Centro Residencial de Oportunidades Educativas de Villalba, Villalba, Puerto Rico, T: Rocio Hernandez Quinones
- ETSD048** **Creation of Control Recovery Systems for Coupe Body Cars To Increase the Probability of Regaining Control at High Speeds**

Abdiel Urayoan Saez, 17, Senior, Dr. Pedro Albizu Campus, Ponce, Puerto Rico, T: Jonatan Plaza Plaza
- MATSO46** **Creation of Biodegradable Polymers From Starch of *Zea mays* Combined With Organic Resin**
Angel Omar La Torre, 17, Senior, Dr. Pedro Albizu Campus, Ponce, Puerto Rico, T: Kathia Rodriguez
- Sabana Grande, Puerto Rico, TEPR08, Mayaguez Regional Science Fair**
- ENEV063T** **Generating Energy From Ocean Waves**
Sofia Isabel Roman Garrastazu, 17, Senior, Annabelle Marie Garcia, 18, Senior, Dr. Carlos González High School, Aguada, Guaniquilla, Puerto Rico, T: Maria Mendoza
- TMED057** **Effect of CaS Dispersion Concentration on Human Skin Benign and Melanoma Cell Viability**
Kiara Yarelis Gonzalez, 18, Senior, Escuela Superior Patria Latorre Ramirez, San Sebastian, Puerto Rico, T: Shadai Lorenzo
- Ponce, Puerto Rico, TEPR09, San Juan Regional Science Fair**
- CBIO035** **Eye Disease Diagnosis Using Deep Learning**

Karen Sofia Medina Aparicio, 17, Senior, University Gardens High School, San Juan, Puerto Rico, T: Xavier Pagan
- EGSD041** **Accessory to Optimize the Functionality of Solar Cells Using Reflective Materials**
Javier Andres Martinez-Ballagas, 17, Junior, University Gardens High School, San Juan, Puerto Rico, T: Xavier Pagan

Carolina, Puerto Rico, TEPR12, Puerto Rico Metropolitan Science Fair

- EBED040T Slot-Bee Care: A Self-Powered Beehive Monitoring System to Promote the Well-Being of Honeybees**
Layla Sofia Ballet Torres, 16, Sophomore, Kayla Zoara Teron Villodas, 15, Sophomore, Colegio Rosa-Bell, Guaynabo, Puerto Rico, T: Yajaira Torres
- EGSD047 Innovative Multifunctional Portable Cooler Capable of Efficiently Using Solar Energy During Emergency Situations: A Life-Changing Device**
Iralys Rodriguez Ramos, 15, Sophomore, Madelcar Academy, Vega Baja, Puerto Rico, T: Juan Torres Sanchez
- EGSD048 The Development of a Stream Generator Prototype Capable of Obtaining Tidal Energy From Diverse Bodies of Water**
Andres Ricardo Guerra-Hernandez, 17, Junior, The San Juan Math, Science and Technology Center, San Juan, Puerto Rico, T: Jonathan Perez-Rivera
- ENBM071T Non-Invasive Wearable Patch for Non-Enzymatic Glucose Monitoring Using Fluorescent Graphene Quantum Dots**
Jerry Chen, 16, Junior, Saleh Sultan Yassin-Shehadeh, 16, Junior, Saint John's School, San Juan, Puerto Rico, T: Edna Guzman Ferreira
- ETSD051T Sustainable Aviation: Fuel Use Reduction Through Algorithmic Routing**
Siona (Dolly) Pramoda, 14, Freshman, Meghna A. Pramoda, 15, Junior, Baldwin School of Puerto Rico, Guaynabo, Bayamón, Puerto Rico, T: Zacha Ortiz
- MCRO053 The Characterization of a Phenolic-Protein Conjugated Patch as an Antimicrobial Agent to Prevent Infections in Wounds**
Karina Michelle Lopez-Rivera, 18, Senior, Colegio Rosa-Bell, Guaynabo, Puerto Rico, T: Yajaira Torres
- SOFT039 Development of a Videogame That Serves as an Innovative and Revolutionary Tool for the Diagnosis of Recurrent Abuse in Minors From 8 to 17 Years Old**
Gabriela Nicole Martinez Disla, 18, Senior, The San Juan Math, Science and Technology Center, San Juan, Puerto Rico, T: Jonathan Perez-Rivera
- TMED058 Use of *Borreira laevis* Herb (White Broomweed) To Dissolve Common Kidney Stones of Calcium Oxalate Crystals**
Riccardo Lopez-Cepero Navarro, 17, Junior, Colegio San Ignacio de Loyola, San Juan, Puerto Rico, T: Laura Rosado
- TMED074 Use of Red Harvester Ant (*Pogonomyrmex barbatus*) as a Biomarker to Identify Glucose in Human Urine**
Diego Alexander Rivera Cartagena, 17, Junior, Colegio San Ignacio de Loyola, San Juan, Puerto Rico, T: Laura Rosado Rodriguez
- Mayaguez, Puerto Rico, TEPR10, SESO Regional Science Fair**
- SOFT015 A Deep Learning Architecture Using EEG for Working Memory Assessment in Mild Cognitive Impairment**
Sriniketan Sridhar, 15, Freshman, Southwestern Educational Society, Mayaguez, Puerto Rico, T: Melissa Segarra Ruiz

QATAR

Doha, Qatar, QAT001, The National Student Research Fair

- BMED064T The Effect of Immune Checkpoint Inhibitor Ipilimumab on the Development and Proliferation of Breast Cancer Stem Cells**
Youssef Abdelaal Nasr, 17, Senior, Khalifa Waleed Al-Janahi#, 17, Senior, Hassan Ibn Thabit Secondary School for Boys, Doha, Qatar, T: Faisal Hassan T: Faisal Hassan
- CELL030T Tumor Suppressor Fbw7 Protein Aggregation: A Novel Tumorigenic Mechanism in Cancer?**
Bashar Bilal Awwad, 16, Junior, Rashid Hamad AL Marri, 16, Junior, Omar Bin Abdulaiz Independent Secondary School for Boys, Doha, Qatar, T: Wael Aboushady
- EBED032T A Solar Powered Internet of Things (IoT) Based Real-Time Weather Monitoring System for Precision Agriculture and Farming**
Saoud Abdulaziz Askar, 15, Junior, Ahmed Abdulaziz Almulla, 17, Junior, Qatar Science and Technology Secondary School for Boys, Doha, Ain Khalid, Qatar, T: Mahamood Alam

ENEV053T Toxicity Evaluation of Two Surfactants With Anticorrosion
Mohammed Khaled Alhajri, 16, Junior, Mohamed Yousef Aljaber, 16, Junior,
Qatar Banking School for Boys, Doha, Qatar, T: Ahmed Shawer

REPUBLIC OF MOLDOVA

Chisinau, Republic of Moldova, MDA001, Moldova Science and Engineering Fair

CHEM065 New Semi-Synthetic Agents With Antibacterial and Antifungal Properties
Iulia Teleuca, 16, Junior, Theoretical High School "Orizont, Durlesti", Chiainau, Republic of Moldova, T: Vasilii Graur

ETSD067 Developing a New Acoustic Levitation Platform Design for Non-Contact Handling in Electronics Assembly
Anton Bulancea, 16, Freshman, Alexandr Pushkin Lyceum, Chisinau, Republic of Moldova, T: Oleg Josan

ROMANIA

Suceava, Romania, ROM001, Romania Science and Engineering Fair

BCHM007 Glucocorticosteroids in Case of Genetic Mutations, Autoimmune Diseases or COVID-19
Iuliana Paula Hutanu, 18, Junior, Colegiul Tehnic Latcu Voda Siret, Siret, Suceava, Romania, T: Cristina Dumitras

BCHM008 Methods of Predicting the Functions of Intrinsically Disordered Proteins: The Functions of Tau Protein
Ioana Madalina Caraus, 19, Senior, International Computer High School of Bucharest, Bucharest, Romania, T: Stefan Eugen Szedlacsek

ENBM017T MotionShift Prosthetic Device for Replicating Natural Walking Using Artificial Neural Networks
Antonie Rares Grigoras, 18, Junior, Mihai Alexandru Hulubeac, 19, Senior, Petru Rares National College Suceava, Suceava, Romania, Colegiul National "Petru Rares" Suceava, Suceava, Romania, T: Anca Greculeac

ENBM018 Three Layered Support Based on Collagen and Carbon Nanotubes Functionalized With Thiamphenicol as Drug Delivery System: A New Concept of Intelligent Wound Dressing
Bianca Mihaela Nemes, 18, Junior, Liceul Teoretic International de Informatica Bucuresti, Bucharest, Bucharest, Romania, T: Madalina Albu Kaya

PHYS015 The Development of a Second-Order Autocorrelator for Measuring the Duration of Ultrashort Laser Pulses
Miruna Neacsu, 19, Senior, International Computer High School of Bucharest, Bucharest, Romania, T: Andrei Naziru

SAUDI ARABIA

Riyadh, Saudi Arabia, SAU001, Mawhiba Science & Engineering Fair

BEHA030 Development of 3D Printed Personalized Chewable Tablets for Use in Older Adults With Dysphagia
Hanadi Hassan Orayf, 17, Senior, Umm Salamah, Makkah, Makkah, Saudi Arabia, T: Raed Felimban

BEHA032 A Deep-Learning System for Culture-Based Emotion Recognition
Juri Ibrahim Aljohani, 17, Senior, Al Aqeeq International School, Medina, Medina, Saudi Arabia, T: Youssef Mohammed

BMEDO45 Conditional Inactivation of ap2-mrp by Di-Cre System Leads to Arrest in Plasmodium falciparum Growth
Jory Fadil Alturki, 17, Senior, Riyadh School for Boys and Girls, Riyadh, Saudi Arabia, T: Amit Subudhi

BMEDO46 Upregulation of Innate Immune Response Genes in a SARS-CoV-2 Nucleocapsid Protein Dependent Manner
Zahraa Al Shubbar, 17, Senior, Dhahran Ahliyya School, Dammam, Eastern Province, Saudi Arabia, T: Muhammad Shuaib

- CBIO032** **A Novel Exosome-Encapsulated-miRNA-Based Machine Learning Model for Blood-Based Diagnosis, Subtype Classification, and Stage Detection of Multiple Cancer Types**
Abdullah Ali AlGziwi, 17, Senior, King Faisal School, Riyadh, Riyadh, Saudi Arabia, T: Huda AlKhalaf
- CELL038** **Development of Selective MIZ-1 BTB Domain Inhibitors Targeting HUWE1 E3 Ligase in MYC-Driven Cancers**
Yousef Alsabban, 18, Senior, Riyadh School for Boys and Girls, Riyadh, Saudi Arabia, T: Inas Zein
- CELL044** **Comparing the Effects of NSD2 and Its Cancerous Mutation on Nucleosomes to Identify Potential Routes for Inhibition**
Nour Reda Jamjoom, 17, Senior, Jeddah Knowledge International School, Jeddah, Makkah, Saudi Arabia, T: Kacper Szczepski
- CHEM039** **A Bifunctional System for Atmospheric Water Harvesting and Direct Air Electrolysis for Hydrogen Production**
Fatima Abdullah Alarfaj, 15, Sophomore, Al-Anjal Private School, Al Hofuf, Eastern, Saudi Arabia, T: Mahmoud Abdelnaby
- CHEM041** **Introducing a Novel Nanohybrids of Nickel and Cobalt Nanoparticles Loaded on Carboxymethyl Cellulose Core-Shell as an Anodic Catalyst for Urea Fuel Cells**
Fatimah Abdrab Alameer Alboali, 17, Senior, Alkifah Academy, Al Hufuf, Eastern Province, Ahsaa, Saudi Arabia, T: Hany Abd El-Lateef
- CHEM053** **Bi-Functional MOF-Based Electrocatalyst for Efficient and Cost-Effective Hydrogen Production From Seawater**
Faisal Fahad Almuhaysh, 17, Junior, Alkifah Academy, Al Hufuf, Eastern Province, Ahsaa, Saudi Arabia, T: Aasif Helal
- EAEV050** **A New Approach for Optimizing a Light Scattering Coating Formulated With Different Sized BaSO₄ Particles for Energy Conservation Applications**
Deema Mohammed Marwahi, 17, Senior, Al Hussan National Model School For Girls– Jubail, Al Jubail, Eastern, Saudi Arabia, T: Muhammad Mansha
- EAEV051** **Low-Cost Replicable Open-Source Mangrove Monitoring System**
Dhay Shujaa, 17, Senior, Secondary Gifted School, Jeddah, Makkah, Saudi Arabia, T: Khaled Salama
- EBED029** **Highly Sensitive MEMS Cantilever Gas Sensor Using Deposited Nanostructured Sb-doped ZnO Thin Film Deposited by PLD for Low Concentration Detection of Ammonia Gas**
Abdulmohsen Khalid Almansour, 17, Senior, Riyadh School for Boys and Girls, Riyadh, Saudi Arabia, T: Mohammed Aldosary
- EBED030** **Preventing Piracy of Integrated Circuits via a Provable Security Mechanism**
Fatimeh Mohammed Al Ghannam, 18, Senior, Al-Anjal Private School, Al Hofuf, Eastern, Saudi Arabia, T: Mohamed El Massad
- EGSD031** **Engineering Hybrid System to Generate Renewable Energy From Solar and Raindrop Energy Using Newly Designed Compatible Piezoelectric Devices**
Fajr Abdulmajeed Alkhalayfi, 17, Senior, Riyadh School for Boys and Girls, Riyadh, Saudi Arabia, T: Adnan Zaman
- EGSD032** **Concrete Electrolyte-Based Structural Supercapacitor Reinforced With Carbon-Modified Steel Mesh**
Rataj Abdulrahman Alsulami, 17, Junior, Talented Secondary School, Jeddah, Makkah, Saudi Arabia, T: Mohammed Abdul Aziz
- EGSD034** **New Approach to Increase Hydrogen Production by Adding Magnetic Field to the Photoelectrochemical Water Splitting of Metal Oxides Thin Films**
Taif Alhedmi, 17, Senior, Manarat Al-Riyadh, Riyadh, Saudi Arabia, T: Abdullah Alotaibi
- EGSD035** **Electrocatalytic Green H₂ Generation Using Novel Defect Engineered Cotio_{3-x}/Tio_{2-x}- Perovskite Nanostructures Synthesized by Pulsed Laser Processing**
Leen Ahmed Al-Mulhim, 16, Junior, University Schools, Dhahran, Eastern Province, Saudi Arabia, T: Zozo Ahmed

- EGSD036** **Laser-Induced One-Step Green Synthesis of Graphene Nanoparticles for Fabrication of All-Solid-State Ultracapacitor**
Latifa Hesham Alghannam, 16, Junior, KFUPM Schools, Dhahran, Eastern Province, Saudi Arabia, T: Mohammed Gondal
- ENBM049** **The Effect of 3D Peptide Hydrogel Scaffold Stiffness on Osteoblast Proliferation and Differentiation for Bioengineering Applications**
Hala Al Majed, 17, Senior, Dhahran Ahliyya School, Dammam, Eastern Province, Saudi Arabia, T: Dana Alhattab
- ENBM053** **Generating Novel *E. coli* Nissle Cells Using a Reprogrammable CRISPR-Cas12 System for Targeted Drug Delivery**
Wesam Fahd Algurashi, 18, Senior, Manarat Al Khobar National & International Schools, Al Khobar, Eastern Province, Saudi Arabia, T: Aaron Angles
- ENEV046** **A Multi-Functional and Highly Efficient Photo-Electrocatalytic 3D ZnO Nanoflowers for Simultaneous Water Splitting and Wastewater Treatment**
Maria Ghalib AlGhamdi, 17, Senior, Al Shams National Schools, Riyadh, Saudi Arabia, T: Nawal Al-Abass
- ENEV047** **Net Direct Air Capture: Novel Contact Liquid-Based Approach for Efficient, Cost-Effective, and Scalable Cryogenic Carbon Capture**
Mohammed Ahmed Alarfaj, 17, Senior, Dhahran Ahliyya School, Dammam, Eastern Province, Saudi Arabia, T: William Roberts
- ENEV048** **Super Paramagnetic Nanoparticles as a Reusable Delivery System of Pesticides**
Layan Mohammed Noorwali, 17, Senior, Talented Secondary School, Jeddah, Makkah, Saudi Arabia, T: Safyan Khan
- ETSD038** **Development of a Testing Platform for an Underwater Surveying Robot to Assess Coral Reef Health**
Maria Qumsani, 18, Senior, Dar Jana International School, Jeddah, Saudi Arabia, T: Eric Feron
- ETSD043** **Kinetic Simulation of Ammonia/Hydrogen Combustion Under Gas Turbine Conditions for CO₂ Reduction**
Leen Majed Qanash, 16, Senior, Jeddah Gifted School, Jeddah, Makkah Almukkarmah, Saudi Arabia, T: Mani Sarathy
- MATS034** **Development of a Novel and High Performance WO₃/Al₂O₃ Ceramic Composite Membrane for Oil-Water Separation**
Tahani Adel Ahmed, 17, Junior, KFUPM Schools, Dhahran, Eastern Province, Saudi Arabia, T: Mohammad Gondal
- MATS035** **Magnetic and Microwave-Absorbing Properties of Scandium-Doped Co_{0.5}Ni_{0.5}Fe_{2-x}O₄ Nano-Spinel for High-Frequency Applications**
Sarah Essam Alsulaim, 16, Junior, AlBassam Schools, Dammam, Saudi Arabia, T: Munirah Al-Messiere
- MATS037** **Development of Novel and Cost-Effective Perovskite Photoconductive Micro-Device for Terahertz Emission Applications**
Retal Mohammed Jadaa, 17, Senior, Jeddah Gifted School, Jeddah, Makkah Almukkarmah, Saudi Arabia, T: Monerah Alkizzy
- MATS044** **Engineering of a Novel Low-Cost Hybrid Perovskite Material for Modulating LED Devices**
Abeer Ali Alyousef, 16, Sophomore, Dohat Alibdaa International Schools, Alahsa, Eastern Province, Saudi Arabia, T: Essa Alharbi
- PLNT034** **Improving *Aquilaria crassna callus* Sesquiterpenoid Production Using MOFs**
Yazan Alflayyeh, 18, Senior, King Faisal School, Riyadh, Riyadh, Saudi Arabia, T: Kyle Lauersen
- PLNT035** **The Effects of (Fe₃O₄) Nanoparticles on the Growth, Viability, and Toxicity of *Triticum aestivum L.* Plants**
Layan Almalki, 16, Junior, Alfaisaliah Islamic Schools, AlKhobar, Saudi Arabia, T: Huseyin Tombuloglu
- PLNT036** **Bioactivity of New Series of Zaxinone Mimics in Rice Growth and Its Effect on *Striga* Germination**
Noor Yousef Alhammad, 18, Senior, Al-Anjal Private School, Al Hofuf, Eastern, Saudi Arabia, T: Salim Al-Babili

- ROBO035** **An Adaptable, Cost-Effective, Compact Approach to 3D Printer Self-Repair**
Bandar Mahmood AlBraheem, 17, Senior, Manarat Al Khobar National & International Schools, Al Khobar, Eastern Province, Saudi Arabia, T: Eric Feron
- TMEDO46** **Development of Universal Multi-Target Antibody-Like Vaccines Against the Highly Pathogenic Coronaviruses**
Faris Alyami, 17, Senior, Sada Al-Ibdaa, Khamis Mushayt, Asir, Saudi Arabia, T: Mohamed Alfaleh

SINGAPORE

- Singapore, Singapore, SGP001, Singapore Science and Engineering Fair**
- EGSD024** **Perfectly Flawed: Leveraging on Defects in AgSbTe₂ via Ge Doping for Thermoelectric Waste Heat Harvesting**
Ivan Joel Wen Jie You, 17, Junior, NUS High School of Mathematics & Science, Singapore, Singapore, T: Ai Lin Chong
- MATSO21** **Computational Discovery of Highly Sustainable and Efficient Metal-Organic Frameworks for SO₂ Capture**
Ruotong Bai, 18, Senior, Hwa Chong Institution, Singapore, Singapore, T: Kelvin Tan
- MATSO22T** **Laser Tuned Micro-Fluorescence in Fish Scales for Steganography and Chemical Sensing**
Georia Ang, 16, Sophomore, Tricia Tan, 15, Sophomore, Chung Cheng High School (Yishun), Singapore, Singapore, T: Chia Hwee Lim
- MCRO026** **Doctor Bartender: Phage Cocktails To Treat Multi-Drug Resistant *Mycobacterium abscessus***
Jamie Wen, 17, Junior, Dunman High School, Singapore, Singapore, T: Shuang Ning Chin
- PHYSO27** **Gyro-Ring: Dynamics and Steady Precession of Ring on a Vertical Smooth Rod**
XinRui Li, 18, Senior, Hwa Chong Institution, Singapore, Singapore, T: BiaoJin Pang
- ROBO027T** **Sign2Speak! Synthesizing Emotional Speech From Sign Language Through Deep Learning**
Yu Xi Ong, 17, Senior, Mirdhini Shri Rajaram, 17, Senior, Raffles Institution, Singapore, Singapore, T: Bingquan Shen

SLOVAKIA

- Bratislava, Slovakia, SVK002, AMAVET-Slovak Association for Youth, Science & Technology**
- MATSO30** **Smart Theranostic Lipid-Based Nanoparticles for Breast Cancer Treatment Using Hydrophobic Cytostatics**
Ludmila Kvasnovska, 17, Junior, Gymnazium Jozefa Miloslava Hurbana, Cadca, Slovakia, T: Eva Kormendyova
- SOFT031T** **Evidence and Management of Warehouses With Eco-Based Materials**
Vanessa Ciskova, 18, Senior, Vanesa Smolakova, 19, Senior, Stredna priemyselna skola elektrotechnicka, Presov, Presovsky kraj, Slovakia, T: Gabriela Mitrova

SLOVENIA

- Ljubljana, Slovenia, SVN001, Slovenia Science and Engineering Fair**
- PHYSO21T** **Distance Measurement of Delta Scuti Variable Stars**
Hana Brumec, 18, Senior, Damjan Dovnik, 19, Junior, Srednja Sola, Slovenska Bistrica, Slovenia, T: Marko Zigart

SOUTH AFRICA

- Johannesburg, South Africa, ZAF001, Expo for Young Scientists–South Africa**
- CHEMO08** **Evaluation of Powdered Insulators for High Voltage Applications**
Brandon de Greef, 18, Junior, Crawford International Ruimsig, Roodepoort, Gauteng, South Africa, T: Nicholas von Buddenbrock
- EAEV005** **The Impact of Land Use Type and Distance Downstream on the General River Health and Water Quality in the Eerste River, Stellenbosch, Western Cape, South Africa**
Enzo Blignaut, 16, Sophomore, Paul Roos Gymnasium, Stellenbosch, Western Province, South Africa, T: Annami Van Rooyen

- EAEV012** **Predicting the Likelihood and Severity of Sinkholes Occurring in Khutsong Due to Leakage From Underground Water Pipes**
Keitumetse Kamogelo Sebatlelo, 17, Junior, Carleton Jones High School, Carletonville, Gauteng, South Africa, T: Idzai Gondo
- EBED010** **Improved System for Hazardous Gas and Heat Detection and an Alert System for Households**
Tyla Elisabeth Shepstone, 16, Sophomore, Somerset College, Cape Town, Western Cape, South Africa, T: Clare Searle
- ENEV013** **SMARTer: Soil Moisture Artificially Intelligent Regression in a Domestic Garden Environment to Conserve Water**
Yu Tang Shan, 17, Senior, St Johns College, Johannesburg, Gauteng, South Africa, T: Kevin Zheng
- MCRO008** **Land Use Effects on Soil Quality in Philippi, Western Cape, South Africa**
Matthew John Witbooy, 18, Senior, Curro Durbanville High School, Cape Town, Western Cape, South Africa, T: Flip Theunissen

SOUTH KOREA

Daegu, South Korea, KOR001, Korea Code Fair

- EBED023T** **VisionGuard: Control Hardware-Based Autonomous Driving for Enhancing Walking Safety and Mobility of the Visually Impaired**
Seongbin Byun#, 16, Junior, Chaewon Huh#, 17, Senior, Wondong Lee, 17, Junior, Kyeongbuk High School, Daegu, South Korea, T: Sunhee Lee
- ROBO031T** **Personalized Wheelchair for Disabled With Mobility Loss**
Seunghyeon Park, 17, Senior, Jinho Kim, 18, Senior, Korean Minjok Leadership Academy, Hoengseong, Gangwon, South Korea, T: Yeounsoo Kim
- SOFT011T** **Breaking Isolation: Medical Software Platform Utilizing Beneficial Medical Terms for Patients Without Sufficient Health Care Service**
Donghyun Kim#, 18, Senior, Hyunwoo Cho, 16, Junior, Hyundai Senior High School, Seoul, Seoul, South Korea, Korea Digital Media High School, Ansan-si, South Korea, T: Hojin Choi
- SOFT025** **Improving Road Safety With Artificial Intelligence: A Low-Cost AI-CCTV Intervention for Detecting Vehicular Danger**
Jeesung Lee, 17, Sophomore, St. Johnsbury Academy, Jeju, Jeju Special Self-Governing Province, South Korea, T: Deric Cole
- SOFT033T** **ALcode: Automatic Allergy Determination Program Using Public Data**
JiSeok Lee, 16, Sophomore, YoonHyeok Kim, 14, Freshman, Jeo Hyeon High School, Goyang-si, Gyeonggi-do, South Korea, Pungdong Middle School, Goyang-si, Gyeonggi-do, South Korea, T: Myoung Yong Kang

Seoul, South Korea, KOR002, YSC (National Science Research Competition)

- ANIM015T** **Biomechanical Analysis of Labial Movement in the Hunting of Dragonfly Nymphs**
Minseo Kim, 18, Senior, Sujin Kim, 18, Senior, Sejong Academy of Science and Arts, Sejong, Chungcheong, South Korea, T: Myeong Hee Kim T: Myeong Hee Kim
- CBIO034** **Modeling Viral Evolution and Epidemic Simulation Using Genetic Algorithms**
Dain Kyung, 17, Junior, Chungnam Science High School, Gongju Si, Chungcheongnamdo, South Korea, T: Junghyun Paek
- EBED021T** **Classification of Watermelon's Inner State Based on Hitting Sound Using Machine Learning**
Gaeun Lim, 17, Senior, Lee Tae Yoon, 18, Senior, Incheon Academy of Science and Arts, Incheon, Incheon, South Korea, T: Daeki Cho
- ROBO075T** **Cat Eye Disease Diagnostic Device**
Sanghee Go, 15, Freshman, Hanwool Jang, 15, Freshman, Jecheon Girls' Middle School, Jecheon-si, Chungcheongbuk-do, South Korea, Naeto Middle School, Jecheon-si, Chungcheongbuk-do, South Korea, T: Lee Hyungsuk T: Hyungsuk Lee

Cheonan-Si, South Korea, KOR003, Korea Science Fair

- BEHA022** **Assessing Abnormalities in Spatial Awareness of Patients With Alzheimer's Disease Through the Line Quadrisection Test**
Yurim Jin, 17, Senior, Korean Minjok Leadership Academy, Hoengseong, Gangwon, South Korea, T: Kyungsil Song

- CHEM016T** **Raney Nickel: Introducing the New High-Activity and Cost-Effective Catalyst for the Sabatier Reaction**
 Hyoungseok Lee, 16, Junior, Junhyeok Park, 16, Junior, Jinsong Kim, 16, Junior, Daegu-il Science High School, Daegu, Gyeongsangbuk-do, South Korea, T: Kyuhan Jeong
- CHEM037T** **Application of Appropriate Technology Through the Adsorption of Copper Ions in Chestnut Trees**
 JeongAn Woo, 18, Senior, MinJi Kang, 18, Senior, Tae Eun Kim, 17, Senior, Kangwon Science High School, Wonju, South Korea, T: Yeon Ju Yu
- EAEV027T** **Demonstration and Efficiency Tests of the Biodegradation of Polyurethane by Microorganisms in the Gut of the *Zophobas atratus* Larvae**
 Yuhyun Choi, 18, Senior, Dahin Lee, 17, Senior, Korean Minjok Leadership Academy, Hoengseong, Gangwon, South Korea, T: Minho Kim
- ENEV019T** **Eco-Friendly Paper Food Packaging Using PVA Cross-Linking**
 JuHeon Lee, 16, Junior, Subin Lee, 16, Junior, Chungnam Science High School, Gongju Si, Chungcheongnamdo, South Korea, T: Chul Yong Park
- ENEV028T** **Evaluating the Decolorization Efficiency of an Invasive Species, *Lonicera japonica*, in Removing Acid Blue 113 Dye**
 Minjung Choi, 17, Junior, Jiwon Kwon, 17, Junior, Hajin Ruy, 18, Junior, Korea International School, Jeju Campus, Seogwipo-si, Jeju-do, South Korea, T: Joe Catron
 T: Joseph Catron
- ETSD007T** **A Proposal and an Evaluation of the Efficiency of the Tesla Turbine Heat Recovery System**
 Junseok Kang, 17, Senior, Seongwoo Min, 17, Senior, Yong-Wook Kim, 17, Senior, Korean Minjok Leadership Academy, Hoengseong, Gangwon, South Korea, T: Donghyuk Yang
- MATH027** **Promoting Efficient Allocation in Refugee Camps: Comparing Mechanisms With Minority Reserves**
 Gyulim Kang, 16, Junior, Singapore American School, Singapore, Singapore, Singapore, T: Ian Coppell
- MATSO16** **Effect of Sucrose on Directional Motions of Cholesterol Crystals Surfing on a Lipid Membrane**
 # Melissa Kim, 17, Junior, Seoul International School, Seoul, Gyunggi-Do, South Korea, T: Nam-Joon Cho
- MCRO030** **Inhibiting Superbug Formation by Blocking Bacterial Necrosignal Transmission Using Kimchi LAB Metabolites**
 Ann Lee, 16, Junior, Seoul International School, Seoul, Gyunggi-Do, South Korea, T: Sunny Kim
- PHYS029T** **Verification of Quantum Key Distribution via Description and Implementation of Mixed States**
 Jiwoo Hong, 17, Senior, Seongmin Hong, 18, Senior, Korea Science Academy of KAIST, Busan, Busan, South Korea, T: Zaeyoung Ghim
- ROBO015** **Applying Fractal Structure to Vision Transformer (ViT)**
 Sehun Jeong, 18, Junior, North London Collegiate School Jeju, Seogwipo-si, Jeju-do, South Korea, T: Jearson Rojas
- TMED015** **Colorimetric Detection of Oxalate and Calcium for the Early Screening of Urolithiasis**
 Jinwon Chang, 17, Senior, Korean Minjok Leadership Academy, Hoengseong, Gangwon, South Korea, T: Daehwan Kim
- TMED020** **Developing a Sensitive, Papain-Based Hydrogel Film That Colorimetrically Detects Glucose**
 Seoyun Lee, 17, Junior, Daegu International School, Dong-gu, Daegu, South Korea, T: Woorin Lee

SPAIN

Barcelona, Spain, SPN001, Exporecerca Jove

- MATH043** **On the Location of Poles of Meromorphic Functions and Its Combinatorial Application**
 Oriol Coll-Estopa, 17, Senior, INS Ramon Turro i Darder, Barcelona, Spain, T: Jaume Carles Frisuelos

SOFT050 **Creation of a Virtual Assistant for the Elderly Using Artificial Intelligence Systems**
Markus Urban, 17, Senior, Institut Joan Brudieu, La Seu d'Urgell, Lleida, Spain,
T: Xavier Mane

SWEDEN

Stockholm, Sweden, SWE001, Utställningen Unga Forskare

CBIO060 **Developing and Utilizing a Whole-Cell Mathematical Model of IL-6 in Triple-Negative Breast Cancer: Predicting Cell Behavior and Targeted Anti-Tumorigenic Drug Interactions**

Yasma Najji Esteitieh, 17, Junior, Malmo Borgarskola, Malmo, Skane, Sweden,
T: Louise Boucher

PHYS048 **Modeling the Distribution of Dark Matter in the Milky Way Based on the Galaxy's Rotation Curve**

Tuva Alicia Kallberg, 19, Senior, Sven Eriksonsgymnasiet, Boras, Vastra Gotaland, Sweden, T: Mats Hillensjö

PHYS061 **Quantifying Skyglow With a Consumer Camera**

Axel Sethsson, 18, Senior, Norra Reals Gymnasium, Stockholm, Stockholm, Sweden,
T: Malin Mattsson

SWITZERLAND

Bern, Switzerland, CHE001, Swiss Youth in Science

CBIO002 **Characterization of MAS1 Tertiary Structure**

Nathan Oberti, 19, Senior, Liceo Cantonale Bellinzona, Bellinzona, Ticino, Switzerland,
T: Davide Speziga

ENEV004 **Direct Air Capture: Construction, Testing and Optimizing of a Prototype**

Denis Etienne Spring, 19, Senior, Kantonsschule Frauenfeld, Frauenfeld, Thurgau, Switzerland, T: Sebastian Pilgram

THAILAND

Pathum Thani, Thailand, THA002, Young Scientists Competition

BMEDO47T **Neuroprotective Effect of Centella asiatica Ethanolic Extract on Toluene-Led Neurodegeneration in *Caenorhabditis elegans***

Pattaradol Leerojanaprapa, 17, Junior, Phubet Sanephakdee, 17, Junior, Kamnoetvidya Science Academy, Rayong, Thailand, T: Tanawan Leeboonngam

CBIO050T **PROSynMOGN: Enhancing Molecular Graph Neural Networks Toward Predicting Synergistic Cancer Drug Combinations Driven by Protein Expression**

Kittiphat Pongarunotai, 16, Sophomore, Matin Kositchutima, 16, Junior, Tisorn Na phattalung, 17, Junior, Kamnoetvidya Science Academy, Rayong, Thailand,
T: Bundit Boonyarit

EGSD058T **Biomass-Based Porous Carbon Electrode for Supercapacitor**

Tamonvan Maila-iad, 17, Senior, Natthaset Mekjaroenwiwattana, 17, Senior, Nathanon Srisuwan, 17, Senior, Benjamarachutit School, Mueng Nakon Si Thammarat, Nakhon Si Thammarat, Thailand, T: Janthip Chulasak

PHYS057T **A Study of Behavior for Magnetic Nanoparticles in Vascular System Through LAMMPS**

Thitiwat Kosolpattanadurong, 17, Junior, Nopparuj Sodsri, 17, Junior, Kamnoetvidya Science Academy, Rayong, Thailand, #41 "Harmony", Samara, Samara, Russian Federation, T: Adis Khetubol

TMEDO73T **A Game-Changing Idea for Rapid Cancer Screening: Detection of Circulating Tumor DNA on the Surface of Red Blood Cells**

Matina Boontem, 17, Senior, Chutinun Sukpongjirakul, 17, Senior, Wongsakon Malalaksamee, 17, Senior, Mahidol Wittayanusorn School, Nakhon Pathom, Thailand,
T: Kiattipoom Rodpun

TMEDO80T **micKEY: Memory-Efficient Deep Learning for Personalized Biomarker Discovery and Cancer Origin Prediction From DNA Methylation Data**

Kasidech Aewsrissakul, 17, Junior, Pakanan Tussanapirom, 17, Junior, Triam Udom Suksa, Pathumwan, Bangkok, Thailand, T: Kobchai Duangrattanaert

THAILAND

Bangkok, Thailand, THA001, SST-NSM National Science Projects Competition

- ANIM024T Optimization of Green Lacewing (*Mallada basalis*) Survivability From Hatching and Foraging Behavior**
Pannathorn Siri, 15, Sophomore, Poon Trakultangmun, 18, Senior, Teepakorn Keawumdee, 17, Junior, Bangkok Christian College, Bangkok, Thailand, T: Chanan Keatsirisart
- ANIM025T A Sustainable Approach to Control the Destructive Red Palm Weevil Pests**
Sunyapat Akkarajeerawat, 15, Freshman, Thanat Korn Chauvanasmith, 15, Freshman, Bangkok Christian College, Bangkok, Thailand, T: Wanida Bhui-iam
- ANIM026T A Novel Non-Invasive Method to Detect Pebrine Disease in Sericulture by Using Phototaxis of Hatched Silkworm (*Bombyx mori*)**
Panatas Chaiprakan#, 17, Junior, Thanawat Namjaidee, 17, Junior, Kanyarin Sriwichai, 17, Junior, Damrongratsongkroh School, Muangchiangrai, Chiangrai, Thailand, T: Kiettisak Inrajsadon T: Kiettisak Inrajsadon
- EAEV028T A Novel Invention of Aerial Delivery of Planting Material for Burnt Forest Restoration Inspired by the Structure of *Kadsura coccinea* Fruit**
Naruephat Yajai, 18, Senior, Prompiriya Khattiyawong, 18, Senior, Jirapon Sengnongban#, 18, Senior, Princess Chulabhorn Science High School Pathumthani, Ladlumkaew, Pathumthani, Thailand, T: Khunthong Klaythong
- ENBMO63T Cardiac Self-Monitoring Tool (CS-M Tool) for Monitoring Cardiovascular Disease With Heart Sounds From a Stethoscope Utilizing a Mobile Application, Using a Neural Network Algorithm To Classify Heart Disease and Detect the Heartbeat**
Tanapat Charunworaphan, 17, Junior, Matt Tanthai Cosh, 16, Junior, Noppawit Chunram, 17, Junior, The Prince Royal's College, Mueang Chiang Mai, Chiang Mai, Thailand, T: Rungkan Wangboon
- MATSO28T Green One-Step Synthesis of Mushroom-Derived Carbon Dots as Fluorescent Paper-Based Sensors for Iron (III) Detection**
Kodchakorn Klongklaw, 17, Senior, Praeploy Kiatsuksri, 17, Senior, Bunyarak Phiomkaew, 18, Senior, Kamnoetvidya Science Academy, Rayong, Thailand, T: Suranan Anantachaisilp
- PHYS026T Effect of the Planetary Magnetic Field on the Shape of Gas Giants' Polygons Based on Fluid Instabilities Principle**
Jinjuta Paripurana, 18, Senior, Pavarit Phanichkul, 18, Senior, Amada Panumonwatee, 18, Senior, Kamnoetvidya Science Academy, Rayong, Thailand, T: Parinya Sirimachan
- TMEDO66T O-RA: Osteoarthritis Rehabilitation Assistant**
Kaewkla Sroykabkaew, 17, Junior, Napaschol Inthapan, 17, Junior, Krittapat Tragoolpua, 17, Junior, The Prince Royal's College, Mueang Chiang Mai, Chiang Mai, Thailand, T: Krittipong Wachirangkul

TURKEY

Ankara, Turkey, TUR002, Tubitak Fair

- BCHM012T Development of Paper-Based Origami Biosensor Platforms for Colorimetric Detection of Biocontaminants**
Devin Inan, 18, Senior, Rumeysa Cicek, 16, Junior, Buca Inci-Ozer Tirnakli Science High School, Izmir, Izmir, Turkey, T: Cansu Kuru
- BCHM014 Polycaprolactone Hydrolysis Using Immobilized Enzymes**
Hasan Hakan Sarica, 19, Senior, Acarkent Doga Anatolian High School, Istanbul, Beykoz, Turkey, T: Makbule Nevra Duser
- BCHM016T Development of Functional Nanoplatforms by Green Synthesis for Various Bio-Applications**
Azra Demirkapilar, 16, Sophomore, Asli Ece Yilmaz, 17, Sophomore, Sehit Prof. Dr. Ilhan Varank Bilim ve Sanat Merkezi, Balikesir, Karesi, Turkey, T: PA±nar Sabaz
- CHEM024T Intelligent Hydrogel Synthesis and Bracelet Design to Detect Foreign Materials in the Human Body and in Beverages**
Sude Naz Gulsen, 16, Sophomore, Ekin Asyali, 16, Sophomore, Gaziantep Private Sanko College, Gaza Antep, Gaza Antep, Turkey, T: Ozgul Guner

- ETSD018** **A Novel Gait Controller Method for More Stable Operation of Complex Legged Systems**
Ahmet Kagan Altay, 17, Senior, Kocaeli Science High School, Kocaeli, Izmit, Turkey, T: Irfan Kaya
- MATH021** **Analysis of Hypocycloid Formation Processes From Different Perspectives and Polygonal Structures Seen in Trace Curves**
Mehmet Emir Konac, 17, Sophomore, Malatya Bilim ve Sanat Merkezi, Malatya, Turkey, T: Mehmet Arslan
- MATS019T** **Development of a Novel Bolus Material for Radiotherapy Applications**
Selin Yilmaz, 18, Senior, Arda Yesilyurt, 17, Junior, Cakabey Schools, IZMIR, Turkey, T: Hale Melis Soylu Gurer
- ROBO021** **Artificial Genius: Testing the Abilities of Artificial Intelligence in a More Turing Way**
Batuhan Ipek, 18, Junior, Erzincan Fen Lisesi, Erzincan, Erzincan, Turkey, T: Sadi Aksu
- ROBO024T** **A Novel Transformer-Based Deep Learning Pipeline for Multilingual Fake News Detection**
Begum Atay, 17, Sophomore, Kagan Agras, 16, Junior, METU Development Foundation Private High School, Ankara, Ankara, Turkey, T: Pinar Karagoz
- ROBO025T** **Teach Me Braille: A Kit Consisting of Modules and Applications That Can Provide Fully Efficient Education for Visually Impaired Students and Support the Problems Faced by Individuals in Their Daily Life With the Help of Machine Learning Approaches**
Irem Duran, 16, Sophomore, Kerem Arslan, 18, Junior, Ibrahim Utku Derman, 17, Sophomore, Atatürk High School of Science, Istanbul, Turkey, T: Mehmet Durmus
- SOFT019T** **A Novel Passive Positioning System Based on Wave Mechanics**
Haktan Altunkaya, 19, Senior, Selim Gidirislioglu, 18, Senior, Ataturk High School of Science, Istanbul, Istanbul, Turkey, T: Aykut Turunc
- TMEDO24** **Personalized Neurooncology Radiogenomic Classification and Recommendation Model With AI and MRI**
Cagan Koska, 16, Sophomore, Izmir Atakent Anadolu Lisesi, Izmir, Turkey, T: Ilker Koska
- TMEDO25T** **Investigation of the Effects of *Ginkgo biloba*'s Extracellular Vesicles on Alzheimer's Disease**
Meliha Aydan Yucel, 16, Sophomore, Belgin Balim Tastan, 16, Sophomore, Kultur Science High School, Istanbul, Istanbul, Turkey, T: Ozlem Dolmaz Celik

UKRAINE

- Kyiv, Ukraine, UKR001, Eco-TechnoUkraine**
- BMEDO38T** **Expansion of Cord Blood Hematopoietic Progenitor Cells in Long-Term Culture on a Hydrogel Substrate in vitro**
Iryna Toporova, 17, Junior, Valeriia Holod, 16, Junior, Specialized school No 194 "Perspective", Kyiv, Kyiv, Ukraine, Ukrainian Medical Lyceum National Medical University the Name of O. O. Bogomolets, Kyiv, Ukraine, T: Zoia Lysenko T: Irina Shinkarenko
- EGSD044** **Getting Electricity From Waterfalls**
Illiya Oleksandrovych Sydorochuk, 15, Freshman, Zhytomyr City Center of Scientific and Technical Creativity of Student Youth, Zhytomyr, Ukraine, T: Anatolii Shubin
- SOFT036** **Quick Autonomous Pointer With Local Positioning**
Denys Yuriyovych Hromovyi, 15, Sophomore, Cherkasy Gymnasium #31, Cherkasy, Cherkasy Oblast, Ukraine, T: Yuriy Belogorodsky

UNITED STATES OF AMERICA

ALABAMA

- Montgomery, USAL01, Greater East Alabama Regional Science and Engineering Fair**
- ANIM012** **Effects of Sublethal Methylmercury on Hippocampus and Telencephalon Volume of Zebra Finches**
Sumin Park, 17, Junior, Loveless Academic Magnet Program High School, Montgomery, Alabama, T: Cara Brittain
- BEHA008** **External Feedback and the Effect on Adolescent Mentality**
Rachel Noelle Allen, 18, Senior, Elmore County High School, Eclectic, Alabama, T: Virginia Vilardi

- MATSO11T** **Mechanical Property Characterizations of Reprocessed Multi-Layer Packaging Blends**
Lindsay Levy, 17, Junior, Raymond Yi-Cong Hou, 17, Senior, Loveless Academic Magnet Program High School, Montgomery, Alabama, T: Joseph Profio T: Yucheng Peng
- Birmingham, USAL02, Central Alabama Regional Science and Engineering Fair**
- ANIM014** **Investigating the Effects of *Papaver somniferum* Seeds and *Curcuma longa* on Wound Healing Using *Drosophila melanogaster* as a Model Organism**
Anusha Singh, 16, Junior, Vestavia Hills High School, Vestavia Hills, Alabama, T: Jessica Sutherland
- EGSD016** **Developing Earth-Abundant Aluminum-Ion Batteries Using Chloroaluminate Ionic Liquid Electrolytes and Recycled Aluminum Scraps for Electric Vehicles and the Electricity Grid**
Yiwen Wang, 16, Junior, Northridge High School, Tuscaloosa, Alabama, T: Alayna Townsend
- ETSD008** **TrackAiR: Optimal Tracking of Moving Aerial Targets With Online Reinforcement Learning**
Daniel Zhao, 18, Senior, Alabama School of Fine Arts, Birmingham, Alabama, T: Cecil Flournoy
- PHYS024** **Giant Superconducting Diode Effect From Controlled Edge Asymmetry**
Amith Varambally, 18, Senior, Vestavia Hills High School, Vestavia Hills, Alabama, T: Roger Bittinger
- Huntsville, USAL03, North Alabama Regional Science and Engineering Fair**
- EBED011** **Frequency Modulated Continuous Wave RADAR for Blind Navigation**
AnnaBekah Cress, 18, Senior, Libertas Classical Community, Decatur, Alabama, T: Jared Cress
- PHYS013** **Does the Color of an Astronomical Body Affect the Observation of Decreasing Intensity With the Transit Photometry Method?**
Makaila Simone Jennings, 15, Junior, Key Destiny Homeschool, Huntsville, Alabama, T: Doresa Jennings
- Mobile, USAL04, Mobile Regional Science Fair**
- ENBMO25** **Optogenetic Modulation of Endothelial Cell Growth and Barrier Repair**
Jayden Hsieh Lin, 17, Junior, WP Davidson High School, Mobile, Alabama, T: Robin Stefurak
- Auburn, USAL50, Alabama Science and Engineering Fair**
- BEHA044** **The Effects of Environmental Disparities on the Environmental Awareness of High School Students in the Greater Birmingham Area**
Joscelyn Kalani James Peterson, 18, Senior, Alabama School of Fine Arts, Birmingham, Alabama, T: Cecil Flournoy
- CBIO053** **Development of a Simulated Platform That Replicates the Visual System Using Large Scale Neural Modeling and Performs Deep Brain Stimulation Using the Virtual Brain to Produce Synthetic Sight for the Visually Impaired**
Madhushalini Balaji, 17, Junior, James Clemens High School, Madison, Alabama, T: Kathryn Weir
- CELL052** **Investigating Transgenerational Phenotypes and Altered Behavior in *C. elegans* Mutants With Inappropriately Inherited Histone Methylation**
Rhea Rastogi, 17, Junior, Loveless Academic Magnet Program High School, Montgomery, Alabama, T: David Katz
- ROBO060** **Leveraging Convolutional Neural Networks, Deep Learning, and Computer Vision in a Novel Approach to Rapid Banana Disease Detection**
Kevin Zirui Yan, 16, Sophomore, Auburn High School, Auburn, Alabama, T: Yin Sun

ALASKA

- Anchorage, USAK50, Alaska Science and Engineering Fair**
- ANIM055** **Quantitative Environmental DNA Metabarcoding for the Enumeration of Pacific Salmon (*Oncorhynchus spp.*)**
Elizabeth Shao Djajalie, 17, Junior, Thunder Mountain High School, Juneau, Alaska, T: Carol May

ARIZONA

Sierra Vista, USAZ02, SSVEC's Youth Engineering and Science Fair

ETSD022T Universal Screwdriver

Audrey Elizabeth Denham, 17, Senior, Dylan James Rubstello, 17, Junior, Kevin Theanh Tran, 17, Junior, Buena High School, Sierra Vista, Arizona, T: Amy Martinez

ETSD025 Battle of the Octanes

Manuel Alejandro Castillo, 17, Senior, Veritas Christian Community School, Sierra Vista, Arizona, T: Melissa Bravenec

Tucson, USAZ03, Southern Arizona Research, Science and Engineering Fair

BCHM017 Molecular Modeling Guided Drug Design

Hannah Kuo Feinberg, 17, Junior, BASIS Tucson North, Tucson, Arizona, T: Hannah Goodman

CELL026 Novel Isolation and Filamentation of *Drosophila melanogaster* Phosphofructokinase-1

Keona Peng Kuo, 16, Junior, University High School, Tucson, Arizona, T: Kevin Nieves Pichardo

CHEM027T Anthocyanin-Based Polymeric Matrices That Can Detect Shrimp's Freshness

Jorge Antonio Covarrubias, 14, Freshman, Estefany Valenzuela Regalado, 15, Freshman, Harvest Preparatory Academy, Yuma, Arizona, T: Alfred Santos T: Alfred Santos

EAEV030 A Novel Approach on Mitigating Ocean Acidification by Enhancing Photosynthesis Rate of Macroalgae *Ulva lactuca*

Jimena Uribe Lin, 18, Senior, Harvest Preparatory Academy, Yuma, Arizona, T: Alfred Santos

EAEV031 Catching Plastics: Which Species of Algae Can Best Catch Microplastics?

Serena Yung-I Rezende Tsao, 16, Sophomore, University High School, Tucson, Arizona, T: Elyse Wexler

ENEV031 Packaging Waste Reduction by Optimal Cardboard Box Selection

Jimmy Kwon, 15, Sophomore, BASIS Tucson North, Tucson, Arizona, T: John Paul-Mann

MCRO027 Novel Oral Treatments Infused With Native Plant Extracts to Improve Oral Health in Developing Countries

Ashley Valencia, 16, Junior, Harvest Preparatory Academy, Yuma, Arizona, T: Alfred Santos

MCRO028 Novel Applications of Native Sonoran Desert Plants (NSDP), Year 3 Study

Andrea Romero, 18, Senior, Harvest Preparatory Academy, Yuma, Arizona, T: Alfred Santos

Phoenix, USAZ50, Arizona Science and Engineering Fair

BCHM024T Experimental Characterization of Allosterically Relevant Mutations in Beta-Glucosidase Identified Using a Dynamics-Guided Computational Approach

Michael Lau, 17, Junior, Sneha Lakamsani, 18, Senior, Maxwell Igwe, 17, Senior, Arizona College Prep High School, Chandler, Arizona, Hamilton High School, Chandler, Arizona, ASU SCENE, Tempe, Arizona, T: Jeremy Mills T: Debbie Nipar T: Bethany Kartchner

BMED051 Hypothalamic EZH2: A Key Regulator of Leptin Sensitivity in Obesity

Baochan Fan, 17, Junior, Hamilton High School, Chandler, Arizona, T: Debbie Nipar

CBIO058 A Novel Breast Cancer Recurrence Risk Predictor Using a Deep Learning Multi-omics Data Integration Framework

Ariana Ferdous Rahman, 15, Sophomore, BASIS Chandler, Chandler, Arizona, T: Daniel Hodge

CELL054 Complexing of Aminoglycoside Lipo-Polymeric Nanoparticles for mRNA Transfection in Melanoma Cancer Cells

Nina Yu, 17, Junior, Hamilton High School, Chandler, Arizona, T: Deborah Nipar

CHEM049 Batch Adsorption of Methylene Blue Using Fresh Prickly Pear Cactus Cladodes as a Model Material for Textile Wastewater Remediation

Maritza Roberts, 18, Junior, BASIS Tucson North, Tucson, Arizona, T: Derek Reichel

EAEV068 FloodCast: Real-Time Flood Mapping and Prediction in Southeast Asia Using Remote Sensing Data

Sruti Peddi, 17, Junior, BASIS Scottsdale, Scottsdale, Arizona, T: Ryan Carey

- EAEV078** **Forecasting County Level Crop Yield in Top Agricultural-Producing States Using Satellite Data**
 ## Chloe Feiyang Zhan, 16, Junior, Hamilton High School, Chandler, Arizona,
 T: Debbie Nipar
- EGSD053T** **NASA Inspired Dual Axis Solar Tracker**
 Anthony Zhu, 17, Freshman, Joshua John, 14, Freshman, John Vu, 18, Freshman, Gilbert Classical Academy, Gilbert, Arizona, T: Vanessa Ameziane
- ETSD049** **PTERA: Propeller Tilt Efficiency Rotor Aircraft**
 Yuvan Senthil, 16, Sophomore, BASIS Peoria, Peoria, Arizona, T: Marcos Guillen
- PLNT047** **Evaluating the Impact of UVB Light Exposure on the Growth of Red Malabar Spinach**
 Ram Natraj Bubby, 17, Junior, BASIS Scottsdale, Scottsdale, Arizona, T: Ryan Carey
- ROBO059** **Modeling the Dynamics of Functional Brain Networks With BrainSTEAM**
 # Alexis Li, 17, Junior, Hamilton High School, Chandler, Arizona, T: Debbie Nipar
- ROBO062** **Automatic Aquaponics**
 Julie Rodriguez, 14, Freshman, Andrada Polytechnic High School, Tucson, Arizona,
 T: Tiffany Newton
- SOFT041** **Musical Chords: A Mobile App That Auto-Generates Chord Progressions**
 Aditya Lakshminarasimhan, 16, Sophomore, BASIS Scottsdale, Scottsdale, Arizona,
 T: Ryan Carey
- SOFT045** **Analyzing the Effect of Mid-Circuit Measurement (MCM) on Spectator Qubits**
 Harshil Avlani, 17, Junior, BASIS Chandler, Chandler, Arizona, T: Daniel Hodge
- TMED063** **A Novel Segmentation-Based AI Approach for the Early Detection of Diabetic Retinopathy and Macular Edema (DREAM) via Analysis of Retinal Fundus Images**
 Siddharth Adda, 17, Junior, BASIS Scottsdale, Scottsdale, Arizona, T: Ryan Carey

ARKANSAS

- Fayetteville, USAR03, Northwest Arkansas Regional Science and Engineering Fair**
- ENBMO26** **Optimizing Glycemic Control in Type 1 Diabetic Patients Using a Deep Learning-Based Artificial Pancreas With a Secure Glucagon and Insulin Delivery System**
 Rohan Singh, 16, Junior, Bentonville High School, Bentonville, Arkansas,
 T: John Mark Russell
- ENBMO48** **Improving Early Diagnosis and Treatment Monitoring of Tuberculosis With Novel Machine Learning Cough Analysis**
 # Chandra Kiran Koushik Suda, 16, Junior, Bentonville High School, Bentonville, Arkansas,
 T: John Mark Russell
- MATS017** **Growth & Characterization of Layered Magnets**
 # Taksh Yogeshbhai Patel, 17, Senior, Fayetteville High School, Fayetteville, Arkansas,
 T: Matthew Holden
- Jonesboro, USAR04, Northeast Arkansas Regional Science Fair**
- BMED014** **Does the Degree of the Q-Angle Affect the Frequency of ACL Injuries or Knee Pain?**
 Rayah Jeanette Turnbough, 17, Sophomore, Salem High School, Salem, Arkansas,
 T: Katie Southard
- ETSD029** **Hot and Cold: Analyzing CPU Cooling Methods**
 Brandon Lee Elrod, 17, Junior, Harrisburg High School, Harrisburg, Arkansas,
 T: Chad Lacy
- PLNT017** **A Two-Year Study: How Does Planting Configuration and Irrigation Method Affect Soybean Growth?**
 # Sydney Rae Wolf, 16, Junior, The Academies at Jonesboro High School, Jonesboro, Arkansas, T: Allyson Goodin
- Little Rock, USAR05, Central Arkansas Regional Science and Engineering Fair**
- BCHMO05** **Deciphering the Radioprotective Effects of the Soy Isoflavone Genistein in Lung Cells**
 Siddharth Sridharan, 15, Freshman, Little Rock Central High School, Little Rock, Arkansas, T: Patrick Foley
- CELL011** **Punicalagin Attenuates Chemotherapy-Induced Hepatotoxicity in Normal Cells**
 ## Bhavana Sridharan, 17, Junior, Little Rock Central High School, Little Rock, Arkansas,
 T: Lee Conrad

EGSD010 **Influence of Freezing Methods on the Supercapacitor Performance of Doped Carbon**
Ahmad Gohar Alam, 16, Junior, Little Rock Central High School, Little Rock, Arkansas,
T: Patrick Foley

MCRO010 **Norfloxacin and IR-780 Iodide Dye Ionic Combination Drug and Near-Infrared
Photothermal Therapy as a Dual Mechanism Antibacterial Treatment Against
Escherichia coli**
Zaina Daaboul, 15, Sophomore, Little Rock Central High School, Little Rock, Arkansas,
T: Tracy Brown

ROBO014 **VAST (Voice and Spiral Tool): A Novel Multimodal Machine Learning Method
To Detect Parkinson's Disease and Assess Severity**

Anu Iyer, 18, Senior, Little Rock Central High School, Little Rock, Arkansas,
T: Lee Conrad

Monticello, USAR06, Southeast Arkansas Regional Science Fair

BEHA040 **Can You Win Rock Paper Scissors?**
Elliott Boyd, 16, Sophomore, Stuttgart High School, Stuttgart, Arkansas,
T: Katherine Yancey

Hot Springs, USAR07, West Central Regional Science fair

MCRO004 **Antibiotic Resistance Genes Identified in the Thermal Hot Springs National Park
Public Water**
Sydney Lynne Hammond, 18, Senior, Arkansas School for Mathematics, Sciences
and the Arts, Hot Springs, Arkansas, T: Patrycja Krakowiak

PLNT004 **Post-Fire Bryophyte Dynamics in a Temperate Mixed Forest**
Charlotte Elizabeth Boehme, 18, Senior, Arkansas School for Mathematics, Sciences
and the Arts, Hot Springs, Arkansas, T: Lindsey Waddell

TMED009 **Investigating the Role of Rev1 in Maintaining Accurate DNA Replication Past G4
Containing Regions in the Leading and Lagging Strands**
Shreyam Tripathi, 18, Senior, Arkansas School for Mathematics, Sciences and the Arts,
Hot Springs, Arkansas, T: Patrycja Krakowiak

Conway, USAR50, Arkansas State Science Fair

ANIM046T **Examination of the Variability of Fall Armyworm Infestations in Arkansas
and the Potential for Biopesticide Treatment of Soybeans**
Drew Johnson, 17, Senior, Alyssa Nicole Thomas, 18, Senior, Arkansas School for
Mathematics, Sciences and the Arts, Hot Springs, Arkansas, T: Lindsey Waddell

CBIO041 **Tracking COVID-19 Variants of Concern in Wastewaters of Central Arkansas**
Olya Sophia Tryndyak, 15, Sophomore, Little Rock Central High School, Little Rock,
Arkansas, T: Beth Maris

ENEV070 **A Smart Sponge to Control Oil and Chemical Spills**
Ahona Ghosh, 16, Sophomore, Little Rock Central High School, Little Rock, Arkansas,
T: Patrick Foley

ETSD052 **The Effects of Variable Rotor Pitch on Axial Compressor Efficiency**
Joshua Peter McNeil, 17, Junior, Little Rock Central High School, Little Rock, Arkansas,
T: Mary Maris

PLNT045T **Development of a Novel AI Soybean Root-Knot Nematode Stress Assessment
(NASRKNSA) Model in Soybean Plants (Both Field and Home-Grown)**
Amanda Navarro, 17, Senior, Charis Xiong, 18, Senior, Arkansas School for Mathematics,
Sciences and the Arts, Hot Springs, Arkansas, T: Nicholas Seward T: Nicholas Seward

TMED059 **Identifying Novel Drugs to Inhibit APOE4 as a Therapeutic Intervention
for Treating Alzheimer's**
Geethika Atluri, 16, Sophomore, Little Rock Central High School, Little Rock, Arkansas,
T: Beth Maris

CALIFORNIA

Los Angeles, USCA02, Los Angeles County Science and Engineering Fair

CHEM057T **Conversion of Carbon Dioxide to Versatile Green Chemicals With Isoreticular
Metal-Organic Frameworks**
Sehoon Kang, 18, Junior, Zhehao Zhang, 17, Junior, Webb School of California,
Claremont, California, T: Lisa Nacionales

- TMED070** **New Generation Drug Development Pipeline From in silico Identification to Preclinical Evaluation for Novel Drug Candidates in Glioblastoma**
Mahesh Arunachalam, 17, Junior, Crescenta Valley High School, La Crescenta, California, T: Orenda Tuason
- Fresno, USCA03, Fresno County Science Fair**
- BCHM020** **Anti-Androgen Therapeutic Agents: Use of PTLC and Microplate Counting to Measure Isolates From Four Promising California Indigenous Plants on Anti-Proliferation in LNCaP, DU145, PC-3, and 22Rv1 Prostate Cancer Cell Models**
Eva Yihao Chen, 17, Senior, University High School, Fresno, California, T: Brenda Royce
- CBIO025** **Identifying Novel miRNA Targets and Therapeutics Through A Network-Based Computational Pipeline**
Jaspreet Kaur Sahota, 15, Sophomore, Sanger West High School, Fresno, California, T: Joel Orellana
- CHEM033** **Development of a Rapidly Calculating Energy Gap (rCEG) AI Model for Instantaneous Determination of the HOMO-LUMO Gap**
Isaac Jian Wang, 17, Senior, Clovis North High School, Fresno, California, T: Kay Barrie
- EGSD042T** **Landfills and Methane: A One Year Study Into Actual and Controlled Bioreactor Production of Methane Using G.E.M.**
Jacqueline Diana Rocha, 17, Junior, Breann Marie Amarante, 16, Junior, Fowler High School, Fowler, California, T: Stephanie Salas
- Sacramento, USCA04, Sacramento Regional Science and Engineering Fair**
- CHEM052** **The Effect of Superabsorbant Polymer on Soil Heavy Metal Immobilization**
Pranavi Khanna, 18, Senior, Mira Loma High School, Sacramento, California, T: Mark Porter
- EGSD045** **Pura Aer 2: Dual-Stage, Energy-Efficient, Modular Air Purifier System, Inspired Porifera To Improve Air Quality**
Jordan Prawira, 16, Junior, Mountain House High School, Mountain House, California, T: Steven Geuss
- ENBM062** **Enabling Verbal Communication Through a Novel Usage of Brain-Computer Interfaces for the Differently Abled**
Rishabh Vijay Ambavanekar, 17, Junior, Vista del Lago High School, Folsom, California, T: Jessica Abulencia
- Bonita, USCA05, Greater San Diego Science and Engineering Fair**
- CBIO029** **Improved Generalizability and Performance on Small Datasets Using Hyper-Connected Neural Architectures, C. elegans-Inspired Networks, and Evolutionary Modeling**
Agastya Sridharan, 17, Junior, Scripps Ranch High School, San Diego, California, T: Patty Fowler
- CBIO030** **Investigating the Underlying Molecular Patterns in Aggressive Brain Tumor ETMR to Develop a Robust Diagnostic Prediction Model**
Saanvi Dogra, 15, Freshman, Del Norte High School, San Diego, California, T: Andrea Callicott
- ENEV086** **Utilizing 3D-Printed Engineered Living Materials To Break Down Environmental Pollutants**
Sanjana Kumar, 17, Junior, Francis Parker School, San Diego, California, T: J.P. Pierce
- MCRO048** **A Self-Disinfecting Nanomaterial for Future Space Travel**
Kara Fan, 18, Senior, Westview High School, San Diego, California, T: Scott Halandar
- PLNT033** **Reducing Lead Contamination Through Hydroponically-Grown Mycorrhizal Plants**
Kate Xu, 15, Sophomore, Del Norte High School, San Diego, California, T: Briana West
- ROBO039T** **A Differentially-Geared, Omnidirectional Robotics Platform With Autonomous Jerk-Limited Navigation**
Logan Mars Brown, 16, Sophomore, Nicholas Usher, 17, Junior, High Technical High North County, San Marcos, California, T: Caroline Sailor
- Novato, USCA06, Golden Gate STEM Fair**
- ROBO058** **AI-Based English to American Sign Language (ASL) Translation Enabled by the Largest Continuous ASL Dataset**
Yehong Jiang, 16, Sophomore, The Nueva School, San Mateo, California, T: Mark Hurwitz
- TMED060** **Designing a Novel Primer Blocker Using Bioconjugation of Single Stranded Binding Protein and Oligonucleotides for Improved KRAS Mutation Detection**
Katie Sun, 17, Junior, Crystal Springs Uplands School, Hillsborough, California, T: Justin Thompson

Burlingame, USCA07, Synopsys Silicon Valley Science and Technology Championship presented by the Santa Clara Valley Science and Engineering Fair Association

- ANIM042 BeeWell: Developing an AI-Based Bee Health Assessment System Utilizing Computer Vision and Acoustic Signal Processing**
Andrew Y. Liang, 16, Sophomore, The Harker School, San Jose, California,
T: Anuradha Datar
- CBIO047 Crucial Pathogenic Role of Elevated Mast Cells in Pulmonary Fibrosis Revealed by Single-Cell RNA-Sequencing Analysis**
Tiffany Chang, 18, Senior, The Harker School, San Jose, California, T: Chris Spenner
- CBIO048 RandomRibo: A Novel Tool for Transcript-Level Ribosome Velocity Determinant Identification With Single Codon Resolution**
Roshni Parulekar-Martins, 17, Senior, Homestead High School, Cupertino, California,
T: Daniel Nunez
- CBIO049 A Model to Optimize Subthalamic Deep Brain Stimulation for Parkinson's Disease**
Ananya Dasaka, 16, Junior, Silver Creek High School, San Jose, California,
T: James Staten
- CELL047 Quantification and Optimization of Circular RNA Stability for Improved RNA Therapeutics**
Reshma Kosaraju, 17, Junior, The Harker School, San Jose, California, T: Eric Johnson
- EAEV067 A Novel Physics Based Predictive Model for Wetland Eutrophication**

Vedant Venkatasai Janapaty, 17, Junior, Silver Creek High School, San Jose, California,
T: Bich Nguyen
- EBED036 Tactical Drone Detection and Tracking Using Machine-Learned Radio Interferometry: Lessons From Ukraine**

Roy Gross, 18, Senior, Henry M. Gunn High School, Palo Alto, California,
T: James Lincoln
- ENBM072 OctoGrasp: The Design and Construction of a Cephalopod-Inspired Prosthetic Arm**
Daniel Edison Siegel, 18, Senior, Palo Alto Senior High School, Palo Alto, California,
T: Matthew Rossillon
- PHYS055 Discovering Gravitationally Lensed Galaxies Using a Vision Transformer Image Classification Model Trained on Synthetic and Real Data**
Gauri Todur, 15, Freshman, Santa Clara High School, Santa Clara, California,
T: Suzanne Miller Moody
- PHYS056 Discovery of the Smallest Ever Ultra-Short-Period Planet Using Novel Phase Folding Detection System Parallelized on a Cheap GPU**
Kaitlyn Wang, 17, Junior, The Harker School, San Jose, California, T: Chris Spenner
- TMED061 HDformer: A Higher Dimensional Transformer With a Novel Time Square Attention Mechanism Utilizing Long Range Vascular Signals for Diabetes Detection, and an AI-Based PPG Wearable**

Ella Selina Lan, 16, Junior, The Harker School, San Jose, California, T: Eric Nelson
- TMED067 BioRx: An Integrative NLP Approach to Early Survival and Recurrence Prediction and Novel Biomarker Discovery in Unstructured Text-Based Clinical Narratives for Diabetes Patients**

Snikitha Banda, 17, Senior, Notre Dame High School San Jose, San Jose, California,
T: Chelsey Beck
- Walnut Creek, USCA08, Contra Costa County Science and Engineering Fair**
- ANIM028 The Effect of Neonicotinoids on the Positive Transfer of Learning in Honeybees**
Charisse Zou, 17, Junior, Dougherty Valley High School, San Ramon, California,
T: Jennifer Cincotta
- ENBM031 Female: Diagnostic and Evaluation System for Anemia in Teenage Girls Due to Their Menstrual Cycle**
Krisha Singhani, 15, Sophomore, Monte Vista High School, Danville, California,
T: Preeti Singhani
- MATS026 CLAMP: A Contrastive Language and Molecule Pre-Training Network for Scaling Artificial Photosynthesis Candidate Identification**
Neel Redkar, 18, Senior, Dougherty Valley High School, San Ramon, California,
T: Minu Basu

Danville, USCA09, The Alameda County Science and Engineering Fair

- BEHA045T** **SEL-Pet: An Innovative Eye-Tracking and Audio Hybrid System for ASD Early Detection**
Alec Zhang, 16, Junior, Jingjing Liang, 14, Freshman, The Harker School, San Jose, California, T: Eric Johnson T: Miriam Allersma
- BMED053** **Novel Strategies for the Reversal of Cancer Cell Immortality**
Samuel Wu, 17, Senior, Dublin High School, Dublin, California, T: Julianne Sundstrom
- CHEM055** **The Effect of Copper-Aluminum Bimetallic Metal Organic Framework Based Electrode on the Energy Stored in a Supercapacitor**
Aditi Bharadhwaj Kiran, 16, Sophomore, BASIS Independent Fremont, Fremont, California, T: Zeynep Araci
- EGSD055** **Arduino-Controlled Photobioreactor Algal Microbial Fuel Cell With Conveyor Belt Cathode for Boosted Biofilm Growth and Heavy Metal Removal**
Anwasha Ghosh, 17, Junior, Dublin High School, Dublin, California, T: Trevor Johnston
- ENBM080T** **Development of 3D Printed Soft Origami-Inspired AI-driven Millirobot for Biomedical Applications**
Victor Luo, 15, Freshman, James Charlie Gu, 16, Sophomore, Nathan Xu, 16, Junior, Mission San Jose High School, Fremont, California, BASIS Independent Fremont, Fremont, California, Saint Francis High School, Mountain View, California, T: Oana Seremeta T: Anuj Chaudhri T: Chihiro Ikezi
- ENEV072** **Effects of RootPipes on Landfill Gas Emissions**
Kennessa Garg, 17, Junior, American High School, Fremont, California, T: Natalia Fernandes-Rossi

Palos Verdes Peninsula, USCA10, Palos Verdes Peninsula Unified School District Science and Engineering Fair

- CELL021T** **The Development of the C2F Seawater to Freshwater Converting Bioplant**
Anna Peti-Peterdi, 17, Junior, Lena Peresztegi, 15, Freshman, Daniel Peresztegi, 16, Junior, Palos Verdes High School, Palos Verdes Estates, California, T: Julie Munoz
- ENBM021** **Hydrogel-Assisted Brain Transplantation of HOXA3-Expressing Endothelial Progenitor Cells for Brain Repair After Stroke**
Christine Xie, 17, Junior, Palos Verdes High School, Palos Verdes Estates, California, T: Julie Munoz
- ETSD002** **A Novel Control System for Autonomous Quadcopter Navigation**
Anish Anand, 15, Freshman, Palos Verdes Peninsula High School, Rolling Hills Estates, California, T: Mark Greenberg
- ROBO007** **A Novel Super-Resolution AI Engine and Multi-Stage Abnormality Detection Pipeline for Early Blindness Prevention**
Justin Liu, 17, Senior, Palos Verdes Peninsula High School, Rolling Hills Estates, California, T: Mark Greenberg
- ROBO008** **Designing and Constructing an Automatic, Non-Electrical Dependent Cardiopulmonary Resuscitation Machine Gen 2.0**
Andreas John Tempereau, 17, Senior, Palos Verdes High School, Palos Verdes Estates, California, T: Julie Munoz
- SOFT006** **SuperVision: A Novel Integrated Sensing and Computational Framework to Enable Superhuman Epiretinal Prostheses**
William Huang, 18, Senior, Palos Verdes Peninsula High School, Rolling Hills Estates, California, T: Mark Greenberg

Santa Cruz, USCA11, Santa Cruz County Science and Engineering Fair

- EBED037** **Low-Cost Solar Powered Water Quality Monitoring Device With 24/7 Uploading to Public Access Website**
Jack Driscoll-Natale, 17, Junior, Pacific Collegiate School, Santa Cruz, California, T: Wayne Conley
- ENEV073** **How Can PLA Degrade in an Aerobic Home Compost?**
Hazel Campbell, 14, Freshman, Pacific Collegiate School, Santa Cruz, California, T: Elliott Campbell

Salinas, USCA12, Monterey County Science and Engineering Fair

MCRO039 **Analysis of Osmoadaptation Systems in *C. reinhardtii* in Response to Osmotic Stress Produced by Toxic Brine Dumping Cycles**

Rithik Bhushan, 16, Junior, Monterey High School, Monterey, California, T: Jason Nicholson

San Bernardino, USCA13, San Bernardino, Inyo, Mono, (SIM) Science and Engineering Fair

BMEDO41 **Developing a Preventative Treatment for Age-Related Macular Degeneration**

Snow Cameron, 16, Junior, Upland High School, Upland, California, T: Christopher Morgan

CELL040 **A New Method to Assess Cytotoxicity of Osteoblasts Exposed to EDTA**

Isabella Lepe, 17, Senior, Wilmer Amina Carter High School, Rialto, California,
T: Catherine Sanchez

MATH033 **Optimizing the Build Parameters of a Linear Delta Robot**

Zahed Siddiqui, 16, Junior, Los Osos High School, Rancho Cucamonga, California,
T: Lawrence Su

ROBO054T **Color and Object Detection for the Blind**

Priscilla Elena Munoz, 16, Sophomore, Danaya Jaslene Figueroa, 16, Sophomore,
Grand Terrace High School, Grand Terrace, California, T: Matthew Johnson

Riverside, USCA15, Riverside County Science and Engineering Fair

BCHM018T **Refining the Analysis and Tracking of Cell Behavior to Improve Understanding on How Metabolites Impact Glioblastoma Cell Lines**

Sungwon Hur, 17, Junior, Moises Yul Hur, 17, Junior, Martin Luther King High School,
Riverside, California, T: Michele Hampton

CHEM034 **Synthesis and In-Depth Evaluation of Degradable Copolymers via Cyclic Ketene Acetal Incorporation**

Angelina Yang, 16, Junior, Eleanor Roosevelt High School, Eastvale, California,
T: Kelly Howell

MCRO033 **Natural vs. Synthetic Antibiotics in Battling *E. coli* Bacteria**

Brooke Jayenna Vansuch, 16, Sophomore, Temescal Canyon High School, Lake Elsinore,
California, T: Julie Beckius

Bakersfield, USCA16, Kern County Regional Science Fair

BEHA031 **The Effect of Ergonomics on Students' Performance**

Aarohi R. Patel, 17, Junior, Stockdale High School, Bakersfield, California, T: Jill Reynolds

ENBM036 **3D Printed Silicone Wound Care Dressing With Carbon Composite Structure Containing Porous Fibers for Reinforcement and Uniform Biocide Delivery**

Harjaisal Singh Brar, 17, Junior, Stockdale High School, Bakersfield, California,
T: Jill Reynolds

Camarillo, USCA17, Ventura County Science Fair

BEHA048 **The Feasibility and Public Perception of Implementing AED Drones Into EMS Systems**

Emily Irene Bryant, 17, Junior, Thousand Oaks High School, Thousand Oaks, California,
T: Felix McGinnis

Los Angeles, USCA50, California Science & Engineering Fair

ANIM053 **Development of a Predictive Model of Honey Bee Foraging Activity Under Different Climate Conditions**

Vince Wu, 15, Sophomore, Palo Alto Senior High School, Palo Alto, California, T: Sefika Eris

CBIO067 **Lipid Bilayer Bending Due to Membrane-Protein Interactions: A Computational Investigation**

Nandana Madhukara, 16, Sophomore, Canyon Crest Academy, San Diego, California,
T: Christopher Lee

ENEV082 **Testing the Effectiveness of a Bioplastic Layer Bonded to Natural Chelating Agents on the Minimization of Lead Iodide Leaching in Perovskite Solar Cells and a Novel Antireflective Coating Derived From Corn and Lotus Leaf Imprints on the Cell**

Sasha Masson, 17, Junior, The Harker School, San Jose, California, T: Michael Pistacci

COLORADO

Alamosa, USCO01, San Luis Valley Regional Science Fair, Inc.

ENBM037 **Utilizing 3D Printing Technology to Engineer Prosthetic Human Heart Valves**

Claire Andrea Seger, 16, Sophomore, Monte Vista High School, Monte Vista, Colorado,
T: Loree Harvey

Brush, USCO03, Morgan-Washington Bi-County Science Fair

PHYS011 Performance of Pyramidal Airfoils With Wings in an Oscillating Wind Tunnel
Bailey Terese Link#, 18, Senior, Parker Erik Stone, 18, Senior, Brush High School,
Brush, Colorado, T: Erik Stone

Colorado Springs, USCO04, Pikes Peak Regional Science Fair

EGSD011 Buoy Wave Energy Converters Capture of Ocean Wave Energy
Natalie Elizabeth Muro, 15, Freshman, William J. Palmer High School, Colorado
Springs, Colorado, T: Nathaniel Lohmann

**EGSD022 Electrify Your Step — The Next Stride: Converting Foot Traffic Into Renewable
Energy Using Piezoelectric Transducers**

Shrey Rohilla, 16, Sophomore, The Classical Academy - North, Colorado Springs,
Colorado, T: Jennifer Smith

MCRO011 Am I Effective?

Vanya Lavu, 16, Sophomore, The Classical Academy - North, Colorado Springs,
Colorado, T: Sophia Smith

La Junta, USCO07, Arkansas Valley Regional Science Fair

**ANIM030T How Qualities of Soil Affect Where *Aphonopelma hentzi* Burrow
in the Colorado Grassland**

Everett Armstrong Ediger, 16, Junior, Zoey Alyson Montoya, 16, Sophomore, La Junta
High School, La Junta, Colorado, T: Julia Barta

Joes, USCO08, Northeast Colorado Regional Science Fair

ANIM013 The Effect of Light and Fertilizer Exposure on Planaria Regeneration

Nayla Ramos Vega, 15, Sophomore, Yuma High School, Yuma, Colorado,
T: Amy Melby

Boulder, USCO09, Corden Pharma Colorado Regional Science Fair

**EGSD012 Investigating Natural Hydrogels to Sustain Bioluminescent Algae for Sustainable
Lighting and CO₂ Removal**

Amrita Saini, 17, Junior, Peak to Peak Charter School, Lafayette, Colorado,
T: Robert Hettmansperger

**PHYS012 Effect of Different Rover Wheel Materials on Triboelectric Charge of Lunar
Simulant Dust Particles**

Alexandra Flint, 18, Senior, Peak to Peak Charter School, Lafayette, Colorado,
T: Robert Hettmansperger

SOFT012 American Sign Language Translator

Liam Patrick Sweeney, 18, Senior, Centaurus High School, Lafayette, Colorado,
T: Nicholas Cady

Denver, USCO10, Denver Regional Science and Engineering Fair

BEHA012 Analyzing Data of Data Analysis of Analyzed Data About Exoplanets

Evelyn Patricia Seevers, 14, Freshman, Conifer High School, Conifer, Colorado,
T: Stephanie Seevers

**BMED010 Evaluating the Performance of Natural and Commercial Moisturizers for Dry Skin:
A Study Using Agar Agar Skin Model**

Vignesh Velmurugan, 15, Freshman, Cherry Creek High School, Greenwood Village,
Colorado, T: Kalpana Velmurugan

ETSD070 A New Rocket Nozzle Design To Improve Performance at High Altitudes

Ersel Ozan Serdar, 15, Sophomore, Cherry Creek High School, Greenwood Village,
Colorado, T: Ethan Dusto

Pueblo, USCO11, Southern Colorado Regional STEM Fair

ETSD069 R.O.T. (Rate of Travel) Slide

Kenneth Clayton Zittel, 17, Junior, Central High School, Pueblo, Colorado,
T: Jamie Withnell

Fort Collins, USCO50, Colorado Science and Engineering Fair

**ANIM029 The Efficacy of Abiotic/Biotic Factors and Trap Design for Effective Capture
of Invasive American Bullfrog Tadpoles (*Lithobates catesbeianus*)**

Marissa Lilianna Martinez, 18, Senior, Monte Vista High School, Monte Vista,
Colorado, T: Loree' Harvey

- CBIO062** **A Novel Phosphosite Localization Approach Using Tandem Phosphoprotein Mass Spectra and Temporal Dilated Networks**
Margaret Madeleine Arthur, 17, Junior, Fairview High School, Boulder, Colorado,
T: Paul Strode
- ETSD063** **Moon-Opoly II: Employing Additive Manufacturing Technology for Lunar Construction With Waterless Concrete**
Nathaniel Ellis, 16, Junior, Durango High School, Durango, Colorado, T: Ann Drummond
- PLNT052** **The Effect of Heavy Metal Toxicity on *Solanum tuberosum*, *Cucurbita pepo*, *Medicago sativa*, and *Capsicum annuum* Plants Inoculated With Mycorrhizae**
Carlos Antonio Ochoa-Marquez, 18, Senior, Monte Vista High School, Monte Vista, Colorado,
T: Loree' Harvey
- TMED013** **Model Validation and Preclinical Testing of Digestive Enzymes for Gluten Breakdown: A Move to Cure Gluten Intolerance and Celiac Disease**
Aditi Avinash, 16, Junior, Rock Canyon High School, Littleton, Colorado, T: Susanne Petri

CONNECTICUT

Sandy Hook, USCT50, Connecticut Science & Engineering Fair

- CBIO027** **Cell Type-Specific Expression of the Molecular Players in Mouse Prefrontal Cortex During Cocaine Addiction**
Eric Jiyu Teng, 17, Junior, Kent School, Kent, Connecticut, T: Jesse Klingebiel
- EBED024** **A Self-Stabilizing Haptic Accessibility Mouse for Parkinson's Sufferers**
Jingyuan Zhang, 17, Sophomore, Choate Rosemary Hall, Wallingford, Connecticut,
T: Jan Cook
- ENEVO43** **Concurrent Removal of Rising, Soluble Ocean Carbon Dioxide and Oil-in-Water Contaminants via Multi-Functional Remediation Framework**
Naomi Park, 17, Junior, Greenwich High School, Greenwich, Connecticut,
T: Andrew Bramante
- ETSD037** **Eco-Navigator: Novel Routing Software Optimized to Reduce Greenhouse Gas Emissions and Generate Fuel Savings for Wind-Assisted Ships**
Thomas Ewald, 17, Junior, Brunswick School, Greenwich, Connecticut, T: Dana Montanez
- MCRO032** **Knockdown of the Essential 23S rRNA Methyltransferase, *rv3579c*, Increases the Susceptibility of Mycobacterium Tuberculosis to Macrolides**
Yuriy Sandmeier, 19, Senior, King School, Stamford, Connecticut, T: Victoria Schulman
- ROBO038T** **ParkBD: A Novel Multi-Modal Deep Learning Framework for Parkinson's Disease Severity Prediction and Treatment Using Clinical and Blood-Based Biomarker Data**
Diya Girish Kumar, 16, Junior, Shriya Jonnalagadda, 17, Junior, Brookfield High School, Brookfield, Connecticut, T: Jonathan Neuhausel
- TMED035** **Non-Invasive Pre-Screening Approach for Early Detection of the Human Papillomavirus (HPV) to Aid in Cervical Cancer Prevention in Underrepresented Demographics**
Ana-Lois Davis, 18, Junior, Academy of Aerospace and Engineering, Windsor, Connecticut,
T: Michelle Bellinger

FLORIDA

Okeechobee, USFL01, Heartland Regional Science and Engineering Fair

- CELL004** **FadA-Secreting Fusobacterium nucleatum Promotes Inflammatory and Immunomodulatory Response in Colorectal Cancer (Year 2)**
Angela Huang, 17, Senior, Sebring High School, Sebring, Florida, T: Amy Bubb
- EAEVO23** **Do Cattle That Graze Off of Farmfields That Have Been Farmed With Plastic Mulch Have Microplastics in Them?**
Laina Marie Canary, 16, Sophomore, Hardee Senior High School, Wauchula, Florida,
T: Robert Beatty

Deland, USFL04, Tomoka Region Science and Engineering Fair

- ENEVO07** **Recycling Polyethylene Terephthalate to Reduce Plastic Waste**
Lehigh Acres, USFL05, Thomas Alva Edison Kiwanis Science and Engineering Fair
- BMED029** **Development of a Low-Cost Machine Learning Diagnostic Device and Medical IoT Application as a Novel Approach to Combating Retinal Diseases**
Aum Jaykumar Dhruv, 18, Senior, Fort Myers High School, Fort Myers, Florida,
T: Anthony Sangermano

- CELL037** **Determining the Effect of Acetic Acid on Alginate Bead Membrane Permeability to Aid the Implementation of Allogeneic Transplantation Without Immunosuppression**
Megan D'Souza, 16, Sophomore, Community School of Naples, Naples, Florida,
T: Kelly Percivall
- EAEV034** **Utilizing Nutrient Enriched Biologically Activated Bioremediation Units as a Soil Amendment in a Cyclic Remediation System (A Novel Fifth Year Study)**

Morgan Taylor Barnes, 18, Senior, Canterbury School, Fort Myers, Florida,
T: Kati Morris
- ENBM042** **Corneal Applanation Scleral Buckling Model (C.A.S.B.M)**
Sonia Patel, 16, Junior, Community School of Naples, Naples, Florida,
T: Kelly Percivall
- ENEV041** **Using *Chlorella vulgaris* and *Spirulina major* To Create an Open System Bioreactor Generating Electricity While Running an Air Purification and CO₂ Sequestration System (A 3rd Year Study)**
Amaya Jennifer Etcheverry, 16, Junior, Community School of Naples, Naples, Florida, T: Kelly Percivall
- ROBO034** **Optimizing Traffic Flow: Implementing Neural Networks and Deep RL Machine Learning Algorithms to Make Traffic Management More Effectual**
Dhruva Sharma, 16, Sophomore, Fort Myers High School, Fort Myers, Florida,
T: Anthony Sangermano
- Port St. Lucie, USFL06, St. Lucie County Regional Science and Engineering Fair**
CHEM023 **Color Wave- Investigating the Impact of Organic Dyes on Dye Sensitized Solar Cell Performance**
Dominique Thomas, 18, Senior, Treasure Coast High School, Port St. Lucie, Florida, T: John Williams III
- Valparaiso, USFL07, Panhandle Regional Science and Engineering Fair**
EAEV035 **Reducing Coral Bleaching Using Natural Resources and a Self-Sufficient Solar-Powered Filtration System (Year 4)**

Marisol Rose Enguidanos, 17, Junior, Niceville High School, Niceville, Florida,
T: Scarlett Brock
- MATH029** **Folding the Future: An Innovative Approach to Solving the Supply Chain Crisis With Geometry**
Aurora Mendenhall, 16, Junior, Niceville High School, Niceville, Florida,
T: Scarlett Brock
- Gainesville, USFL08, Alachua Region Science and Engineering Fair**
ENEV009 **Iron-Modified Biochar Recovers Phosphorus From Wastewater as Fertilizer Through Column Filters and Flow Reactors (Year 2)**
Angela Li Gao, 17, Senior, F. W. Buchholz High School, Gainesville, Florida,
T: Marc Moody
- Ft Lauderdale, USFL09, Broward Regional Science & Engineering Fair**
BEHA046 **The Effect of Intermittent Metabolic Switching (IMS) on the Cognitive and Behavioral Abilities of Mutant *Drosophila*, Leading to Brief Synaptic Neuroplasticity as an Alzheimer's Model**
Emma Marie Colarte Delgado, 16, Sophomore, American Heritage School, Plantation, Florida, T: Leya Joykutty
- MATS050** **3D Printing Personalized Knee Implants: Novel Computational Geometric Models for Stem Cell Regeneration in Meniscus Tears**

Calvin Thomas Mathew, 16, Sophomore, American Heritage School, Plantation, Florida, T: Leya Joykutty
- PLNT048** **Mitigation of Decreased Protein Synthesis Under Elevated Carbon Dioxide in *Arabidopsis thaliana* Using Transgenic and Exogenous Approaches**
Jacob Noah Federici, 17, Junior, American Heritage School, Plantation, Florida,
T: Leya Joykutty

- ENBM012** **Detecting Myofascial Tightness in the Lower Extremities**
Sophia Marie Weiner, 17, Junior, Holy Trinity Episcopal Academy, Melbourne, Florida,
T: Daniel Angotti
- ENEV076** **Engineering a Completely Biodegradable Water Treatment System To Reverse Eutrophication in Leachate Canals That Lead Into the Indian River**
Robert Zrallack, 18, Senior, Titusville High School, Titusville, Florida, T: Jason Rowe
- West Palm Beach, USFL29, Palm Beach Regional Science and Engineering Fair**
- ANIM051** **The Effect of Type 2 Diabetic Treatment on the Morphology of the Offspring of *D. melanogaster***
Lia Lapidot, 18, Senior, American Heritage School of Boca Delray, Delray Beach, Florida,
T: Brittnee McDole
- CBIO069** **Computational Analysis of Human Antibody Repertoires To Inform Design of HIV-1 Vaccines**
Ava Allwardt, 17, Junior, Saint Andrew's School, Boca Raton, Florida, T: Michael Farzan
- EGSD059** **Effects of Artificial Algal-Bacterial Symbioses (*E. coli* K-12, *C. freundii*, & *E. coli* MC4100) on Microbial Hydrogen Production**
Samara Rashid, 18, Senior, American Heritage School of Boca Delray, Delray Beach, Florida, T: Brittnee McDole
- ENEV078** **O.D.O.B.A**
Isabella Lackner, 16, Sophomore, Florida Atlantic University High School, Boca Raton, Florida, T: Katherine Hendrickson
- TMED077** **Investigating the Effects of Vinblastine Sulfate Combined With Alpha Tocopheryl Succinate on A549 Lung Cancer Cells and Prostate Cancer Cells**
Rohith Karthik, 17, Senior, American Heritage School of Boca Delray, Delray Beach, Florida, T: Britnee McDole
- TMED078** **The Effect of Nicotinamide on the Il-6 Expression and Cell Count of Barrett's Esophagus Expressing Cells**
Sruthi Sai Balasubramanian, 18, Senior, American Heritage School of Boca Delray, Delray Beach, Florida, T: Brittnee McDole
- TMED079** **Analyzing the Effects of Turmeric & Curcumin on Tau Aggregation & Amyloid Beta Plaques on *Caenorhabditis elegans* and Its Further Implications Into Alzheimer's Disease**
Aayushi Ranjan, 16, Junior, American Heritage School of Boca Delray, Delray Beach, Florida, T: Brittnee McDole
- Land O' Lakes, USFL30, Pasco Regional Science and Engineering Showcase**
- MCRO007** **Preventing Surgical Site Infections: Designing a Novel Post-Surgical Treatment Using Silver Nitrate and Ayurvedic Extracts in Combination With DNA Sequence Analysis**
Meghna Manjith, 17, Junior, Wiregrass Ranch High School, Wesley Chapel, Florida,
T: Branden Anglin
- PLNT008** **An Innovative Approach to Promoting Lignin Biosynthesis in *S. lycopersicum* Using Sound Waves**
Caroline McHale, 17, Senior, Wiregrass Ranch High School, Wesley Chapel, Florida,
T: Branden Anglin
- Vero Beach, USFL31, Indian River Regional Science and Engineering Fair**
- MCRO003** **Identifying, Cloning, and Validating a Lysin Gene Into *E. coli***
Elizabeth Claire De Schouwer, 17, Senior, Vero Beach High School, Vero Beach, Florida,
T: Nicole Mosblech
- Sarasota, USFL32, Sarasota County STEM Fair**
- BCHM035** **How Will the Population of Human Gut Microbe *Lactobacillus fermentum* Be Affected by Exposure to Macromolecules Glycerol, Zein, and Gliadin?**

Rylee Lynn Mulhollen, 18, Senior, Sarasota High School, Sarasota, Florida,
T: Andrew Harshman
- MCRO064** **Wastewater Treatment Chemicals' Effect on *Escherichia coli* WP2 pKM101 Mutation & Antibiotic Resistance Genes**

Nicholas Wright Cox, 17, Senior, Sarasota High School, Sarasota, Florida,
T: Andrew Harshman

Jacksonville, USFL10, Northeast Florida Regional Science and Engineering Fair

ANIM006 The Role of VEGF-B and NRP-1 Axis in Regulating Mitochondrial Homeostasis in Ischemic Heart Disease

Riya Kar, 17, Junior, The Bolles School, Jacksonville, Florida, T: Kathryn Halloran

BEHA017 Spark Care+: Personalized Music Therapy for Relaxation and Energizing Using a Mobile and AI Approach

Sarah Chaeyoon Park, 15, Sophomore, The Bolles School, Jacksonville, Florida, T: Kathryn Halloran

CBIO005 Utilizing Unsupervised Machine Learning to Derive and Analyze Therapeutically Insightful Regions of Bacteriophage Genomes

William Robert Rosenberg, 17, Junior, Episcopal School of Jacksonville, Jacksonville, Florida, T: Marion Zeiner

Newberry, USFL11, Suwannee Valley Regional Science and Engineering Fair

ANIM023 How Do Moon Phases Affect the Calving Rate in Dairy Cattle?

Gloria Lynn Gilliam, 17, Junior, Lafayette High School, Mayo, Florida, T: Case Emerson

Bartow, USFL12, Polk Region Science and Engineering Fair

PLNT029 Impact of Methylene Blue Dye on Response of *Solanum lycopersicum* to Stress Caused by High Salinity

Ellen Rose Jones, 18, Senior, Haines City IB East, Lake Wales, Florida, T: Anna Clarke

Viera, USFL13, Brevard South Science and Engineering Fair

CHEM006 Novel Red Blood Cell Membrane-Wrapped Septenary High-Entropy-Alloy Nanoparticles for Photothermal Osteosarcoma Treatment, Year 2

Laya Damaraju, 18, Senior, West Shore Junior/Senior High School, Melbourne, Florida, T: Mary Schropp

EAEV010 Muck Accumulation and Nutrient Cycling Within Salt Wedge Zones in the Indian River Lagoon: A Second Year Study

Ava Auter, 18, Senior, West Shore Junior/Senior High School, Melbourne, Florida, T: Mary Schropp

EBED008 3rd-Eye: A Novel Embedded System for Driver Attentiveness Monitoring Using Data Fusion and Machine Learning (Year 2)

Pranav Ponnusamy, 17, Junior, West Shore Junior/Senior High School, Melbourne, Florida, T: Sally Kempfer

Satellite Beach, USFL14, Brevard Intracoastal Regional Science and Engineering Fair

ENEV021 An Engineered Hub & Spoke System to Seek & Destroy HABs (Year 4)

Sharanya Natarajan, 15, Freshman, Edgewood Junior Senior High School, Merritt Island, Florida, T: Meredith Reninger

PLNT024 Targeted Mutagenesis of the Arabidopsis deoxyhypusine Synthase Gene via CRISPR/Cas9 Enzyme Engineering Generating an Increase in Carbon Sequestration and Photosynthetic Rate

Samantha Ariel Cohen-Pinsky, 18, Senior, Satellite High School, Satellite Beach, Florida, T: Magdalena Molledo

TMED007 Seaweed and Spheroids: Investigating the Maintained Anti-Cancer Efficacy of the Seaweed Extract Fucoidan Against Adenocarcinoma Cultured Two and Three Dimensionally, Year III

Jeremiah Feizi, 17, Senior, Satellite High School, Satellite Beach, Florida, T: Loren Kingsley

Coral Gables, USFL15, South Florida Science and Engineering Fair

ANIM005 Burmese Python Sightings and Temperature Extremes and Fluctuations

Elena Kristina Beck, 15, Freshman, Coral Reef Senior High School, Miami, Florida, T: Lauriann Carbajal

BMED003 SOX7: Novel Autistic Gene Identified Through Analysis of Multiomics and Human Brain Organoids

Jane Zhao, 17, Junior, School for Advanced Studies - South, Miami, Florida, T: Dahis Manzanares

- EAEV008** **Hurricane Rapid Intensification Convolutional Neural Network: A Novel Deep Learning Model for Predicting Tropical Cyclone Rapid Intensification Using 20 Years of Satellite Rainfall Data**
Sunny You, 16, Junior, Miami Palmetto Senior High School, Pinecrest, Florida, T: Pamela Shlachtman
- EAEV084T** **The Resilience of *Daphnia* to Liquid Household Products**
Elif Kaya, 18, Senior, Isis Penelope San Martin, 18, Senior, Eduardo Alfaro, 18, Senior, Downtown Doral Charter Upper School, Doral, Florida, T: Merly Ovares T: Merly Ovares
- MATH008** **A Logistic Regression Model Representing the Genetic Landscape Differences Between Bipolar Disorder 1 and Bipolar Disorder 2**
Lucas Gutman, 17, Junior, iPrep Academy North, Miami, Florida, T: David Buncher
- MATH009** **Correlations in Cryptocurrencies: A Comparative Safe-Haven Analysis**
Dawson Medina, 17, Junior, Westminster Christian School, Palmetto Bay, Florida, T: Lisa Garrido
- TMED008** **Leveraging AI to Assist Cardiovascular Disease Diagnosis**
Ethan Thomas, 16, Sophomore, Ransom Everglades School, Miami, Florida, T: Susan Mactye
- Ocala, USFL16, Big Springs Regional Science Fair**
- CHEM005T** **Design of Experiment Optimisation of the Suzuki Cross-Coupling: A Synthesis of Biphenyl, Catalysed by Palladium Tetrakis, from Phenylboronic Acid and Bromobenzene**
Diana Gegaj#, 17, Senior, Litian Zheng, 18, Senior, Vanguard High School, Ocala, Florida, T: Eddy Rey-Castellanos
- MATH006** **Application of Michaelis-Menten Rational Function Models, Parametric Calculations, and Differential Equations to Determine the Most Influential Factor on Histamine Levels**
Camille Aguilera Duma, 17, Junior, Vanguard High School, Ocala, Florida, T: Eddy Rey-Castellanos
- MCRO002** **Bi-Directional Hygiene: Using the Microbiome to Combat Nosocomial Infection**
Rishit Arnav Shaquib, 16, Junior, Vanguard High School, Ocala, Florida, T: Candace Roy
- Davenport, USFL17, Dr. Nelson Ying-Orange County Science Exposition**
- CBIO017** **Using Artificial Intelligence Neural Networks to Repurpose Pre-Existing Drugs and Analyze Drug Relationships, Year 3**
Krithik Seela, 17, Senior, Lake Highland Preparatory School, Orlando, Florida, T: Lisa Davenport
- MATS052** **The Novel Development of a Bio-Based Smart Material for Pharmaceutical Packaging and Temperature Insulation**
Genesis Angelyne Cely, 17, Senior, Trinity Preparatory School, Winter Park, Florida, T: Romina Jannotti
- MATS053** **Biodegradable Magnesium Implants for Bone Repair**
Ashna Mathur, 16, Sophomore, Lake Highland Preparatory School, Orlando, Florida, T: Lisa Davenport
- PHYS066** **Extending the Analysis of TNO Data to Longer Wavelengths in Advance of James Webb Space Telescope Data**
Aryan Pathak, 17, Junior, Lake Highland Preparatory School, Orlando, Florida, T: Lisa Davenport
- Wildwood, USFL18, Sumter County Regional Science Fair**
- ANIM002** **Aloe...Is It Me You're Looking for? A Clinical Trial to Determine the Effect of Aloe Vera on Dogs' Skin Allergies**
Kadie Mariano, 17, Junior, Wildwood High School, Wildwood, Florida, T: Emily Keeler
- EAEV007** **Are Growth Rates of Pine Trees Affected by Depth to Groundwater?**
Alynza Isabella McBride, 16, Sophomore, South Sumter High School, Bushnell, Florida, T: Stephanie Yarbrough
- ENBM010** **A Method for Papnicolaou Tests Utilizing a Novel Cytobrush To Reduce Acute Pain and Increase Effective Sample Collection**
Hannah Grace Kennedy, 18, Senior, The Villages Charter High School, The Villages, Florida, T: Monica Vinas

- ENBM011T** **Shoulder and Leg Prosthetic With a Dynamic Magnetic Shoulder**
Brandon M. Martinez, 18, Senior, Raquel M. Rowland, 17, Senior, Wildwood High School, Wildwood, Florida, T: Emily Keeler
- PHYS005** **Establishing a Correlation Between Variation of Thermodynamics and Corresponding Aerodynamics in Descent of Maple Samara Seed**
Jose M Carvajal-Beltran, 16, Sophomore, Wildwood High School, Wildwood, Florida, T: Emily Keeler
- Pensacola, USFL20, West Panhandle Regional Science and Engineering Fair**
- ENEVO26** **Pollution Tracker**
Shrinithi Sridhar, 15, Freshman, Pensacola High School, Pensacola, Florida, T: Suzanne Ryals
- St. Augustine, USFL21, St. Johns County STEM Fair**
- BMEDO04** **Sex Differences in Cardiac Energetics During Viral Myocarditis**
Kathryn Alexandra Shapiro, 17, Senior, Ponte Vedra High School, Ponte Vedra, Florida, T: Kathryn Kehoe
- CELL028** **Mitochondrial Dysfunction in TDP-43 Knockout HeLa Cells**
Ella McCarthy, 18, Senior, Ponte Vedra High School, Ponte Vedra, Florida, T: Kathryn Kehoe
- Sanford, USFL23, Seminole County Regional Science, Mathematics & Engineering Fair**
- ANIM019** **Using Pavlovian Conditioning to Promote Attraction of *Apis mellifera* to the Endangered Orchid *Prosthechea cochleata*, Year 2**
Ella Pilacek, 17, Junior, Oviedo High School, Oviedo, Florida, T: William Furiosi
- CELL005** **Engineering a Novel Polymeric Coating Incorporating Osteogenically-Active Antimicrobial Proteins to Combat Bone Implant Infection Related to Biofilm Formation**
- # Anouska Seal, 17, Junior, Paul J. Hagerty High School, Oviedo, Florida, T: Angela Campbell
- ENBM009** **Exploring Tissue Viability and Tubule Formation of 3D Bio-Printed MDCK Cells and Canine Smooth Muscle Cells**
Ethan Chen Reshad, 18, Senior, Oviedo High School, Oviedo, Florida, T: William Furiosi
- Stuart, USFL25, Martin County Regional Science and Engineering Fair**
- PLNT053** **Quantification of *Macrophomina phaseolina* Survival After Organic Soil Treatments Under Multiple Temperature Regimes**
- # Nira Goyal, 16, Junior, Martin County High School, Stuart, Florida, T: Jennifer Borges
- Tallahassee, USFL26, Capital Regional Science and Engineering Fair**
- CBIO006** **Defining and Modeling Nuclear Migration in the Early *Drosophila* Embryo**
Leah Gebre Kiro, 17, Junior, Maclay School, Tallahassee, Florida, T: Ariel Evans
- CELL007** **Modulation of EMT Gene Expression Using CRISPRa/i to Investigate Lung Cancer Mechanosensation**
- # Shiv Patel, 16, Junior, Maclay School, Tallahassee, Florida, T: Ariel Evans
- Tampa, USFL27, Hillsborough Regional Science Fair**
- BCHM021** **Measuring the Effect of a Stimulating Decongestant in Combination With Other Substances on Cricket Action Potential**
Alessia Francesca Concas, 16, Junior, C. Leon King High School, Tampa, Florida, T: Brynna McFarland
- ENBM058** **Using an Electroencephalogram and a Transcutaneous Electrical Nerve Stimulation (TENS) Unit to Develop a Noninvasive Neuroprosthetic for Quadriplegic Patients**
Rudra Patel, 16, Sophomore, Middleton High School, Tampa, Florida, T: Bhagyashree Kulkarni
- Melbourne, USFL28, Brevard Mainland Regional Science and Engineering Fair**
- CELL022** **A Novel Imaging Technique: Using Fluorescent Dyed Silica Nanoparticles in Identifying Leukemia Biomarkers**
Jasmine Amelia Bohannon, 18, Senior, Rockledge High School, Rockledge, Florida, T: Aaron Leblanc

Howey In The Hills, USFL34, Lake County Regional Science & Engineering Fair

BMED005 Screening an Underrepresented Demographic, Lake County, Through a Cumulative Questionnaire on Cardiovascular Health and Its Relation to Diet

Niya Satish Patel, 16, Junior, Mount Dora High School, Mount Dora, Florida,
T: Collin Olson

SOFT017 A Cloud SaaS (Software as a Service) That Makes Your Pet's Information Easily Shareable Using Standard Web Communication Formats Such as API's, QR, and NFC (Near Field Communication) Protocols

Jasmine Alexandria Gaines, 15, Freshman, East Ridge High School, Clermont, Florida,
T: Eric Calabrese

Orange Park, USFL35, Clay Rotary Regional Science and Engineering Fair

MATS024 Titanium Bonds: A Study on the Efficacy of Varied Surface Preparation Methods of Titanium Substrates for Optimised Structural Adhesion

Nha Thanh Emma Duong, 18, Senior, Ridgeview High School, Orange Park, Florida,
T: Bethany Derousie

ROBO010 Motion Profiling Algorithm for Improved Intelligent Machine Target Correction

Alexander James Gordon, 17, Junior, Ridgeview High School, Orange Park, Florida,
T: Bethany Derousie

Orlando, USFL50, State Science and Engineering Fair of Florida - Ying Scholars

ANIM008 Year 4: Evaluating the Efficacy of Novel Volatile Beer Blend and Coumaphos Acaricide for Small Hive Beetle Treatment Within Honey Bee Hives

Atreya Manaswi, 17, Sophomore, Orlando Science Schools, Orlando, Florida,
T: Judith Bright

BEHA050 Understanding the Impact of Celebrity Endorsements on the Artificial Growth of Altcoins Through a Multi-Level Latent Class Analysis and Software Based Approach (Year 2)

Rushil Shah, 17, Junior, West Shore Junior/Senior High School, Melbourne, Florida,
T: Mary Schropp

BMED058 Utilizing *Caulobacter crescentus* To Target the Bcl-2 Gene and NF- κ B to Cause Apoptosis in Nasal Squamous Cell Carcinoma

Maya Mohanty, 17, Junior, American Heritage School of Boca Delray, Delray Beach, Florida, T: Brittnee McDole

CHEM059 Development and Characterization of a Novel Instantaneous-Crosslinking Pectin-Based Hydrogel

Nolan Wen, 18, Senior, American Heritage School of Boca Delray, Delray Beach, Florida,
T: Kevin Kang

EBED020 Year II: Designing a Novel LiDAR Navigation System With Haptic Feedback, Bluetooth and App Integration for the Visually Impaired

Tiffani Rai Gay, 16, Sophomore, Orlando Science Schools, Orlando, Florida,
T: Judith Bright

ENBM081 A Novel Application of Microfluidics to Develop a Rapid and Cost-Effective Objective Diagnostic Method for Parkinson's Disease

Deeksha Kumaresh, 17, Senior, American Heritage School of Boca Delray, Delray Beach, Florida, T: Darryl Dieujuste

MCRO060 In Pursuit of New Soil-Based Bacteriophages That Infect *Gordonia rubripertincta*: Discovering Evergreen

Chloe Barreto-Massad, 17, Junior, American Heritage School of Boca Delray, Delray Beach, Florida, T: Brittnee McDole

PHYS031 A Novel Method of Determining Air Shower Muon Half-Life Using Time of Flight

Dillen Scott, 18, Senior, Satellite High School, Satellite Beach, Florida,
T: Magdalena Molledo

GEORGIA

Atlanta, USGA03, Atlanta City Science & Engineering Fair

BMED015 Identification of Environmental Risk Factors Triggering Amyotrophic Lateral Sclerosis in Veterans

Ella Grace Sipe, 15, Sophomore, North Atlanta High School, Atlanta, Georgia,
T: Dana Peebles

- CBIO012** **Genetic and Environmental Contributions to Racial and Ethnic Differences in Complex Disease and Their Relations to Health Disparities in the US and UK**
Jeremiah Longino, 18, Senior, South Atlanta High School, Atlanta, Georgia,
T: Brian Cook
- ROBO026** **A Dexterous Gripper for Complex and Delicate Tasks**
Edward Andrew Botchwey, 18, Senior, Charles R. Drew Charter School, Atlanta, Georgia,
T: Courtney Bryant
- Stone Mtn, USGA04, Dekalb Science & Engineering Fair**
- TMEDO05** **Identification of Cell-Free DNA Methylation Signatures as a Potential Genomic Biomarker of Alzheimer's Disease**
Deeksha Khanna, 17, Junior, Chamblee Charter High School, Chamblee, Georgia,
T: Jacqueline Stephens
- McDonough, USGA06, Henry County Science and Engineering Fair**
- EBED005** **Deployable Broadband Emergency Communications Network**
Jonathan Luke Dorminy, 16, Sophomore, Sola Fide Home School, McDonough, Georgia,
T: Ann Dorminy
- EGSD003** **Tracking vs. Fixed-Angle Solar**
Noah Lee Seelhammer, 16, Sophomore, Union Grove High School, McDonough, Georgia, T: Miranda Sears
- Milledgeville, USGA07, Georgia College & State University Regional Science and Engineering Fair**
- ANIM050** **It's a Bloody Topic**
Nicholas Herbert Jackson, 16, Junior, Johnson County High School, Wrightsville, Georgia, T: Michael Caneega
- CHEM025** **Determination of Heavy Metals Through Tetra Hydroxyphenyl Porphyrin-Doped Sol-Gels**
Morgan K. Collins, 18, Senior, Putnam County High School, 300 War Eagle Dr, Georgia,
T: Catrena Lisse
- Griffin, USGA09, Griffin RESA Regional Science Fair**
- EAEV020** **Sustainable Eating to Save Our Planet**
Roshan Purna Kolachina, 17, Junior, McIntosh High School, Peachtree City, Georgia,
T: Seth Bishop
- EBED018** **Haptic Vision: An Assistive Device for the Visually Impaired**
Aadi Vinayak Vaidya, 14, Freshman, McIntosh High School, Peachtree City, Georgia,
T: Seth Bishop
- PLNT005** **Algae Science: Analyzing Photosynthesis Rates of Agitated vs. Still Algae**
Briana Senoj-Marie Jones, 18, Senior, Newton College and Career Academy, Covington, Georgia, T: Laura Lambert
- Perry, USGA10, Houston Regional Science and Engineering Fair**
- BMEDO16** **Developing Cellulose Nanocomposite Hydrogel as a Value-Added Product From Biomass Waste for Wound Dressing**
Vageesh Sai Degala, 16, Junior, Houston County High School, Warner Robins, Georgia,
T: Jenny Gutshall
- ROBO029** **CoVNet: A Deep Convolutional Neural Network Model for Improving COVID-19 Detection**
Shiva Kevin Soundappan, 16, Junior, Houston County High School, Warner Robins, Georgia, T: Jenny Gutshall
- Suwanee, USGA11, Gwinnett Regional Fair**
- EGSD020** **Comparative Analysis of Plant-Derived Dyes in Dye-Sensitized Solar Cells: Maximizing Energy Production Efficiency**
Rohan Kumar, 16, Junior, Paul Duke STEM High School, Norcross, Georgia,
T: Tiffany Bookal
- ENBM022** **Measuring Blood Glucose Without Finger Stick: NIR Spectroscopy**
Sohum Trivedi, 16, Junior, Gwinnett School of Mathematics, Science, and Technology, Lawrenceville, Georgia, T: Courtney Cox

- MCROO18T** **Evaluating the Antimicrobial Properties of Materials in Kenya**
Jayson Ndungu, 17, Junior, Aayan Mushfik Mukul, 16, Junior, Gwinnett School of Mathematics, Science, and Technology, Lawrenceville, Georgia, T: Rhonda Rackley, T: Courtney Cox
- MCROO19** **Turning the Phage: Effects of Bacteriophages on *E. coli* K12**
Afreen Ali, 16, Sophomore, Peachtree Ridge High School, Suwanee, Georgia, T: Corey Wellmaker
- PLNT019** **Effect of Exogenous L-Glutamine on Soybeans**
Paula Gonzalez, 17, Junior, Gwinnett School of Mathematics, Science, and Technology, Lawrenceville, Georgia, T: Courtney Cox
- ROBO020** **CogVR: A Novel AI Therapeutic System for MS Patients**
Krish Saxena, 16, Sophomore, Collins Hill High School, Suwanee, Georgia, T: Frankie Morin
- Conyers, USGA12, Rockdale Regional Science & Engineering Fair**
- CELL017T** **Alleviating DNA Demethylation of 5hmC in Neurons and Zebrafish Embryos**
Abigail Grace Buchanan, 17, Junior, Alexa Malkia Apiyo, 16, Junior, Rockdale Magnet School for Science and Technology, Conyers, Georgia, T: Shelley Seagraves, T: Laura Rogers
- ENBMO23** **The Use of Aloe Vera and Silver Nanoparticles in Wound Healing**
Dylan Burkey, 18, Senior, Rockdale Magnet School for Science and Technology, Conyers, Georgia, T: Shelley Seagraves
- PLNT021T** **Utilizing FGE To Improve Agricultural Health**
Jessica Rhee, 17, Junior, Camille Hall, 17, Junior, Rockdale Magnet School for Science and Technology, Conyers, Georgia, T: Laura Rogers, T: Scott Robinson
- Atlanta, USGA13, Fulton County Regional Science & Engineering Fair**
- MATSO01** **Novel Piezoelectric Nanogenerator for Biomedical Applications**
Annika Joshi, 17, Junior, Johns Creek High School, Johns Creek, Georgia, T: Nicole Ferreira
- PLNT014T** **Black Gold: The Effect of C3 vs. C4 Feedstock on Carbon Sequestration of Resultant Biochar**
Swathi Mugundu Pradeep, 16, Junior, Chinmaya Saran, 17, Junior, Northview High School, Johns Creek, Georgia, T: Pallavi Rallapalli
- Marietta, USGA14, Cobb/Paulding Regional Science Fair**
- CBIO011** **Targeted Drug Delivery for Aortic Aneurysms: Using Computational Fluid Dynamics to Optimize Drug Delivery & Treatment**
Misha Nilesh Patel, 17, Junior, Wheeler High School, Marietta, Georgia, T: Joel Howell
- SOFT018** **EyePal: A Novel Multimodal Diagnosis & Prevention System to Enable Accessible and Individualized Glaucoma Detection**
Rohan Kalia, 17, Sophomore, Wheeler High School, Marietta, Georgia, T: Joel Howell
- Jonesboro, USGA15, Clayton County Regional Science & Engineering Fair**
- CHEMO36** **Facile Liquid-Liquid Fractionation for the Reuse of Magnetite Nanoparticles in the Eco-Friendly Removal of Immiscible Pollutants**
Amy Pham, 17, Senior, Elite Scholars Academy, Jonesboro, Georgia, T: Reshawndra Hutchins
- ENBMO44T** **Can Vibrational Frequencies Assess Joint Health?**
Jacob William Riad, 18, Senior, Barbara Anabella Simmons, 17, Senior, Martha Ellen Stilwell School of the Arts, Jonesboro, Georgia, T: Rajini Sundararaj
- Athens, USGA50, Georgia State Science and Engineering Fair**
- EBED043T** **Micro-Q: A Low-Cost, Portable, IoT-Based Fluorometer**
Vineeth Sendiraj, 16, Junior, Madhav Gulati, 18, Senior, Lambert High School, Suwanee, Georgia, T: Janet Standeven
- ENEV074T** **Mastering Menstruation: Counteracting Period Poverty**
Olivia Margaretha Lynne Ray, 18, Senior, Emily Nicole Wagner, 18, Senior, Whitewater High School, Fayetteville, Georgia, T: Shelley Kozlowski
- ETSD058T** **Underwater Robotics: Manipulation and Photogrammetry**
Makenna Reilly, 16, Junior, Violet Marian Brockmann, 15, Freshman, Lanier High School, Buford, Georgia, T: Michael Reilly

HAWAII

Waipahu, USHI01, Hawaii Association of Independent Schools Science and Engineering Fair
BMED006 Identifying and Mitigating Renal Toxicity of Lithium on Bipolar Disorder Using HEK293 Cells

Amara Kanoelani Martin, 17, Junior, Kamehameha Schools Kapalama Campus, Honolulu, Hawaii, T: Gail Ishimoto

CELL006 Possible Use of MicroRNA-488 as a Biomarker for Bad Prognosis in Type 2 Diabetes
Ming-Hao Alex Lee, 18, Senior, Iolani School, Honolulu, Hawaii, T: Yvonne Chan

Waipahu, USHI02, Leeward District Science and Engineering Fair
BMED007 Investigating the Impact of Pyruvate Kinase Muscle Isoform 2 (PKM2) Knockout on Cardiac Murine Cellular Hypertrophy

Cheydon Jim Tabiolo Agos, 17, Junior, Waipahu High School, Waipahu, Hawaii, T: Tanya Cobbin

MATSO07 Analyzing the Strength of Different Edible Biodegradable Films
Kayla Nguyen, 16, Junior, Waipahu High School, Waipahu, Hawaii, T: Tanya Cobbin

Puunene, USHI03, Maui County Regional Science and Engineering Fair

EAEV076T The Effects of Coastal Erosion

Penelope Kalolaine Tupou, 16, Junior, Brie-Ann Shiyo Fukutomi, 16, Sophomore, Henry Perrine Baldwin High School, Wailuku, Hawaii, T: Hannibal Starbuck, T: Hannibal Starbuck

Lihue, USHI04, Kauai Regional Science & Engineering Fair

ANIM043 Lure Comparison for Capturing Male Culex Mosquitoes

Lauryn Hideko Hashimoto, 16, Sophomore, Kauai High School, Lihue, Hawaii, T: Kevin Johnson

BCHM037 Creating Perfusable Tissue Scaffolds From Decellularized Plant Leaves

Jaxyn Kai Cable-Treadwell, 17, Senior, Kauai High School, Lihue, Hawaii, T: Kevin Johnson

Hilo, USHI05, Hawaii District Science and Engineering Fair

PHYS006 Investigating the M-Sigma Relation: An Analysis of Active Galactic Nuclei Mass Evolution Patterns

Ciana-Lei Bence, 18, Senior, Kamehameha Schools Hawaii Campus, Keaau, Hawaii, T: Kehau Kalili

TMED011 Identifying the Molecular Mechanisms of a Safer Neuroblastoma Cure Using the Native Hawaiian 'Awapuhi (*Zingiber zerumbet*) Herb

Rachel Z. Tao, 17, Senior, Waiakea High School, Hilo, Hawaii, T: Whitney Aragaki

Kaneohe, USHI06, Windward District Science and Engineering Fair

ANIM007 The Effect of Anthropogenic Noise Pollution on the Photosynthetic Yield of *Aiptasia*

Sage Kamani Marley Andrews, 17, Junior, Kailua High School, Kailua, Hawaii, T: Sara Anglin

ETSD003 Modeling and Designing a Sustainable Bicycle Helmet

Kailan Gertonson, 18, Senior, Kalaeo High School, Kailua, Hawaii, T: Diana Chun

Aiea, USHI07, Central Oahu District Science and Engineering Fair

ENEV008 Decontamination of Heavy Metals Through Phytoremediation by Native Hawaiian Plants

Kenneth J. Yi, 16, Junior, Mililani High School, Mililani, Hawaii, T: John Sandvig

ETSD023 Biomass Powered Desalination Year III: Combustion Tuning by Closed Loop Control System

Cassidy Ibanez, 17, Junior, Mililani High School, Mililani, Hawaii, T: Namthip Sitachitta

Honolulu, USHI08, Honolulu District Science & Engineering Fair

CHEM007 Chemical Reclamation of Precious Metals to Reduce Environmental Contamination

Vincent A. Grillo, 18, Senior, Kalani High School, Honolulu, Hawaii, T: Bryan Silver

- ENEV011** **Testing the Effectiveness of *Sabellastarte spectabilis* as a Potential Bioremediator**
Kian Kenneth Francisco Sanchez, 16, Sophomore, University Laboratory School, Honolulu, Hawaii, T: Jennifer Seki-Wong
- MATSO08** **Observing the Benefits of the Involvement of Pressure in the Annealing of 3D Printed Components for Higher-Strength Applications**
Jefferson Young, 18, Senior, Kalani High School, Honolulu, Hawaii, T: Bryan Silver
- Kailua-Kona, USHI09, West Hawaii District Fair**
- ROBO017** **Classifying Coral Species Using Machine Learning Algorithms**
Aiden Ankrum, 18, Senior, Kealakehe High School, Kailua-Kona, Hawaii, T: Justin Brown
- Honolulu, USHI50, Hawaii State Science and Engineering Fair**
- BEHA058** **Determining Whether the Onset Age of Bilingualism Enhances Cognitive Control**
Michelle Choi, 18, Senior, Iolani School, Honolulu, Hawaii, T: Yvonne Chan
- BMED067** **Cytotoxicity of Mamaki (*Pipturus albidus*) on LNCaP Cells**
Christian James Kalama Roy, 17, Junior, Kamehameha Schools Kapalama Campus, Honolulu, Hawaii, T: Gail Ishimoto
- CHEM063** **The Chemical Profiling and Antibacterial Evaluation of Extracts from *Garcinia xanthochymus***
Alanna Sun, 17, Senior, Waiakea High School, Hilo, Hawaii, T: Whitney Aragaki
- ##**
- EAEV081** **Studies on *Gracilaria salicornia*: Zinc Oxide (ZnO) Sunscreen Exposure and Use as Agricultural Fertilizer**
Madison Rieko Hiilani Murata, 16, Junior, Kamehameha Schools Kapalama Campus, Honolulu, Hawaii, T: Gail Ishimoto
- ETSD064** **Modification of Induction Motor Designs for Higher Efficiency and Starting Torque**
Paul Watson Varricatt, 18, Senior, Waiakea High School, Hilo, Hawaii, T: Whitney Aragaki
- #**
- ETSD065T** **The Use of Electrohydrodynamic Thrust in Marine Propulsion Systems**
Aysa Jones, 17, Junior, Sebastian Rojas, 16, Junior, Kanoaomauloakai Sonny DaSilva, 17, Senior, Kailua High School, Kailua, Hawaii, T: Sara Anglin T: Sara Anglin
- MCRO065** **Detecting *Prevotella* and *Sneathia* in Adolescent Vaginal Microbiomes Using 16s rRNA Gene Sequencing and Spreading Awareness of Under-Recognized Women's Health Issues Through CARE: A Health Marketing Campaign**
Ellsha Lumina Florence Johnston, 17, Senior, Iolani School, Honolulu, Hawaii, T: Yvonne Chan
- IDAHO**
- Boise, USID01, Northern Idaho Science & Engineering Fair**
- ENEV032** **Using Plants to Remove Heavy Metals From Wastewater**
Holly Lynn Brannan, 19, Senior, Grangeville High School, Grangeville, Idaho, T: Shaun Bass
- ETSD032** **Refining Novel Drone Design to Increase Efficiency**
Caden Joel Perry, 18, Senior, Moscow High School, Moscow, Idaho, T: Pat Blount
- #**
- Boise, USID02, Western Idaho Science & Engineering Fair**
- MCRO015T** **Managing Rainbow Trout Disease and Antibiotic Resistance by Raising Naturally Resistant Strains**
Amulya Sai Tanikella, 15, Sophomore, Kiana Mohammadi, 16, Sophomore, Treasure Valley Math and Science Center, Boise, Idaho, T: Julie Ekhoﬀ
- ROBO016** **Pedestrian AI**
Kathy Nie, 15, Sophomore, Timberline High School, Boise, Idaho, T: Heidi Pluska
- Boise, USID03, Eastern Idaho Science & Engineering Fair**
- PHYS007** **Tsunami Sound (T-Sound): Neutralizing Tsunamis Using Acoustic Gravity Waves**
Jasmine Aubrey Lima, 15, Sophomore, American Heritage Charter School, Idaho Falls, Idaho, T: Alaysha Whitworth
- PLNT007** **The Effects of Gibberellin Concentration on the Development of Bean Plants**
Logan Edward Krohn, 17, Junior, American Heritage Charter School, Idaho Falls, Idaho, T: Alaysha Whitworth

ILLINOIS

CHICAGO, USIL01, Chicago Public Schools Student Science Fair

CELL034 **Transcriptome Changes of Hematopoietic Stem and Progenitor Cells in Peripheral Blood of COVID-19 Patients by scRNA-seq**

Zhouqi Shao, 17, Junior, Whitney M. Young Magnet High School, Chicago, Illinois, T: Anna Gallardo

CELL035 **A Novel siRNA-Based Drug for the Treatment of Hepatocellular Carcinoma**

Ritvik Viniak, 18, Senior, Walter Payton College Preparatory High School, Chicago, Illinois, T: Walter Kinderman

EAEV041 **Predicting Large Wildfires Using Machine Learning Approach Towards Environmental Justice via Remote Sensing**

Nikita Agrawal, 17, Junior, Whitney M. Young Magnet High School, Chicago, Illinois, T: Anna Gallardo

ENBM046 **mPOC and Hydroxyapatite Implant for Bone Tissue Regeneration**

Maya Joshi, 18, Senior, Walter Payton College Preparatory High School, Chicago, Illinois, T: Walter Kinderman

Bowen, USIL04, Illinois Junior Academy of Science Region X Science Fair

ENEV038 **The Development of a Mobile, Arduino-Based Water Quality Testing Apparatus**

Macy M. Putnam, 17, Senior, Southeastern Junior/Senior High School, Augusta, Illinois, T: Kassie Henry

Evanston, USIL05, Illinois Junior Academy of Science North Suburban Region 6 Science and Engineering Fair

CHEM020 **Green Synthesis and Testing of ZIF-8 as a Carbon Dioxide Capturing Agent**

Zahra Zulfiqar Nathani, 18, Senior, Niles Township West High School, Skokie, Illinois, T: Parin Patel

PHYS018 **Accelerating CERN and LIGO Big Data Processing Using an Optical Correlator**

Aarushi Tiwari, 18, Sophomore, Adlai E. Stevenson High School, Lincolnshire, Illinois, T: Christina Palffy

INDIANA

Terre Haute, USIN20, Hoosier Science and Engineering Fair Region 1

ENEV059 **Sustainable Water Purification by Indigenous Fruit Waste Technology (SWIFT): Ingenious Solution to Reuse Food Waste to Reduce Environmental Pollution**

Rohan Prakash Bhosale, 16, Sophomore, Carmel High School, Carmel, Indiana, T: Prakash Bhosale

ROBO046 **BrainTrain: Aligning Deep Neural Networks to Human Behavior to Improve Robustness and Generalization**

Bharath Anand, 14, Freshman, West Lafayette Junior/Senior High School, West Lafayette, Indiana, T: Rebecca Creech

Terre Haute, USIN21, Hoosier Science and Engineering Fair Region 2

TMED053 **Advancing Early Detection of Kidney Cancer (Year 2): A Novel Automated Workflow for Proteomic Profiling of Urinary Extracellular Vesicles**

Zheng-Chi Lee, 17, Junior, West Lafayette Junior/Senior High School, West Lafayette, Indiana, T: Rebecca Creech

Terre Haute, USIN22, Hoosier Science and Engineering Fair Region 3

EAEV052 **Short Range Hourly Temperature Forecasting in Relation to National Weather Prediction Models: A Breakthrough**

Mira Nuthakki, 15, Freshman, Carmel High School, Carmel, Indiana, T: Jennifer Drudge

TMED050 **Detection of Malignant Lung Tumors From CT Scans Through Deep Learning-Based Artificial Intelligence Algorithms**

Sophia Fu, 16, Sophomore, Carmel High School, Carmel, Indiana, T: Haoda Fu

Terre Haute, USIN23, Hoosier Science and Engineering Fair Region 4

PLNT037 **Effects of *Pseudomonas fluorescens* and *Mycorrhizal Fungi* in Grafts**

Samuel Reed Martin, 15, Freshman, Northwestern High School, Kokomo, Indiana, T: Linda Wilson

PLNT039 **Inhibiting Fungi Growth With Iodine, Sodium Thiosulfate, and Vitamin C**
Savannah Kaylee Curtis, 15, Freshman, Northwestern High School, Kokomo, Indiana, T: Linda Wilson

Terre Haute, USIN24, Hoosier Science and Engineering Fair Region 5

ROBO042 **Advancing Multimodal Muscle Signal Processing: Pruning-Enhanced Machine Learning for sEMG and Mechanomyogram Integration in Task-Specific Hand Rehabilitation and Assistance**
Minran Wang, 16, Sophomore, Culver Academies, Culver, Indiana, T: Medhi Meziane

TMED051 **The Effects of APC Loss on Response to Chemotherapy in Ovarian Cancer Cells**

Lucinda Flanagan, 18, Senior, Marian High School, Mishawaka, Indiana, T: Ken Andrzejewski

Terre Haute, USIN25, Hoosier Science and Engineering Fair Region 6

PHYS041 **Quantum Algorithms to Solve the Traveling Salesman Problem**
Sean Borneman, 14, Sophomore, Bloomington High School South, Bloomington, Indiana, T: Joshua Borneman

ROBO048 **Where to Build Food Banks: A Machine Learning Approach**

Gavin Zhibo Ruan, 15, Sophomore, West Lafayette Junior/Senior High School, West Lafayette, Indiana, T: Rebecca Creech

Terre Haute, USIN26, Hoosier Science and Engineering Fair Region 7

BMED036 **Platinum Induced Gene Expression Yields Insights to Chemotherapy Resistance**

May Elizabeth Weston, 17, Senior, Marian High School, Mishawaka, Indiana, T: Ken Andrzejewski

EGSD033 **Crystallization and Morphology Tailoring via Functionalized Ligands for Efficient and Stable Perovskite Solar Cells**

Raunak Dani, 16, Junior, West Lafayette Junior/Senior High School, West Lafayette, Indiana, T: Rebecca Creech

Terre Haute, USIN27, Hoosier Science and Engineering Fair Region 8

BCHM022 **Using Virtual Reality to Study the Effects of Mutations on BET Protein Interactions**

Grace Wenyi Yang, 18, Senior, Carmel High School, Carmel, Indiana, T: Jennifer Drudge

PHYS042 **Controlling the Properties of Magnetic Molecules to Develop the Potential Single Molecular Transistor**

Jonathan Yang, 16, Junior, Carmel High School, Carmel, Indiana, T: Jennifer Drudge

Terre Haute, USIN50, Hoosier Science and Engineering Fair

CBIO031 **Convolutional Neural Networks on Stethoscope Audios: COPD Diagnosis and Clinical Feature Identification**

Minnie Liang, 18, Senior, West Lafayette Junior/Senior High School, West Lafayette, Indiana, T: Rebecca Creech

EAEV047 **A Rapid One-Step Field-Based Detection Method for Nanoplastics in Wastewater Samples**

Vidhatri L. Iyer, 15, Freshman, University High School of Indiana, Carmel, Indiana, T: Erica Posthuma

ENBM059 **Levitating Magnetic Insoles: A Novel Approach to Alleviating Plantar Fasciitis Through the Reduction and Redistribution of Plantar Pressures**

Yue Yu, 17, Junior, Culver Academies, Culver, Indiana, T: David Lawrence

IOWA

Cedar Rapids, USIA01, Eastern Iowa Science and Engineering Fair

ANIM034 **The Effect of Synchronization Hormones on Reproductive Ewes**

Everlee Harvey, 17, Senior, Central Lee High School, Donnellson, Iowa, T: Alicia Schiller

EAEV040 **The Effects of the Denitrifications Process Through Bioreactors, *Avena sativa*, Triticum, and Secale Cereal**
Jacob Thomas Hohl, 18, Senior, Central Lee High School, Donnellson, Iowa,
T: Alicia Schiller

MCRO035 **Home Remedies of the *Apis mellifera* Kind vs. *Streptococcus***
Sidney D'Lynn Gruntmeir, 16, Junior, Central Lee High School, Donnellson,
Iowa, T: Alicia Schiller-Haynes

Mapleton, USIA02, Western Iowa Science and Engineering Fair
CHEM045 **Using *Lutjanus campechanus* Scales as a Biosorbent to Filter Cu²⁺, Pb²⁺, and Cd²⁺ From Water**
Kiersten Jean Knobbe, 18, Senior, Guthrie Center High School, Guthrie
Center, Iowa, T: Jennifer Reed

PLNT041 **Increasing Soil Decomposition Rates With Organic and Natural Soil Additives**
Taylor Janelle Ommen, 15, Sophomore, West Central Valley High School,
Stuart, Iowa, T: Gail Kunch

Ames, USIA50, State Science and Technology Fair of Iowa
BCHM027 **Do Bees Vector Pollutants in the Honey They Make?: Phase II**
Aiden Konig, 16, Sophomore, Danville Junior/Senior High School, Danville,
Iowa, T: Gail Kunch

CELL048 **Determining Fat Preference for Triple Negative Breast Cancer Cells**
Michael Lee, 16, Junior, West High School, Iowa City, Iowa, T: Carolyn Walling

CELL049 **Characterizing Differences in Growth and Invasion Between Epithelial and Mesenchymal Cell Lines in Oral Cavity Squamous Cell Carcinoma**
Lillian Graham, 17, Junior, West High School, Iowa City, Iowa,
T: Carolyn Walling

ENBM073 **The Effects of Xenotransplantation on Anterior Cruciate Ligament Grafts in Humans**
Keira Laine Campbell, 15, Sophomore, Keokuk High School, Keokuk, Iowa,
T: Arie Schiller

ENEV075 **Pura Aerem: A Five-Stage Extension to Catalytic Converters Designed to Purify the Gasses and Pollutants Exiting Gas-Powered Vehicles**
Shanza Sami, 14, Freshman, West High School, Iowa City, Iowa,
T: Carolyn Walling

MATSO47 **Structural and Flammable Attributes of Monoammonium Phosphate and Sodium Tetraborate Pressure Treated Wood Phase III**
Joseph Daniel Schneider, 18, Senior, Beckman Catholic High School,
Dyersville, Iowa,T: Cheryl Kluesner

MCRO054T **CRAB vs Pepper: The Effect of Bioenhancers on Ampicillin-Sulbactam as a Treatment Against *A. baumannii***
Avyay Balaji, 15, Sophomore, Ananya Balaji, 15, Sophomore, Ames High
School, Ames, Iowa, T: DeAnna Tibben

KANSAS

El Dorado, USKS50, Kansas State Science and Engineering Fair
BEHA052 **Do Males and Females Have the Same Reaction Time?**
Savannah Clingan, 15, Freshman, Hays High School, Hays, Kansas,
T: Cheryl Shepherd-Adams

CELL055 **Effects of Nrf2 Activator Dimethyl Fumarate on CD8 and CD4 Effector Functions**
Anvesha Sharda, 17, Junior, Manhattan High School, Manhattan, Kansas,
T: Janet Hanson

KENTUCKY

Louisville, USKY02, Louisville Regional Science and Engineering Fair

BCHM015 Disfiguring *E. coli* Biofilm Structure Through Hydrolysis of Extracellular Polymeric Substance via Application of Bacterial Protease and Amylase

Muhilan Balasubramanian, 16, Sophomore, Ballard High School, Louisville, Kentucky,
T: Kathy Cail

EAEV069 The Cloud

Carson R. Baker, 15, Freshman, Ballard High School, Louisville, Kentucky,
T: Katherie Cail

ENBM041 A Non-Invasive and Novel Method for the Early Detection of Pancreatic Cancer

Krithik Varma Nadimpally, 16, Junior, Ballard High School, Louisville, Kentucky,
T: Glenda Jones

PHYS014 Quarkonium Dynamics in Phase Space

Gabriel Ayden Nowaskie, 17, Senior, The Carol Martin Gatton Academy of Mathematics and Science in Kentucky, Bowling Green, Kentucky, T: Cheryl Kirby-Stokes

Louisville, USKY03, Dupont Manual High School Regional Fair

CBIO014 SquidNet: A Novel GAN-based Algorithm for the Color Normalization of Histopathological Images

Sai Charan Jaavadi, 16, Junior, duPont Manual High School, Louisville, Kentucky,
T: Keri Polevchak

ENBM038T Screening for Multiple Gastrointestinal Cancers With CanDELA: Low-Cost, Automated Gastrointestinal Cancer Detection Utilizing Magnetic Bead miRNA Extraction, Peristaltic Pump-Based Liquid Handling, miRNA Amplification and Fluorescence Spectroscopy With Support Vector Networks

Rishabh Ranjan#, 17, Junior, Gopalaniruddh Saisantosh Tadinada#, 17, Junior, duPont Manual High School, Louisville, Kentucky, T: Keri Polevchak

ENEV030T Evaluating Chemically Enhanced Natural Materials for Oil Spill Cleanup

Valerie Nicole Mohrmann, 16, Sophomore, Zahra Chasmawala, 16, Sophomore, duPont Manual High School, Louisville, Kentucky, T: Keri Polevchak

ETSD024 Decentralized, Autonomous Drone Swarms for Real-Time Mapping Applications and Natural Disaster Relief

Richard Lian, 17, Junior, duPont Manual High School, Louisville, Kentucky,
T: Keri Polevchak

ROBO030 Cost-Effective Robotic Arm Prosthesis Integrating Haptic Feedback, EMG Bands, FDM 3D Printing, and Novel Grasp-Type Auto Assistance Using Machine Vision

Jilly Abraham Choi, 16, Sophomore, duPont Manual High School, Louisville, Kentucky,
T: Keri Polevchak

Highland Heights, USKY04, Science and Engineering Fair of Northern Kentucky

BMED026 The Effect of Propylene Glycol on *Chlamydomonas reinhardtii* in Correlation to the Effect of Vaping on Human Lung Cells

Mary Caroline Wall, 17, Junior, Notre Dame Academy, Park Hills, Kentucky,
T: William Stamm

Lexington, USKY05, Central Kentucky Regional Science and Engineering Fair

BCHM019 The Effects of Running-Induced Cathepsin B Secretion on Stroke Recovery

Ana Veronica Despa, 18, Senior, Paul Laurence Dunbar High School, Lexington, Kentucky, T: Karen Young

MATH028 Hereditary Atomicity and ACCP in Monoids and Integral Domains

Joseph Amichai Vulakh, 17, Junior, Paul Laurence Dunbar High School, Lexington, Kentucky, T: Karen Young

TMED034 DAE-XGBOOST: Developing a Method for Classifying Neoplasms via MicroRNAs for Biopsy Verification

Emily Yang Hu, 18, Senior, Paul Laurence Dunbar High School, Lexington, Kentucky,
T: Karen Young

Richmond, USKY50, Kentucky Science and Engineering Fair

CBIO036 Identifying a Novel Gene Signature to Predict Drug Resistance in Epilepsy Patients

Tony Xu, 17, Junior, Paul Laurence Dunbar High School, Lexington, Kentucky,
T: Karen Young

- CHEM046** **Development and Validation of a Novel Clinical Diagnostic Platform With Breath Analysis and Machine Learning**
Justin Huang, 16, Sophomore, duPont Manual High School, Louisville, Kentucky,
T: Jessie Newhouse
- MATSO42** **4-D Printed Low-Cost Novel Shape Memory Polymers for Industrial, Robotics and Disaster Relief Applications**
Vallabh Ramesh, 15, Freshman, duPont Manual High School, Louisville, Kentucky,
T: Keri Polevchak
- MCRO055** **The Effect of Distance on Bacteria Growth From Hot Air Drying Machines**
Zita An Nguyen, 16, Sophomore, duPont Manual High School, Louisville, Kentucky,
T: Keri Polevchak
- PHYS045** **The Implementation of a Pressure-Regulated System to Increase the Efficiency of the OxyCART System**
Anirudh Srinivasan, 17, Junior, duPont Manual High School, Louisville, Kentucky,
T: Keri Polevchak

LOUISIANA

- Baton Rouge, USLA01, Louisiana Region VII-Science and Engineering Fair**
- ENBMO03** **Generation of 3D Co-Cultured Breast Cancer Spheroids to Study the Spatial Distribution of Fibroblast-Produced Collagen**
Margaret Catherine Moe, 17, Senior, Saint Joseph's Academy, Baton Rouge, Louisiana,
T: Jacqueline Savoia
- MATSO04** **The Removal of Lead(II) and Chromium(VI) Ions From Water Using UV-C Light and Immobilized TiO₂ Nanoparticles**
Keanna Luo, 18, Senior, Baton Rouge Magnet High School, Baton Rouge, Louisiana,
T: Lai Cao
- TMEDO02** **Examining the Effects of Dietary Restriction on Mitophagy in *C. elegans***
Orna Mukhopadhyay, 17, Senior, Baton Rouge Magnet High School, Baton Rouge, Louisiana, T: Lai Cao
- Bossier City, USLA02, Bossier Parish Community College Louisiana Region I Science and Engineering Fair**
- CELL024** **Novel Imaging Approaches for the Quantification of Changes in Perivascular Space Volume and Morphology in Response to Transcranial Direct Current Stimulation**
Andrew Minagar, 18, Senior, Caddo Parish Magnet High School, Shreveport, Louisiana,
T: Kris Clements
- MATH013** **On Fractal Knots: Algorithmic Generation and Quantitative Analysis**
Nhi Dao, 18, Senior, Caddo Parish Magnet High School, Shreveport, Louisiana,
T: Kris Clements
- TMEDO38** **Resting State Connectivity With Language Domains of the Cerebellum: Can Language Domains of the Brain Be Identified Using Resting State Magnetic Resonance Imaging?**
Anika Alla, 17, Junior, Caddo Parish Magnet High School, Shreveport, Louisiana,
T: Kris Clements
- Houma, USLA03, Terrebonne Parish Science Fair**
- CHEM017** **Rocket Ready Go!**
Cody J. LeBoeuf, 16, Junior, South Terrebonne High School, Bourg, Louisiana,
T: Chris Brown
- ENEV012** **Solar Powered Water Purification Devices: Which Color Is Best?**
Rosalyn Frances Hubbell, 15, Freshman, H.L. Bourgeois High School, Gray, Louisiana,
T: Regina Chustz
- Lake Charles, USLA05, Louisiana Region V Science and Engineering Fair**
- CELL013** **Characterization of Epstein-Barr Virus-Infected Atypical Memory B Cells**
Joy Dong, 18, Senior, Louisiana School for Math, Science, and the Arts, Natchitoches, Louisiana, T: Micah Luftig

CHEM003 **Preserving Aquatic Life From the Harmful Effects of Ocean Acidification**
Susanna Angel Chiruguru, 15, Sophomore, LaGrange Senior High School, Lake Charles, Louisiana, T: Inyasamma Karanam

New Orleans, USLA08, Greater New Orleans Science and Engineering Fair

ANIM016T **Testing Time Variables of Submersion on *Pomacea bridgesii* Egg Clusters**

Bryce Ashton Martin, 17, Junior, Rohan Ramireddi Reddy, 17, Junior, Isidore Newman School, New Orleans, Louisiana, T: Matthew Jones

BEHA016 **Tides of Stress: The Impact of Hurricanes on Emotion Regulation During a Pandemic**

Vaishnavi Sai Kumbala, 15, Sophomore, Haynes Academy for Advanced Studies, Metairie, Louisiana, T: Hazim Dayeh

EAEV024 **The Levels of Nitrogen and Phosphorus Compounds in Run-Off After Using Various Types of Fertilizers**

Jayden Davis, 16, Junior, Holy Cross School, New Orleans, Louisiana, T: Katherine Schilling

PLNT026T **Effects of Soil pH on Stomatal Density in *Vigna unguiculata***

Amy Thuy-Trinh Nguyen, 17, Senior, Isaac Jabaley, 18, Senior, Benjamin Franklin High School, New Orleans, Louisiana, T: Lisa Hartman

Baton Rouge, USLA50, Louisiana Science and Engineering Fair

BMED054 **CaSR – GSH Interaction: Finding an Effective Antagonist**

Raj Letchuman, 17, Senior, Caddo Parish Magnet High School, Shreveport, Louisiana, T: Kris Clements

EBED038 **Detecting Hidden Security Threats With Thermal Camera**

Kenzie Stentiford, 15, Sophomore, St. Joseph's Academy, Baton Rouge, Louisiana, T: Jacqueline Savoia

ENEV062 **Combustion Carbon Capture via Aqueous Solutions**

Ella Nicole Barker, 17, Junior, Saint Joseph's Academy, Baton Rouge, Louisiana, T: Jacqueline Savoia

ETSD054 **3D Printed Bricks Based Off Mud Dauber Wasp Nest**

Josephine Ellen Day, 17, Senior, Iberville Math, Science, and Arts Academy East, St. Gabriel, Louisiana, T: Mary Ellen Day

MAINE

Bar Harbor, USME50, Maine State Science Fair

BEHA053 **The STEM Gap: What Is the Cause of the Disparity Between Males and Females in the STEM Fields?**

Anh Ngoc Van Vo, 17, Senior, John Bapst Memorial High School, Bangor, Maine, T: Emma Bragdon

MCRO061 **An Antimicrobial-Bacterial Cellulose-Manuka Honey Loaded Dressing for the Active Treatment and Monitoring of Wounds**

Emma Markowitz, 18, Senior, Maine Homeschool, Trevett, Maine, T: Lisa Markowitz

PLNT049T **The Effects of Arbuscular Mycorrhizal Fungi and Mushroom Substrate on the Plant Growth and Soil Characteristics for PE Microplastics-Contaminated Soil**

May Ki-Ok Shin, 19, Senior, Jiwon Choi, 18, Junior, Fryeburg Academy, Fryeburg, Maine, T: Dylan Harry

MARYLAND

Annapolis, USMD01, Anne Arundel County Regional Science and Engineering Expo

EAEV033 **Worming Through Plastics**

Lily McCallister, 16, Sophomore, Severna Park Senior High School, Severna Park, Maryland, T: Teresa Stahl

ENEV037 **Utilizing the Adsorption Properties of Renewable Mediums to Reduce Methane**

Megan Reyna Yeager, 16, Sophomore, Chesapeake Science Point Public Charter School, Hanover, Maryland, T: Robert Woerner

MCRO031 **Please Protect My Flagella**

Addison Haley Johns, 15, Sophomore, Annapolis High School, Annapolis, Maryland, T: Kathleen Cochran

Frederick, USMD02, Frederick County Science and Engineering Fair

- ENBMO60T** **DIVA: Spatial Navigation for the Visually Impaired Using Depth Sensing Artificial Intelligence and Convolutional Neural Networks**
Karthik Muthukkumar, 16, Sophomore, Pranav Sristy, 15, Sophomore, Tarun Malarvasan, 15, Sophomore, Urbana High School, Ijamsville, Maryland, T: Seth Smucker
- ROBO045T** **Alice: Robotic Hand to Translate English to ASL Using Speech to Text Technology for Hard of Hearing Individuals**
AleK Tekeyan, 16, Sophomore, Jeanelle Lin, 16, Sophomore, Tuscarora High School, Frederick, Maryland, T: Aaron Miles

Rockville, USMD03, ScienceMontgomery

- CBIO042** **Investigating Chemotherapy Dose-Dependent Metabolic Changes in Cancer Cells Through Computational Modeling and Experimental Validation**
Sudhish Madapur Swain, 16, Junior, Montgomery Blair High School, Silver Spring, Maryland, T: Angelique Bosse
- CHEMO42** **Highly Electrically Conductive Biomass-Derived Carbon Fibers**
Julia Artemis Gelfond, 18, Senior, Montgomery Blair High School, Silver Spring, Maryland, T: Angelique Bosse
- ENBMO55** **MiniPose: Real-Time 3D Joint Estimation and Reconstruction With LiDAR and Low-Resolution Visual Data**
Daniel Mathew, 16, Junior, Poolesville High School, Poolesville, Maryland, T: Kevin Lee

Capitol Heights, USMD05, Prince George's Area Science Fair

- ETSD028** **MagFlow: A Revolutionary Magnetic Coupling System for More Than Just Generating Flow**
Evan Michael Walsh, 15, Sophomore, Great Mills High School, Great Mills, Maryland, T: Charles Skinner
- MATSO41** **Bulletproof Backpack Insert: Armadillo Skin**
Ava Elizabeth Cotroneo, 16, Sophomore, Dr. James A. Forrest Career And Technology Center, Leonardtown, Maryland, T: Nathan Swick
- MCRO034** **Tracking Viral Evolution: Disease Diversity of Cloned Deformed Wing Virus in Honeybee Populations**
Alriana Ashlyn Buller-Jarrett, 18, Senior, Charles Herbert Flowers High School, Springdale, Maryland, T: Karen Shelton

Baltimore, USMD07, Morgan State University Science-Mathematics-Engineering Fair

- SOFT030** **Guiding Responses to Climate Change: Integrating Fourier Transformation and Residual Learning for Arctic Sea Ice Forecasting**
Louis Lapp, 17, Junior, Baltimore Polytechnic Institute, Baltimore, Maryland, T: Kowsar Ahmed
- TMEDO41** **Higher Serum Testosterone Level Was Associated With Lower Risk of Prediabetes in US Adults: Findings From Nationally Representative Data**
Jason Jiaze Wang, 16, Junior, Marriotts Ridge High School, Marriottsville, Maryland, T: David Hong

MASSACHUSETTS

Bridgewater, USMA01, Massachusetts Region V Science Fair

- ROBO043** **Treating COVID-19 With Machine Learning**
Evan Zhang, 17, Junior, Dover-Sherborn High School, Dover, Massachusetts, T: Kurt Amber

Medford, USMA02, Massachusetts Region IV Science Fair

- ROBO055** **Developing a Precision Rocket Landing Algorithm Using Convolutional Neural Networks and Model Predictive Control Algorithms**
Timucin Erbas, 16, Junior, Acton Boxborough Regional High School, Acton, Massachusetts, T: Brian Dempsey

Fall River, USMA03, Massachusetts Region III Science Fair

- EAEV082** **Are There Microplastics in Fast-Food?**
Molly Abigail Cullen, 15, Sophomore, Bishop Feehan High School, Attleboro, Massachusetts, T: Audrey Lavertu

Cambridge, USMA04, Massachusetts Region I Science Fair

MCRO038 **The Deletion of a Disulfide Bridge Through Site-Directed Mutagenesis to Adapt Cutinase to the Biodegradation of Polyethylene Terephthalate**
Elizabeth Zofia Hanechak, 16, Sophomore, Pope Francis Preparatory School, Springfield, Massachusetts, T: Robert Brodeur

Worcester, USMA05, Massachusetts Region II State Science Fair

ETS050 **A Novel CubeSat-Based System for On-Orbit Millimetric Debris Detection and Characterization**

Nevin Thinagar, 17, Junior, Massachusetts Academy of Math and Science at WPI, Worcester, Massachusetts, T: Kevin Crowthers

TMED076 **The Effectiveness of a Standardized Mixture of Antioxidants as a Preventative Treatment for PTSD and Its Symptoms in *C. elegans***

Anshika Shekhar, 16, Junior, Massachusetts Academy of Math and Science at WPI, Worcester, Massachusetts, T: Kevin Crowthers

Boston, USMA06, Massachusetts Region VI Science Fair

EAEV073 **Novel Multivariate Analysis of Road Erosion Factors Through the Utilization of Structural Equation Modeling (SEM) to Model Road Erosion Risk**

Zach Chen, 17, Junior, Boston Latin School, Boston, Massachusetts, T: Kathleen Bateman

Dudley, USMA50, Massachusetts State Science & Engineering Fair

BMED066 **A Novel Proteomics-Based Model for Determining the Effects of Microplastics on Disease Pathways: Using *in silico* Machine Learning and *in vivo* *Dugesia dorocephala* Model**

Pranav Narasimha Addanki, 15, Sophomore, Canton High School, Canton, Massachusetts, T: Rebecca Stang

CBIO064 **Measuring Genetic Diversity and Change in a Predator Prey Relationship**

Yaniv Dylan Taussky, 16, Sophomore, Wellesley High School, Wellesley, Massachusetts, T: Michael Krieger

EAEV066T **The Electrolytic Extraction of Dawsonite From Ocean Water: Efficient Saltwater Mineral Recovery Through Electrolysis**

Dylan Nayan Striek, 15, Sophomore, Rylee Jane Blair, 17, Junior, Disha Mudenu, 17, Junior, Hopkinton High School, Hopkinton, Massachusetts, T: Kristen Murphy

ENEV077 **Novel Wearable Volatile Organic Compound Detection and Mitigation via Cumulative Solvatochromism and Dietary Modification**

Aryan Mago, 16, Junior, Groton School, Groton, Massachusetts, T: Stephen Belsky

ETSD055 **Control System for an Autonomous Sailboat**

Caden Ashmore, 16, Junior, Grafton High School, Grafton, Massachusetts, T: William Kelleher

MATSO48 **Efficient Fog Harvesting Interface With Bio-Inspired Multilayer Micro Kirigami**

Huiyi Wen, 17, Junior, Tabor Academy, Marion, Massachusetts, T: David Wellstead

ROBO044 **An Under-Actuated Fast-Running Bipedal Lizard Robot With Optimized Lateral Bending**

Arielsie Li, 17, Junior, Phillips Academy, Andover, Massachusetts, T: Keith Robinson

ROBO067 **Cost-Effective and Educational Refreshable Braille Display With Cognitive Learning Features**

Nagamitish Nagamuralee, 17, Senior, Lexington High School, Lexington, Massachusetts, T: Cheryl Zurbrick

ROBO076 **A Novel Pneumatically-Actuated Soft Robotic Hand With 3D Vision-Based Teleoperation**

Hanna Matusik, 16, Junior, Lexington High School, Lexington, Massachusetts, T: Reginald Hobbs

MICHIGAN

Farmington, USMI02, Science and Engineering Fair of Metropolitan Detroit

CBIO020 **Novel Machine Learning Software for DeNoising and Visualizing EEG Data**

Ashwin Mahendran, 16, Junior, Dakota High School, Macomb, Michigan, T: Jon Jones

- CBIO026** **Autonomous Navigation Solution for Medical Microbots With Deep Reinforcement Learning**
Vikram Srinivas Goddla, 17, Junior, Detroit Country Day School, Beverly Hills, Michigan, T: Patricia Hanlan
- CELL033** **Pattern of IRG1/Acod1 Expression in the Tumor Microenvironment as Revealed by Single-Cell RNA Seq Analysis**
Austin Feng, 17, Senior, Cranbrook Kingswood School, Bloomfield Hills, Michigan, T: Stephanie Kokoszka
- ENBM045T** **A Wearable Sensor for Continuous Heart Sound Monitoring**
Olivia Xu, 15, Sophomore, Anthony Li, 16, Sophomore, Lillian Jing, 16, Sophomore, Troy High School, Troy, Michigan, T: Rebecca Brewer
- ENEV042** **Use Of Aerial Drone Technology To Monitor Air Quality in Urban Communities**
Omaree Ishmael, 17, Senior, Davis Aerospace, Detroit, Michigan, T: Sharon Holloway
- ETSD030** **Turbulent Jet Flow to Induce Entrainment for Atmospheric Rocket Flight**
Akshaj Sharma, 16, Junior, International Academy, Troy, Michigan, T: Jaclyn Toepel-Hartzell
- SOFT028** **Applications of Quantum Randomness in Healthcare Informatics**
Anirudh S. Venkat, 17, Junior, Huron High School, Ann Arbor, Michigan, T: Andrew Collins
- TMEDO36** **A Novel Approach to Systemic in silico Drug Discovery Using a Machine Learning-Based Prediction of Binding Affinity**
Fuga Takahashi, 16, Junior, Novi High School, Novi, Michigan, T: James Didio
- Bloomfield Hills, USMIO3, Flint Regional Science & Engineering Fair**
- EAEV042** **Assessing Microplastics and Genotoxicity of Rivers in the Great Lakes Bay Area Using S9 Enzymes to Simulate Human Environment**
Anthony Daoud, 16, Junior, Saginaw Arts and Sciences Academy, Saginaw, Michigan, T: Matthew Miller
- EGSD026T** **Generating Hydrogen and Oxygen to Power an Internal Combustion Engine as a Function of Dry Cells and Amperage**
Andrew Joseph Wagner#, 18, Senior, Olivia Jean Wagner#, 15, Sophomore, Nouvel Catholic Central High School, Saginaw, Michigan, Herbert Henry Dow High School, Midland, Michigan, T: Clara Wagner T: Claire Fries
- MATH031** **Creating and Assessing a Tool to Organize Graphs Using Hooke's Law**
Joseph Crachiola, 18, Senior, Saginaw Arts and Sciences Academy, Saginaw, Michigan, T: Brad Yurgens
- TMEDO39** **NueROX: A Visual Diagnosing System Using a Fully Optimized Convolutional Neural Network Architecture for Rapid and Efficient Classification of Tumorous and Non-Tumorous Brain MRI's and a Model for the Segmentation, Dimension, and Severity Estimation of Brain Tumors**
Akhilesh Reddy Kanmanthreddy, 15, Sophomore, Saginaw Arts and Sciences Academy, Saginaw, Michigan, T: John Barnes
- Kalamazoo, USMIO7, Southwest Michigan Science & Engineering Fair**
- CHEM044** **Characterization and Optical Properties of Nanoplastics Synthesized From Common Household Products**
Sreya Mulakkayala, 18, Senior, Kalamazoo Area Mathematics and Science Center, Kalamazoo, Michigan, T: Rebecca Joyce
- PLNT040T** **Invasive Plant Species Management: Development of a Novel Identification System**
Ashika Bhavani Gullapalli#, 18, Senior, Fayyaz Razi, 18, Senior, Kalamazoo Area Mathematics and Science Center, Kalamazoo, Michigan, T: Rebecca Joyce
- Farmington, USMI50, Michigan Science and Engineering Fair**
- SOFT026** **3D Acoustic Simulation and Optimization Algorithms for Transcranial Focused Ultrasound Delivered With Robotic Systems**
Michelle Hua, 18, Senior, Cranbrook Kingswood School, Bloomfield Hills, Michigan, T: Stephanie Kokoszka
- TMEDO40** **Innovative Combination Therapy for Treating Brain Tumors: Using Avatar Models to Help Improve Patient Outcomes**
Constantine Steven Kalkanis, 16, Junior, Detroit Country Day School, Beverly Hills, Michigan, T: Lara McMillan

MINNESOTA

Duluth, USMNO2, Northeast Minnesota Regional Science Fair

- BMEDO01** **Disinfectant Properties of *Nuphar advena*: An Ethnopharmaceutical Approach**
Johanna Bernu, 16, Sophomore, Cloquet Senior High School, Cloquet, Minnesota,
T: Cynthia Welsh
- EAEV001** **Using Microplastics to Sequester Organophosphate Pollutants**
Emelyn Claire Beaster, 18, Senior, East High School, Duluth, Minnesota,
T: Cheryl Kurosky

Plymouth, USMNO4, Twin Cities Regional Science Fair

- EGSD013** **Making Natural Gas From Compost**
Sarah Danay Zamudio, 16, Sophomore, Burnsville High School, Burnsville, Minnesota,
T: Mike Huemoeller
- ENEV018** **Green Electronics: A Feasible Solution to Reduce E-Waste Pollutions**
John Zhongtai Liu, 14, Freshman, Mounds View High School, Arden Hills, Minnesota,
T: Yuyang Liu
- PLNT011** **Impact of Biochar as Soil Amendment on Produce Yield (Year 1)**
Sriram Sureshkumar, 16, Sophomore, Mahtomedi High School, Mahtomedi, Minnesota,
T: Asha Joshi
- SOFT009** **Detecting Cataracts From Front-View Retinal Images Using Machine Learning**
Lakshika Nanda Kumar Reddy, 17, Junior, Math and Science Academy, Woodbury,
Minnesota, T: Nanda Kumar Narayana Reddy

Crookston, USMNO5, Western Minnesota Regional Science Fair

- EAEV011** **The Study of Aquatic Plants Effect on Polluted Waters**
Isabella Wimmer, 16, Sophomore, Perham High School, Perham, Minnesota,
T: Shawn Stafki

Rochester, USMNO7, Rochester Regional Science & Engineering Fair

- CELL009** **Altering Mitochondrial Bioenergetic Pathways to Overcome Melphalan Resistance in Multiple Myeloma, Year 2**
Isha Kapoor, 17, Junior, Mayo High School, Rochester, Minnesota, T: Christin Stegenga
- TMEDO12** **Cure of Breast Cancer-Year 6: Novel Approaches in the Therapy of Metastatic Breast Cancer Using Clinical Databases and 3D Organoid Model**
Christine Song, 18, Senior, Mayo High School, Rochester, Minnesota, T: Sarah Michet

Plymouth, USMNO9, St. Paul Science Fair

- EGSD014** **Wood-n't It Be Nice: Demonstrating a Novel Continuous Piezoelectric Charge Pump**
Maggie Banks, 17, Junior, Mounds Park Academy, St. Paul, Minnesota, T: Marc Shapiro
- ENBM015** **The Effect of Gefitinib on Cell Proliferation and Invasion in 2D and 3D Cultures of MDA-MB-231 Breast Cancer Cells**
Henry Thomas Choi, 17, Junior, Saint Paul Academy and Summit School, Saint Paul, Minnesota, T: Karissa Baker

Plymouth, USMNO10, Western Suburbs Science Fair

- CELL014** **Beyond Neurons: Mapping the Fine-Scale Organization of Blood Vessels in the Brain May Provide New Insights Into the Mechanisms of Dementia**
Arreh Jain, 17, Senior, Wayzata High School, Plymouth, Minnesota, T: Princesa Hansen
- EBED013** **Wi-C.A.R.E: Wifi Computer-Assisted Remote Eldercare (Year 4)**
Shreshth Shrivastava, 16, Junior, Eden Prairie High School, Eden Prairie, Minnesota,
T: Princesa Hansen
- MATH014** **Extremal Problems on the Steiner k-Distance and the Steiner k-Wiener Index**
Andrew Li Zhang, 17, Senior, Wayzata High School, Plymouth, Minnesota,
T: Hua Wang
- MATS012** **The Application of Mushroom Mycelium as a Biomaterial and Leather Alternative**
Ana Morgan Stewart, 18, Senior, Minnetonka High School, Minnetonka, Minnesota,
T: Kimberly Hoehne
- PLNT012** **Protecting Plants: Investigating the Relationship Between Fertilizers and Insect Damage in an Urban Garden**
Sarah Marie Peterson, 18, Senior, Breck School, Golden Valley, Minnesota,
T: Kati Kragtorp

St. Paul, USMN50, Minnesota Academy of Science State Science & Engineering Fair

- EBED031T** **Project WASP: Autonomous Self-Watering Planter Using Atmospheric Water**
Rishi Bhargava, 17, Junior, Humza Murad, 17, Junior, Saint Paul Academy and Summit School, Saint Paul, Minnesota, T: Kate Lockwood
- EGSD049** **SkyWindFarm: Design of a Novel Vertical Airborne Wind Turbine Clean Energy Farm**
Yash Dagade, 17, Junior, Eden Prairie High School, Eden Prairie, Minnesota, T: Princessa Hansen
- ENBM056** **Personalization of Deep Brain Stimulation Surgery Pre-Operational Planning: Integration of 7-Tesla MRI Segmentations Into 3-D Brain Visualization Platform**
Karen Claire Nakamura, 18, Senior, Math and Science Academy, Woodbury, Minnesota, T: Oren Solomon
- ETSD042** **Unbind the Blind: Engineering an Emergency Evacuation Solution for the Visually Impaired**
Muminah Nihaar Mohammed, 17, Junior, Al-Amal School, Fridley, Minnesota, T: Hala Bazzi

MISSISSIPPI

Ocean Springs, USMS01, Mississippi Region VI Science and Engineering Fair

- BEHA009** **Analyzing the Access to Quality Nutrition of Students**
Dia Kher, 17, Senior, The Mississippi School for Mathematics and Science, Columbus, Mississippi, T: Joseph Barnard
- BMED017** **Investigating the Potential for Vitamin D3 to Serve as a Therapeutic Against the Degenerative Effects of Diabetes Using *Drosophila melanogaster* as a Model Organism**
Madison Grace Echols, 18, Senior, Mississippi School for Mathematics and Science, Columbus, Mississippi, T: Joseph Barnard

Booneville, USMS02, Mississippi Region IV Science Fair

- MCRO059** **The Effects of *Serratia marcescens* Algicidal Production of Prodigiosin on the Growth of *Microcystis aeruginosa*: An Environmentally-Preventative Approach**
Emerson Reese Morris, 18, Senior, St. Patrick Catholic High School, Biloxi, Mississippi, T: Deborah Worrel
- TMED071** **Neuroendoscopic Bias: A Comparison of EVD and IVF in IVH Secondary to SICH: A Pediatric Oncologic Case Study on Neuroendoscopy, External Ventricular Drainage, and Intraventricular Fibrinolysis Regarding Intraventricular Hemorrhage Secondary to Spontaneous Supratentorial Intracerebral Hemorrhage in Children With Atypical Teratoid Rhabdoid Tumor (T2N1M1)**
Adler Paige Brogdon, 16, Sophomore, St. Patrick Catholic High School, Biloxi, Mississippi, T: Deborah Worrel

Cleveland, USMS03, Mississippi Region III Science and Engineering Fair

- ETSD034** **Modeling Lattice Fins as Flight Control Surfaces for a Precision Guided Landing of Reusable Rockets**
Rushyendranath Reddy Nalamalapu, 17, Junior, Mississippi School for Mathematics and Science, Columbus, Mississippi, T: Joseph Barnard
- MCRO036** **Antibacterial Effects of Culinary Spices on *Serratia marcescens* and *Bacillus cereus***
Lisa Renee Seid, 17, Junior, The Mississippi School for Mathematics and Science, Columbus, Mississippi, T: Joseph Barnard

Jackson, USMS05, Mississippi Region II Science and Engineering Fair

- EAEV053** **Runoff of Chemical Herbicide Paraquat and Its Concentration in the Environment**
Pranav Reddy, 15, Sophomore, St. Andrew's Episcopal School, Ridgeland, Mississippi, T: Grace Bellnap
- MATS036** **Design of Multifunctional Magnetic Nanoparticle for Separating and Combating Waterborne Pathogen**
Gautam Ray, 17, Junior, Jackson Academy, Jackson, Mississippi, T: Avijit Pramanik
- MCRO037** **Investigating Anti-bacterial Resistance for Developing Nanomedicines Using Citrate-Based Gold Nanoparticles and Urea-Derived Carbon Nanodots**
Jonmejoy Agniva Dhar, 18, Senior, St. Andrew's Episcopal School, Ridgeland, Mississippi, T: Mackenzie Gibbs

Mississippi State, USMS06, Mississippi Region V Science and Engineering Fair

BMED018 Metaheuristic Analysis of Transcriptional Control to Capture Leukemia Cell Line Characteristics

Nicholas Popescu, 17, Senior, The Mississippi School for Mathematics and Science, Columbus, Mississippi, T: Joseph Barnard

PLNT022 The Effect of Low Voltage Electricity on the Plant Health and Germination of *Raphanus sativus* and *Pisum sativum*

Ashton Taylor, 17, Junior, Mississippi School for Mathematics and Science, Columbus, Mississippi, T: Tina Gibson

Oxford, USMS07, Mississippi Region VII Science and Engineering Fair

MCRO025 What's in That Crack? Exploring Urban Micro Environments for Novel Amoeboid Diversity Using Next-Gen Sequencing

Danielle Elizabeth McConnell, 17, Senior, The Mississippi School for Mathematics and Science, Columbus, Mississippi, T: Joseph Barnard

PLNT025 Vertical Farming: An Approach to Sustainable Agriculture and Food Security for the Future: Cultivation, Yield and Product Quality

Rishi Nautiyal, 16, Junior, Oxford High School, Oxford, Mississippi, T: Suman Chandra

Hattiesburg, USMS50, Mississippi Science and Engineering State Fair

ANIM048 Role of Aryl Hydrocarbon Receptor in Larval *Danio rerio* Benzo[a]pyrene-mediated Behavioral Effects

Arika Araya Gardner, 17, Senior, Mississippi School for Mathematics and Science, Columbus, Mississippi, T: Joseph Barnard

BEHA054T The Effectiveness of Auditory Sub-Threshold Stimuli on Improving the Academic Performance and Mental Propensity of Students With Learning Disabilities

Shayleen Dorian Moeini#, 16, Sophomore, Madilyn Ann Dickinson#, 15, Sophomore, St. Patrick Catholic High School, Biloxi, Mississippi, T: Deborah Worrel

MISSOURI

Cape Girardeau, USMO01, Southeast Missouri Regional Science Fair

BCHM009 The Effect of pH of Water on the Biodegradation of Microplastics via the *Micrococcus luteus* Bacteria

Kaden Dane Luker, 17, Senior, Jackson Senior High School, Jackson, Missouri, T: Brittany Kelley

PLNT046T Can Natural Bryophyta Gardens Affect Air Quality, and Overall Health, and Possibly Put Forth New Ways to Rid the Atmosphere of Greenhouse Gasses? A Small Piece of the Bigger Picture

Jasmine Elizabeth Muench, 17, Junior, Erin Elizabeth Holly, 17, Junior, Perryville Senior High School, Perryville, Missouri, T: Leanna Thele

Joplin, USMO03, Missouri Southern Regional Science Fair

ANIM041 The Effect of Various Diet Consumption on Simulated Alzheimer's Disease Responses

Anna Katherine Barnhart, 16, Junior, Joplin High School, Joplin, Missouri, T: Karisa Boyer

Kansas City, USMO04, Greater Kansas City Science & Engineering Fair

BCHM028 Characterization of Engineered Protein LLHP Repression Through the Induction of DNA Looping

Mia Stamos, 17, Junior, Shawnee Mission East, Prairie Village, Kansas, T: Kenneth Lee

CBIO063 The Use of Topological Scoring and Chemical Cross-Linking to Identify Direct Protein Interactions in the Sin3 Complex

Abigail Rose West, 18, Senior, Shawnee Mission West High School, Overland Park, Kansas, T: Kenneth Lee

CELL046 Alzheimer's and Aftins: Understanding the Role of Mitochondria in Alzheimer's Disease

Caleb Andrew Gilmore, 17, Senior, Shawnee Mission East, Prairie Village, Kansas, T: Kenneth Lee

EAEV070 Analysis of the Extent of Microplastic Contamination Through the Study of Beach Sand

Elizabeth Rose Barnes, 14, Freshman, Shawnee Mission West High School, Overland Park, Kansas, T: Kenneth Lee

Wentzville, USMO05, Missouri Tri-County Regional Science and Engineering Fair

ANIM044 The Effect of Anthropogenic Noise on Bumblebee Foraging Patterns: Further Investigated

Lila Carlene Sverdrup, 18, Senior, Wentzville Holt High School, Wentzville, Missouri,
T: Jennifer Hess

CELL051 The Mechanism of Action by Which p38 Alpha/Beta Regulate DUX4 Gene Expression

Andrew James Bufalo, 18, Senior, Wentzville Holt High School, Wentzville, Missouri,
T: Jennifer Hess

St. Louis, USMO07, Academy of Science - Greater St. Louis Science Fair

CHEM011 Modified Nanoporous Gold Sensor for the Electrochemical Detection of Acetaminophen

Alice Wang Liu, 16, Junior, Marquette High School, Chesterfield, Missouri,
T: Cathy Farrar

ETSD014 Aural Real-Time Position: Determining Model and Influencing Factors

Alex Chen, 18, Senior, Marquette High School, Chesterfield, Missouri, T: Cathy Farrar

Greenfield, USMO08, Ozarks Science and Engineering Fair

ENBM070 Solve Deblurring and Super Resolution in Low-Dose Computer Tomography via One Novel Neural Network

Mingjun Feng, 17, Junior, Nixa High School, Nixa, Missouri, T: Christina Shepherd

ENEV066 Novel Application of Oidiiodendron truncatum to Inhibit Growth

Nicole Katherine Westhusing, 15, Freshman, Camdenton High School, Camdenton, Missouri, T: Andrew Fecteau

Hillsboro, USMO09, Mastodon Art/Science Regional Fair

PLNT043 The Unique Properties of Onondaga Cave Algae

Cameron James Tedrick, 16, Sophomore, St. Clair High School, St. Clair, Missouri,
T: Ben Martin

ROBO047 A Fully Autonomous Heterogeneous Drone Swarm for Collaborative Target Pursuit

Michelle Wang, 18, Senior, Carbondale Community High School, Carbondale, Illinois,
T: Christi McGee

Fayette, USMO10, Central Methodist Eagles Science and Engineering Fair

CBIO068 BIO-PLEX: An Innovative Biocomputational Approach to Decode the Secrets of the 2022 Mpox Resurgence

Saathvik R. Kannan, 17, Junior, David H. Hickman High School, Columbia, Missouri,
T: Kamal Singh

MONTANA

Billings, USMT01, MSU Billings Science Expo

EAEV083T Investigation of Fecal Indicator Bacteria in the Baker Lake via Monitoring of Fecal Coliforms and Genomic Analysis

Cheyenne May Dame, 19, Senior, Conrad M Hess, 16, Junior, Baker High School, Baker, Montana, T: Linda Rost

Butte, USMT02, Montana Tech Regional Science and Engineering Fair

CELL031 The Impact of Gut-Brain Neurotransmitter Signaling on Reproductive Success

Faith Vyn You, 16, Sophomore, Hellgate High School, Missoula, Montana,
T: Willow Affleck

CELL058 Purification of the MED1 Receptor Interaction Domain

Shaun Stephen Liechty, 18, Senior, Sentinel High School, Missoula, Montana,
T: Kelly Nelson

Great Falls, USMT04, Great Falls College MSU Regional Science & Engineering Fair

ANIM027 Calories Count

Hal McGregor, 16, Sophomore, Cascade Public Schools, Cascade, Montana,
T: Kendra Lane

CHEM028 Using Surfactants to Fight Fire

Tyler John Lane, 15, Sophomore, Cascade Public Schools, Cascade, Montana,
T: Kendra Lane

Missoula, USMT50, Montana Science Fair

ANIM052T Equine Engineering: Guaranteeing Pressure-Free Performance
Zoey Lee Wright, 16, Sophomore, Brylee Ann Wright, 16, Sophomore, Simms High School, Simms, Montana, T: Vonda Harrison

BEHA055 Die Verwante Woord Project: Learning Afrikaans Using HD-tDCS
Garrett Michael Goulstone, 15, Sophomore, Hellgate High School, Missoula, Montana, T: Willow Affleck

MATS032 Silk Fibroin-Coated Drug-Eluting Sutures
Mila McKay, 18, Senior, Hellgate High School, Missoula, Montana, T: Willow Affleck

NEBRASKA

Hastings, USNE01, Central Nebraska Science and Engineering Fair

BEHA033 The Influence of Career Technical Student Organizations on College Success and Self Perceived Efficacy
Samantha Bonifas, 18, Senior, Silver Lake High School, Roseland, Nebraska, T: Kim Bonifas

EGSD037 Investigating the Use of Structural Supports to Optimize the Production of Algae
Kiara Kay McGuire, 17, Senior, Ogallala High School, Ogallala, Nebraska, T: Jennifer Jones

ETSD026 How Do Shock Pistons Affect the Efficiency and Ride Quality of a Shock?
Dominic Stutesman, 17, Junior, Adams Central Jr.-Sr. High School, Hastings, Nebraska, T: Jay Cecrle

NEVADA

Spring Creek, USNV01, Elko County STEM Fair

BMEDO12 Medicinal Effects of *Sambucus caerulea* and *Lomatium dissectum* on A549 Lung Cancer Cells
Tziavi Brynn Melendez, 18, Senior, Owyhee High School, Owyhee, Nevada, T: Dietlinde Dann

BMEDO33 Medicinal Uses of *Artemisia tridentata*
Mattisen Lee Jones, 18, Senior, Owyhee High School, Owyhee, Nevada, T: Dietlinde Beneder-Dann

Las Vegas, USNV02, Beal Bank USA Southern Nevada Regional Science & Engineering Fair

CHEM060T Developing an Ethylene Scavenging Polyurethane Foam Packaging Material That Delays the Ripening Process of Climacteric Produce
Samuel Chen, 16, Junior, Jennifer Hsu, 17, Junior, Ed W. Clark High School, Las Vegas, Nevada, T: Zeola Braxton

NEW HAMPSHIRE

Nashua, USNH50, New Hampshire Science & Engineering Expo

BMEDO31 Computational Analysis of MicroRNA Variants Regulating GLUT3 in ADHD
Aden Geonhee Lee, 17, Junior, Phillips Exeter Academy, Exeter, New Hampshire, T: Anne Rankin

CBIO024 Differential Gene Expression Between Mucinous and Non-Mucinous Colorectal Adenocarcinomas
Aditya Bakshi, 17, Senior, Nashua High School South, Nashua, New Hampshire, T: Cynthia Pitkin

ENEV035 An Economical and High-Precision Approach for Nitrate Detection and Filtration to Ensure Quality Drinking Water
Abhinav Avvaru, 16, Junior, Nashua High School South, Nashua, New Hampshire, T: Gwen Goodwin

NEW JERSEY

Lebanon, USNJ01, Terra North Jersey STEM Fair

CBIO038 **Discovering Small-Molecule Inhibitors of the c-MET/HGFR Tyrosine Kinase via Machine Learning**

Elliott Junhan Yoon, 16, Junior, Tenafly High School, Tenafly, New Jersey,
T: Aparna Subramaniam

CELL042 **Targeting Neoantigens Derived From the ZRSR2 Mutation in Hematologic Malignancies**

Jacob Winick, 18, Senior, Millburn High School, Millburn, New Jersey,
T: Susan Arrigoni

ETSD056 **A Novel Autonomous Vertical Take-Off and Landing (VTOL) Aircraft Using a Variable Thrust Control Vector and Morphing Wing Configuration System**

Samhita Pokkunuri, 15, Sophomore, Old Bridge High School, Matawan, New Jersey,
T: Vito Cangelosi

MATH034 **Extending the Vieta-Newton Theorem**

Jeffrey Xu, 17, Junior, Montgomery High School, Skillman, New Jersey,
T: Mihaela Tingire

MATSO45 **GLASS: A Geometric Local Attention-Based Model to Design Superconducting Structures**

Andy Xu, 17, Senior, Millburn High School, Millburn, New Jersey, T: Susan Arrigoni

MATSO49 **Silk Analysis of Silkworms Fed Microcrystalline Cellulose and Cellulose Acetate**

Melinda Deng, 17, Junior, Millburn High School, Millburn, New Jersey,
T: Susan Arrigoni

Spring Lake, USNJ02, Jersey City Medical Center/Barnabas Health STEM Showcase

ROBO071 **Preventing Trespasser Fatalities in NJ Transit Rail Lines Using a YOLO Single-Stage Convolutional Neural Network**

Aditya Jain, 17, Junior, Dr. Ronald E. McNair Academic High School, Jersey City,
New Jersey, T: Maria Osoria

TMED075 **Novel Therapeutic Efficacy of Curcumin and Fish Oil (Omega-3 Fatty Acids) on Inhibiting Neuroinflammation and Neuronal Apoptosis in *Mus musculus* Microglial Cells**

Ehtesham Suhail, 16, Junior, Dr. Ronald E. McNair Academic High School, Jersey City,
New Jersey, T: Maria Osoria

Yardley, USNJ03, Mercer Science and Engineering Fair

MATH041 **Strict Inequalities for the n-Crossing Number**

Nicholas David Hagedorn, 17, Junior, Princeton High School, Princeton, New Jersey,
T: Ryan Walsh

ROBO066 **A Low Cost and Effective Robot: A Four-Wheeled Omnidirectional Robot Equipped With a Multitude of Sensors in Addition to Machine Vision to Successfully Introduce Students to Robotics Through RoboCup**

Naveen Enock, 17, Junior, West Windsor-Plainsboro High School South, West Windsor Township, New Jersey, T: Danielle Bugge

Hackensack, USNJ04, BCA Research Expo

BMED027 **Sulforaphane and Panobinostat: A Novel Therapy for Glioblastoma Multiforme**

Harika Sri Koduru, 17, Senior, Bergen County Academies, Hackensack, New Jersey,
T: German Sabio

ENBMO39 **Novel Approach to Creating Hyper-Customizable Egg Models for Embryonic Analysis**

Muhammad Hosam Eldin El-Sherbiny, 15, Sophomore, Bergen County Academies,
Hackensack, New Jersey, T: Carlos Nodarse

PHYS030T **Efficient Computation of Casuality in Globally-Hyperbolic Spacetimes Using Link Invariants**

Mark Gabriel Suppiah, 17, Junior, Justin Zhang, 17, Junior, Jeremy Seth Pitcock, 16,
Junior, Bergen County Academies, Hackensack, New Jersey, T: Ozgur Dogru

NEW MEXICO

- Albuquerque, USAI50, National American Indian Science and Engineering Fair**
ENEVO64 DINE (Digitally INtegrated Environmental) Arduino Platform for Environmental Quality, Safety, and Health
Ember Bahe, 16, Junior, Navajo Preparatory School, Farmington, New Mexico,
T: Yolanda Flores
- TMEDO62 Black Walnut: Indigenous Medicine Realized**
Ariel Green, 17, Senior, Northwest Technology Center, Fairview, Oklahoma,
T: Shawn Cusack
- Albuquerque, USNM01, Central New Mexico Regional Science and Engineering Challenge**
ANIM040 Diets of a Diet: How Does the Introduction of Different Minerals/Vitamins Affect the Lifespan of Feeder Crickets?
George Miles Privett, 17, Junior, Rio Rancho High School, Rio Rancho, New Mexico,
T: Jennifer Miyashiro
- EAEVO80 Addressing Disparities in Air Quality Monitoring: Using Machine Learning and Remote Sensing to Estimate the Distribution of PM2.5 in Mexico**

Eliana Kai Juarez, 18, Senior, V. Sue Cleveland High School, Rio Rancho, New Mexico,
T: Leah Felty
- EBED034 A Fault Management System for Deep-Space CubeSats**

Landon Flemming, 18, Senior, Explore Academy, Albuquerque, New Mexico,
T: Melissa Chouinard-Jahant
- TMEDO55 Deep Learning Prediction and *in vitro* Validation of Novel Anti-Cancer Peptides From Marine Taxa Database**

Aditya Kiran Koushik, 16, Junior, La Cueva High School, Albuquerque, New Mexico,
T: Lena Eddings
- Farmington, USNM02, San Juan New Mexico Regional Science and Engineering Fair**
BCHM013 Toxin Capturing Algae and the Effect on the Mitotic Index of *Allium cepa* Root Tip of Tsaille Lake, Navajo Nation
Kandis Jaiden Antonio, 17, Junior, Navajo Preparatory School, Farmington, New Mexico,
T: Yolanda Flores
- CHEM013 Artificial Synthesis of Aromatic Amino Acid Tyrosine, Based on Pi-to-Pi* Absorbance Peaks**

Jordyn Begay, 17, Junior, Navajo Preparatory School, Farmington, New Mexico,
T: Yolanda Flores
- Grants, USNM03, Four Corners Regional Science and Engineering Fair**
CHEM035 Insects: Meat of the Future

Alexia Lynn Munson, 17, Junior, Grants High School, Grants, New Mexico,
T: Jason Grosch
- Las Vegas, USNM05, Northeastern New Mexico Regional Science and Engineering Fair**
ENEVO33 Engineered Underwater Vehicle for Ocean Litter Mapping

Daniel Kim, 17, Junior, Los Alamos High School, Los Alamos, New Mexico,
T: Michela Ombelli
- ENEVO34 Developing a Deep Learning Model to Approximate the Convolutional Geometry of Wildfires**
Gene Goh Huntley, 15, Sophomore, Academy for Technology and the Classics, Santa Fe, New Mexico, T: David Kriegshauser
- Socorro, USNM50, New Mexico Science and Engineering Fair**
CHEM064 Construction of Oxygen Permeable Vessels Stage 2: Impact of Cellulose Fiber Lengths on Structure and Functionality

Katherine Carrillo Ortiz, 17, Junior, Academy for Technology and the Classics, Santa Fe, New Mexico, T: David Kriegshauser
- ENEVO84T Utilizing an Experimental Compost To Accelerate the Degradation Process of Low Crystallinity PET Plastics and Employing Molecular Docking To Analyze Targeted Binding Pockets**
Steven Xu, 16, Sophomore, Sylvia Xu, 14, Freshman, Ivan Belyaev#, 18, Senior, New Mexico Military Institute, Roswell, New Mexico, T: Demvia Maslian

- ENEV085** **Toxicological Study of Treated Produced Water for Water Conservation, Reclamation, and Reuse**
 ## Haoyu Bradley Wang, 17, Senior, Centennial High School, Las Cruces, New Mexico, T: Lisa Weinbaum
- MATS055T** **Research for Super-Absorbent Polymer Materials From Tapioca Starch and Applications for Producing Fire-Resistant Hydrogel Products**
 Khang Luu, 17, Junior, Thomas Patrik Wirta, 18, Junior, Ewa Maria Zapala, 18, Junior, Armand Hammer United World College, Montezuma, New Mexico, T: Ramaiah Vva
- PLNT058T** **Utilizing Crop Starches Incorporating Capsaicinoids and Glucosinolates Extracted From Locally Produced Plants To Synthesize Bio-Degradable Insect Detering and Weed Barrier Plastics as an Alternative to Commercially Produced Agricultural Plastics**
 Evan Daniel Kennedy, 17, Junior, Isaac Jaden Armenta Perez, 16, Junior, Lucas Tang, 14, Freshman, New Mexico Military Institute, Roswell, New Mexico, T: Frank Kimbler

NEW YORK

Poughkeepsie, USNY01, Dutchess County Regional Science Fair

- BMEDO65** **Combating Antibiotic Resistance in *E. coli***
 Aksat Shah, 17, Junior, Roy C Ketcham Senior High School, Wappingers Falls, New York, T: Patricia Glancey
- EAEV059** **Biological Buffers: Countering Ocean Acidification**
 Nafiah Farid Mohammed, 16, Junior, John Jay Senior High School, Hopewell Junction, New York, T: Leah Miller

Halesite, USNY02, Long Island Science and Engineering Fair

- ANIM021** **The Ability of Vitamin E to Improve the Reproduction, Locomotor Fitness, and Metabolic Respiration of Nicotine-Induced *D. melanogaster***
 Ibrahim Qadri, 17, Senior, Valley Stream South High School, Valley Stream, New York, T: Melissa Torregrosa
- BEHA015** **Occupational Stress and Mental Health Outcomes Among the Emergency Medical Services Population**
 Mikayla Schwartz, 18, Senior, Paul D. Schreiber High School, Port Washington, New York, T: Elizabeth Thomas
- BEHA018** **Impacts of Levodopa and Traditional Medicines on the Locomotion of Alpha-Synuclein *Caenorhabditis elegans***
 Elif Koch, 18, Senior, Plainview-Old Bethpage John F. Kennedy High School, Plainview, New York, T: Raymond Tesar
- BEHA019** **The Correlation Between Peroxisome Levels and Short-Term Memory Loss in a PINK1-/- Rat Model of Parkinson's Disease**
 Holy Mary Zaher, 17, Senior, Smithtown High School East, St. James, New York, T: Maria Zeitlin
- BMEDO21** **Investigating the Anti-Inflammatory Effects of Famotidine**
 Jake Ethan Konigsberg, 17, Senior, Roslyn High School, Roslyn Heights, New York, T: Allyson Weseley
- BMEDO28** **The Neurobiology of Suicide: Claudin-5 Is a Novel Biomarker of Suicide Pathogenesis**
 # Natasha Kulviwat, 16, Junior, Jericho High School, Jericho, New York, T: Serena McCalla
- CBIO013** **Micro-Changing Short Tandem Repeats: Investigating a Novel Genomic Factor of Polymorphism in 10 Human Cancers**
 # Kevin Zhu, 18, Senior, Jericho High School, Jericho, New York, T: Serena McCalla
- CELL023** **Rethinking Pancreatic Ductal Adenocarcinoma (PDAC) Prognosis: Analysis of KRAS-Dependent Biomarkers Across Subtypes**
 Lucas Sher, 17, Senior, Jericho High School, Jericho, New York, T: Serena McCalla
- EAEV025** **Analysis of Microplastic Compositions in Salt and Freshwater on the South Shore of Long Island**
 Emma Fallon, 18, Senior, West Islip High School, West Islip, New York, T: Mary Kroll

- EAEV026** **Laboratory Studies of X-Ray Amorphous Phases: Constraining the Amorphous Components in Martian Soils and Rocks**
Joseph Daniel Sciotto, 17, Senior, Ward Melville High School, East Setauket, New York, T: Marnie Kula
- EAEV039** **Cost-Effective Air Quality Monitoring Using Readily Available Programming Interfaces**
Kevin Mauricio Leal, 17, Senior, Brentwood High School, Brentwood, New York, T: Rebecca Grella
- EGSD021** **Production of Plasma-Enhanced SiO₂ Films for Optimizing Photovoltaic Cells**
Emily Gloria Theodosopoulos, 18, Senior, Manhasset High School, Manhasset, New York, T: Alison Huenger
- ENBM040** **Bidirectional 12-Lead Electrocardiogram and Electrogram Reconstruction Using a Cycle Generative Adversarial Network**

ENEV024T **Developing a Hydroponic System With the Incorporation of an Arduino Uno Powered pH Sensor**
Sofia Eliza Maciel-Seidman, 16, Junior, Joy Kim, 17, Junior, Riya Saha, 16, Junior, Bethpage High School, Bethpage, New York, T: Nicole Dulaney
- MATS020** **An Advanced Computer App for Simulating White-Beam Diffraction Laue Patterns in Modern X-Ray Crystallography**
Vincent W. Huang, 16, Junior, Syosset High School, Syosset, New York, T: Mary Hendrickson
- MCRO022** **Pioneering Microbial Communities and Biofilm Succession on Plastic in a New York City Waterway**
Sammer Soliman, 18, Senior, John F. Kennedy High School, Bellmore, New York, T: Barbi Frank
- PHYS025T** **VaSt-ID: Novel Application for Variable Star Identification and Classification Using Machine Learning**
Yida Pan, 17, Junior, Luke Huang, 17, Junior, William A. Shine Great Neck South High School, Great Neck, New York, T: Nicole Spinelli
- PLNT023** **Alteration in Concentration and Spatial Distribution of Selenium, Copper, and Essential Physiological Micronutrients in *Saccharina latissima* in a Dose Response to Carbon Dioxide**
Jack Charles Schultz, 18, Senior, Westhampton Beach High School, Westhampton Beach, New York, T: Dianna Gobler
- SOFT020** **Fusing ConvNeXt and Histogram of Oriented Gradients (CNHOG) for Modular and Efficient Driver Distraction Detection**
Samay Lakhani, 17, Senior, Jericho High School, Jericho, New York, T: Serena McCalla
- TMED026T** **FetA.I.: A Novel Fetal Health Classification Program Using Soft Voting With Deep and Ensemble Learning**
Richard Li Xu, 16, Sophomore, Yifu Zuo, 16, Sophomore, William A. Shine Great Neck South High School, Great Neck, New York, T: Nicole Spinelli
- New York, USNY03, Terra New York City STEM Fair**
- ANIM047T** **Can SLEAP be Used to Track and Quantify Octopus Arm Movement?**
Tara Isabel Lago, 17, Senior, Mariella Reynoso, 18, Senior, Staten Island Technical High School, Staten Island, New York, T: John Davis
- BCHM033** **Development of a Short Peptide to Prevent Non-Thrombogenic Clot Formation on Hydrophobic Surfaces**
Rommy Sasson, 18, Senior, Brooklyn Technical High School, Brooklyn, New York, T: Michael Estrella
- BEHA056** **Auditory Acuity and Auditory Feedback Response in Children With and Without Residual Speech Sound Disorder**
Asuka Koda, 18, Senior, The Bronx High School of Science, Bronx, New York, T: Max Chomet
- BMED061** **Novel Pharmacogenomic Methodology for the Discovery of First-In-Class Mechanisms of Phenothiazine Derivatives to Delay and Rescue Alzheimer's Disease Pathology and Extend Lifespan in *C. elegans***
Kun-Hyung Roh, 18, Junior, The Bronx High School of Science, Bronx, New York, T: Vladimir Shapovalov

- CBIO057** **Coupling the Cybernetic Model With Flux Balance Analysis for Dynamic Simulation of Overflow Metabolism in *Escherichia coli***
Kiera Chan, 16, Junior, Staten Island Technical High School, Staten Island, New York, T: John Davis
- CELL056** **The Effect of NMDA Receptor Blockade on Neurogenesis and Neural Crest Development**
Kiele Almeida Morgan, 17, Senior, The Bronx High School of Science, Bronx, New York, T: Max Chomet
- EAEV074T** **Effect of Drought on Grassland Bird Species in an Urban Reclaimed Landfill**
Erica Yu, 16, Junior, Angel Huang, 16, Junior, Staten Island Technical High School, Staten Island, New York, T: John Davis
- ENBM079** **Fabricating Breast-Cancer-Cell-Laden Microspheres With Microfluidics to Simulate the Tumor Microenvironment**
Siddiq Mohammed, 18, Senior, Bronx High School of Science, Bronx, New York, T: Wagner Marisa
- MATH040** **On Numbers Whose Integer Parts of Powers Are Always Composite**
Aaron Kim, 18, Junior, Bronx High School of Science, Bronx, New York, T: Vladimir Shapovalov
- MCRO058** **Intra and Interspecies Control of Bacterial Growth Through Quorum Sensing Molecules**
Bailey Howe, 17, Senior, Brooklyn Technical High School, Brooklyn, New York, T: Michael Estrella
- PHYS065** **Results of Synthetic High-Resolution Spectra From Titan Surface Observations**
Lucas Libshutz, 18, Senior, Columbia Grammar and Preparatory School, New York City, New York, T: Ilya Yashin
- PLNT054T** **The Combined Effects of Varying Gravity Levels and Light Exposures on Garden Cress Development Using a Low-Cost 3D Printed Clinostat**
Alana Falter, 18, Senior, Benjamin Casey Kwait-Gonchar, 17, Senior, Brooklyn Technical High School, Brooklyn, New York, T: Michael Estrella
- ROBO063** **"The Truth Will Come Out": Defending Against the Viral Spread of Misinformation by Characterizing User Responses to Fake News**
Taj Jethwani-Keyser, 17, Senior, The Bronx High School of Science, Bronx, New York, T: Vladimir Shapovalov
- Mahopac, USNY05, Regeneron-Westchester Science and Engineering Fair**
- BEHA027** **Validity and Utility of Smudge.io's CNS Tap Test for Measuring Fatigue in Adolescent Athletes**
Lucy Roach, 17, Senior, Ossining High School, Ossining, New York, T: Angelo Piccirillo
- BMED039** **The Effect of Copper (II) Sulfate Pentahydrate Concentration on Locomotor Ability and Lifespan of Transgenic Alzheimer's Model *Drosophila melanogaster***
Lauren Davidson, 17, Senior, Harrison High School, Harrison, New York, T: Allison Blunt
- BMED040** **Investigating the Efficacy of Hyperbaric Oxygen in Modulating IL-6 and EPO in Stem Cell Transplant Patients**
Maya Nitta, 18, Senior, John Jay High School, Cross River, New York, T: Annmarie Lipinsky
- CBIO033** **Implementation of Land Cover Data to Forecast West Nile Virus in the United States**
Noah Nager, 18, Senior, Hackley School, Tarrytown, New York, T: Andrew Ying
- CBIO039** **Deep Neural Network to Predict Progression From Mild to Severe Acute Kidney Injury**
Aneesh Naresh, 17, Senior, Ardsley High School, Ardsley, New York, T: James Dowd
- CBIO040** **Single Cell Topological and Transcription Analysis of Antimetastatic Effects of CARM1 Inhibitors**
Nuanyang Wang, 18, Senior, Edgemont High School, Scarsdale, New York, T: Talia Dardis

- CELL036** **Electron Transport Chain Acts as Potential Regulator of ER-Mitochondria Interactions**
Sarah Delia Jennings, 17, Senior, Ossining High School, Ossining, New York,
T: Valerie Holmes
- CELL039** **KHDC3 in Grandparents Regulates Gene Expression in the Livers of Wild-Type Females**
Hailey Finkelstein, 18, Senior, Ardsley High School, Ardsley, New York,
T: James Dowd
- CELL041** **PTEN Regulates pMoesin and F-actin to Control Cellular Morphology**
Alicia Chang, 17, Senior, Ardsley High School, Ardsley, New York, T: Jaime Dowd
- CELL043** **Cetaceans' Genomes Unmasking the Secrets Behind Peto's Paradox, Aging and the Evolution of the SWI/SNF Chromatin Remodeling Complex**
Emily Stangel, 18, Senior, Byram Hills High School, Armonk, New York,
T: Caroline Matthew
- EGSD038** **Piezoelectric Energy Harvesting in Daily Life: Powering the Next Generation of Modern Technology**
Sienna Marie Giuseppi, 16, Junior, Pelham Memorial High School, Pelham, New York, T: Steven Beltecas
- ENEV061** **Rational Protein Engineering of PETase From Ideonella sakaiensis to Stimulate the Bioremediation of PET Pollution**
Chloe Spencer Bernstein, 17, Senior, Byram Hills High School, Armonk, New York,
T: Caroline Matthew
- MATSO29** **Cross-Sectional Shape of Gold Nanopillars Directly Affects the Number of Single Photon Emission Sites in Deformed WSe2**
Ada Arda Uysal, 18, Senior, Ossining High School, Ossining, New York,
T: Valerie Holmes
- PHYS039** **Exploration and Analysis of Glitch Sizes and Their Patterns From 112 New Glitches in 30 New Pulsars**
Robbie Shepherd, 17, Senior, Pelham Memorial High School, Pelham, New York,
T: Steven Beltecas
- PHYS040** **Determining DUNE Convolutional Neural Network Neutrino Identification Biases**
Allisa Remeza, 17, Junior, Harrison High School, Harrison, New York,
T: Allison Blunt
- PHYS058** **A Novel Atmospheric Technosignature Grading System to Optimize the Detection of Extraterrestrial Activity on G-Type Exoplanets Using Next-Generation Space Telescopes**
Advait Huggahalli, 17, Junior, Horace Greeley High School, Chappaqua, New York,
T: Lisa Papernik
- TMEDO44** **Investigating Connections Between Sensorimotor Impairment and Resting-State Functional MRI of the Spinal Cord in Multiple Sclerosis**
Emma Van Praagh, 18, Senior, Pelham Memorial High School, Pelham, New York,
T: Steven Beltecas
- TMEDO45** **Investigating the Theranostic Potential of Antibody X Against Small Cell Lung Cancer**
Maxwell Ma, 16, Junior, Irvington High School, Irvington, New York,
T: Nadia Parikka
- TMEDO48** **Predicting Patients at Risk for Preventable Adverse Events Upon Discharge From the Hospital With an Acute Exacerbation of Congestive Heart Failure**
Mia Hoxhaj, 18, Senior, Pleasantville High School, Pleasantville, New York,
T: Christine Pallotta
- TMEDO49** **Selective Inhibition of Matrix Metalloproteinase-9 Attenuates Traumatic Brain Injury-Mediated Blood-Brain Barrier Disruption in a Novel Dynamic *in vitro* Model**
Samantha Maya Milewicz, 18, Senior, Byram Hills High School, Armonk, New York,
T: Caroline Matthew

Syracuse, USNY06, Central New York Science and Engineering Fair

- BMEDO52** **Process of Developing MccJ25 as Universal Antimicrobial Drug**
Manya Kukkar, 14, Freshman, Vestal Senior High School, Vestal, New York, T: Vinita Kukkar
- BMEDO55T** **Application of Deep Learning Models Into the Prediction of Interleukin-6 and -8 Cytokines in Sickle Cell Anemia Patients**
Ethan Beauzile, 16, Sophomore, Dylan Nguyen, 16, Junior, Lukas Mathew Abraham, 17, Junior, Binghamton High School, Binghamton, New York, Alexander W. Dreyfoos School of the Arts, West Palm Beach, Florida, Suncoast Community High School, Riviera Beach, Florida, T: Cyrus Clark

Saratoga Springs, USNY07, Greater Capital Region Science and Engineering Fair, Inc.

- BEHA038** **When to Teach Intellectual Humility? An Investigation Into High School and Middle School Students**
Daniel Anton, 17, Senior, Nyack High School, Nyack, New York, T: Katherine Jacobson
- ENBM064** **Viability of External Reading of a Flexible Sphere's Internal Fluid Pressure and Its Application in Measuring Intraocular Pressure**
Tarun Jacob, 17, Junior, Niskayuna High School, Niskayuna, New York, T: Laura Favata
- TMEDO54** **A Multifaceted Approach to Determine the Therapeutic Efficacy of Ventral Pallidum Deep Brain Stimulation for Epilepsy**
Carsyn Emilie Bonesteel, 18, Senior, Burnt Hills-Ballston Lake High School, Burnt Hills, New York, T: Regina Reals

Utica, USNY08, Utica University Regional Science Fair

- MCRO057** **The Effect of the Nonionic Detergent NP-40 on Pigment Production and Biofilm Development in Pseudomonas uticensis**
Angelina Le, 16, Sophomore, Thomas R. Proctor High School, Utica, New York, T: Lawrence Aaronson

Syracuse, USNY09, Terra Rochester Finger Lakes Science & Engineering Fair

- PHYS036** **A Machine Learning Approach to Determine the Number of Exoplanets in a Given Planetary System Based on NASA Exoplanet Archive Data**
Maureen Zhang, 16, Junior, Pittsford Sutherland High School, Pittsford, New York, T: Daniel Hosey

Syracuse, USNY11, Terra WNY STEM Fair

- BEHA020** **MLOffense: Multilingual Offensive Language Detection and Target Identification on Social Media Using Graph Attention Transformer Model**
Grant Wang, 16, Junior, Williamsville East High School, East Amherst, New York, T: Michael Belling
- MATH022** **Pointed Fusion Categories Over Non-Algebraically Closed Fields**
Sophie Zhu, 16, Senior, Williamsville East High School, East Amherst, New York, T: Julia Plavnik

Winthrop, USNY13, Terra Northeast STEM Fair

- EGSD060T** **Faster Than Wind!**
Olivia Beth Mero, 17, Junior, Jaden Dillon Mero, 14, Freshman, Moriah Central School, Port Henry, New York, T: Tiffany Pinheiro

Glen Cove, USNY50, New York State Science and Engineering Fair

- BCHM026** **Alpha-Lipoic Acid Treatment of *Drosophila melanogaster* as a Novel Therapeutic Method Targeting mTOR-Associated Cognitive Deficits in Fragile X Syndrome**
Xinyi Zhang, 17, Senior, William A. Shine Great Neck South High School, Great Neck, New York, T: Nicole Spinelli
- BEHA042** **Novel Prenatal ASD Diagnosis Tool**
Emma Malliar, 17, Senior, William A. Shine Great Neck South High School, Great Neck, New York, T: Nicole Spinelli
- BMEDO48** **Investigating Anatomical Connectivity in Individuals With Autism Spectrum Disorder Using Magnetic Resonance Imaging**
Caterina Maria Stoica, 17, Junior, The Masters School, Dobbs Ferry, New York, T: Kristina Gremski

- CBIO043** **The Annotation of Novel Datasets for the Training of Cellori (Cell Origin) Spots, a Deep Learning Algorithm for RNA FISH Spot Detection**
Alexandre Tourneau, 16, Junior, George W. Hewlett High School, Hewlett, New York,
T: Terrence Bissoondial
- CBIO045** **Deep Learning Accelerated Lattice Boltzmann Simulations for Multiscale Modeling of Thrombosis**
Amit Saha, 18, Senior, William A. Shine Great Neck South High School, Great Neck,
New York, T: Nicole Spinelli
- EAEV060** **Infestation of Parthenogenetic *Haemaphysalis iongicornis* Ticks in New York Schoolyards: Implications for Spread of Tick-Borne Disease**
Audrey Erin Schneck, 17, Senior, Ossining High School, Ossining, New York,
T: Angelo Piccirillo
- EAEV063** **Evaluating the Detrimental Effects of Mask Leachates on the Growth of *Anabaena Cyanobacterium* Through Spectrometry and Chlorophyll Analysis**
Maggie Wang, 17, Senior, Plainview-Old Bethpage John F. Kennedy High School,
Plainview, New York, T: Raymond Tesar
- ENBM068** **Spatially Multiplexed Gold Leaf Electrodes for Affordable Pathogenic Detection**
Alex Lin Wang, 18, Senior, Syosset High School, Syosset, New York, T: Veronica Ade
- ENEV060** **The Dual Roles of Activated Carbon as an Adsorbent and Photocatalyst for Azo Dye Removal**
Emily Kim, 17, Senior, Jericho High School, Jericho, New York, T: Serena McCalla
- MATH038** **The Sinkhorn Limit of Positive 3×3 Matrices**
Jason Wu, 18, Senior, Half Hollow Hills High School East, Dix Hills, New York,
T: Michael Lake
- MCRO051** **A Model for Reversing the Cardiotoxic Effects of Doxorubicin via Fisetin in *Saccharomyces cerevisiae***
Julia Cherchever, 17, Junior, Garden City High School, Garden City, New York,
T: Steven Gordon
- PHYS050** **Co-Evolving Across Time: Black Holes as Regulators of Their Host Galaxy Properties**
Sarah Jean Gardner, 17, Senior, Ossining High School, Ossining, New York,
T: Angelo Piccirillo
- PHYS053** **The Impact of Initial Flame Conditions on Thermonuclear Supernova Simulations**
Ellis Eisenberg, 17, Senior, Half Hollow Hills High School West, Dix Hills, New York,
T: Michael Lake
- ROBO056** **A Deep Neural Architecture Search Net-Based Wearable Object Classification System for the Visually Impaired**
Aniketh Arvind, 17, Junior, Hackley School, Tarrytown, New York, T: Andrew Ying
- SOFT040** **A Framework for Effective Ransomware Detection and Mitigation**
Eric Ruik Song, 17, Junior, Yorktown High School, Yorktown Heights, New York,
T: Paul Rubeo

NORTH CAROLINA

- Charlotte, USNC01, Charlotte-Mecklenburg Regional Science Fair**
- BEHA029** **Modeling the Changes in the Prevalence of Chronic PTSD and Comorbid Mental Illnesses in Undergraduate Male and Female Students**
Martina Banasova, 17, Senior, Ardrey Kell High School, Charlotte, North Carolina,
T: Robert Gotwals
- EAEV043** **Study of Future Atmospheric Concentrations of CO₂ and CH₄ on Global Heat Absorption and Retention**
Nicholas Moore, 14, Freshman, South Iredell High School, Statesville, North Carolina,
T: Jennifer Cartelli
- Durham, USNC03, North Carolina Science Fair Region 3B**
- BCHM006** **Developing a Selective SUV39H1 Inhibitor to Improve Cancer Prognosis**
David Nahm Kim, 17, Senior, North Carolina School of Science and Mathematics,
Durham, North Carolina, T: Tim Anglin

- BMEDO11** **DiaMiR: A MicroRNA (miR-23) Microneedle Patch for Type-2 Diabetes Control**
George Cheng, 17, Junior, North Carolina School of Science and Mathematics, Durham, North Carolina, T: Michael Cargill
- Raleigh, USNC50, North Carolina State Science Fair**
- BMEDO43** **Production of Recombinant Cataract-Inducing Alpha-B Crystallin With *E. coli***
Maximilian Wang, 16, Junior, Isaac Bear Early College High School, Wilmington, North Carolina, T: Ying Wang
- CELL045** **Inducing Osmotic Stress in *C. elegans* to Observe Mutation Bias in Gpdh-1**
Carter Addison Schrag, 17, Senior, North Carolina School of Science and Mathematics, Durham, North Carolina, T: Heather Mallory
- EAEV048** **Mapping Soil Organic Carbon for Regenerative Agriculture and Reducing Atmospheric Carbon Using Multispectral Satellite Imagery and Machine Learning**
Reyansh Bahl, 17, Junior, Green Level High School, Cary, North Carolina, T: Aticila Mormando
- EBED027T** **Inexpensive Glasses for the Blind and Visually Impaired Using AI and OpenCV**
Mehdi Hussain, 17, Junior, Arnav Kumar Mahajan, 17, Junior, Rithinteja Aechan, 17, Junior, Green Level High School, Cary, North Carolina, T: Baileigh Baker
- ENBMO57** **Near-Wall Vorticity as an Indicator of Marfan Syndrome**
Naveen Ramasamy, 18, Senior, North Carolina School of Science and Mathematics, Durham, North Carolina, T: Robert Gotwals
- ENBMO61T** **ARAIID: A Novel Real-Time Augmented Reality and Artificial Intelligence Driven Navigation System & Surgical Pipeline for Cardiovascular Surgery**
Ethan Sud, 16, Junior, Abhinav Gurram#, 17, Junior, Green Hope High School, Cary, North Carolina, T: Bala Gurram
- ENEV049** **Designing an Activated Carbon Filter to Reduce Water Contamination From Fire Water Runoff**
Riley Johnson, 17, Senior, Charles D. Owen High School, Black Mountain, North Carolina, T: Grady Bailey
- MATH037** **Improving Bitcoin's Post-Quantum Transaction Efficiency With a Novel Lattice-Based Aggregate Signature Scheme Based on CRYSTALS-Dilithium and a STARK Protocol**
- #** Yunjia Quan, 16, Junior, Charlotte Country Day School, Charlotte, North Carolina, T: Laura Trojan
- PHYS037** **A Novel Method in Improving the Accuracy of Exoplanet Classification Using Machine Learning**
Brian Zhang, 16, Junior, William G. Enloe High School, Raleigh, North Carolina, T: Shawn Culbreth
- PHYS049** **Unveiling Distant Worlds: Discovering 13 Ultracool Y-Dwarf Candidates With a Novel Model-Based Machine Learning Detection Technique**
Ankit Biswas, 15, Freshman, Providence High School, Charlotte, North Carolina, T: Danielle Grecu
- TMEDO47** **The Key to Fighting Infections: The Development of an Antimicrobial Solution**
Isabel Marie Garcia, 15, Freshman, Isaac Bear Early College High School, Wilmington, North Carolina, T: Bryan Bishop
- TMEDO52** **Design of a CLIPTAC Probe Molecule for the Treatment of EGFR Mutated Adenocarcinoma**
Grace Helen Otos, 18, Senior, North Carolina School of Science and Mathematics, Durham, North Carolina, T: Tim Anglin

NORTH DAKOTA

- Elgin, USND01, Southwest Central North Dakota Regional Science and Engineering Fair**
- CHEM054** **Think Ink**
Victoria Grace Richter, 16, Sophomore, Flasher High School, Flasher, North Dakota, T: Tana Schafer

- TMED069** **Is It Worse Than Nicotine?**
James Gessey, 16, Sophomore, Flasher High School, Flasher, North Dakota,
T: Tana Schafer
- Hankinson, USND03, Southeast North Dakota Regional Science and Engineering Fair**
BEHA037 **Examining the Effects of Media-Related Confirmation Bias on Adults**
Kardelen Joy Hanson, 17, Junior, Hankinson Public School, Hankinson, North Dakota,
T: Patty Kratcha
- CBIO046** **Do Single-Cell Hi-C Data Follow a Power-Law Decay?**
Patrick Tianci Shen, 17, Junior, Davies High School, Fargo, North Dakota,
T: Molly Werner
- MCRO042** **Brush Up!**
Kenadi Marie David, 16, Sophomore, Hankinson Public School, Hankinson,
North Dakota, T: Patty Kratcha
- Grand Forks, USND05, Northeast North Dakota Regional Science and Engineering Fair**
ENEV029 **Sustainable Solutions: Comparing Electrochemical vs. Traditional Methods
of Wastewater Remediation**
Malory Jane Kemp, 15, Freshman, Cavalier Public High School, Cavalier,
North Dakota, T: Deanna Grandalen
- Tioga, USND06, Northwest North Dakota Regional Science Fair**
MCRO043 **Brand vs. Natural**
Madison Evelyn Mock, 15, Freshman, Trenton High School, Trenton, North Dakota,
T: Robert Turcotte
- MCRO049** **Sporty Bacteria**
Jada Rose Turcotte, 17, Junior, Trenton High School, Trenton, North Dakota,
T: Robert Turcotte
- ROBO050** **Paramount Power Plow**
Gracie Nutt, 18, Senior, Tioga High School, Tioga, North Dakota, T: Deb Moe
- Watford City, USND50, North Dakota State Science and Engineering Fair**
ANIM038 **Water *Daphnia* vs. Marine Pollutants**
Karlee Rose Hoyt, 17, Junior, Trenton High School, Trenton, North Dakota,
T: Robert Turcotte
- ENEV057** **Sustainable Hydroponic Production Using Automated Agricultural Nutrient
Reclamation**
Gavin Donald Kratcha, 17, Junior, Hankinson Public School, Hankinson, North Dakota,
T: Patty Kratcha
- MCRO044** **Antimicrobial Resistance of a Biofilm-Forming Pathogen Probed With Antipyretic
Pharmaceuticals and Antibiotics**
Jada Rose Bonogofsky, 18, Senior, Flasher High School, Flasher, North Dakota,
T: Tana Schafer

OHIO

- Athens, USOH01, Southeastern Ohio Regional Science and Engineering Fair**
ENBM069 **A Human Ultrasonic Echolocation Device for Assisting the Visually Impaired**
Macy Long, 18, Senior, Zane Trace High School, Chillicothe, Ohio, T: John Scott
- Cleveland Heights, USOH02, Northeastern Ohio Science and Engineering Fair**
BEHA025 **Comparing the Effectiveness of Verbal and Visual Prompting on Verbal
and Nonverbal Students With Autism**
Taylor Schindley, 17, Senior, Mentor High School, Mentor, Ohio, T: Lori Cohen
- BMED030** **Role of CRMP2 Interaction With Kinase CDK5 in Forming the Neurofibrillary
Tangles of Alzheimer's Disease**
Samyuktha Krishna Iyer, 17, Junior, Laurel School, Shaker Heights, Ohio,
T: Kimberly Corrigan
- EAEV038** **Examination of the Differences in Physiological Responses of *Daphnia*
to Different Chemical Pollutants**
Madeleine M Bender, 18, Senior, Mentor High School, Mentor, Ohio, T: Lori Cohen

- MATS031** **Biomimetic Composites With Natural Fiber Reinforced, Recyclable Biobased Benzoxazine Resins**
Beatrice Anne Hardacre, 16, Junior, Hawken School, Gates Mills, Ohio,
T: Hatsuo Ishida
- PHYS032** **DSLR Camera Photometry and Star Tracking**
Bryn P. Morgan, 17, Senior, West Geauga High School, Chesterland, Ohio,
T: Stephanie Meyer
- Shaker Heights, USOH05, Hathaway Brown Upper School Fair**
- BMEDO23** **MFN2: A Novel Therapeutic Target for Alzheimer's Disease**
Julia Yuemin Zhu, 16, Junior, Hathaway Brown School, Shaker Heights, Ohio,
T: Andrew Clifford
- CELL025** **3D Human Stem Cell Model for Neural Development**
Ishita Kopparapu, 16, Junior, Hathaway Brown School, Shaker Heights, Ohio,
T: Andrew Clifford
- ENBMO24** **Real-Time Microfluidic Evaluation of Hemostatic Properties of Procoagulant Synthetic Platelets**
Neha Sangani, 16, Junior, Hathaway Brown School, Shaker Heights, Ohio,
T: Andrew Clifford
- ENBMO27** **Developing a Preliminary Ultrasonic Continuous Glucose Monitoring (CGM) Implant System**
Gauri Gandhi, 16, Junior, Hathaway Brown School, Shaker Heights, Ohio,
T: Andrew Clifford
- Bryan, USOH06, Northwest Ohio Science and Engineering Fair**
- EAEV018** **Trihalomethane Occurrence and Formation Within Water Distribution Systems in Public Schools**
Elizabeth Theobald, 17, Junior, Archbold High School, Archbold, Ohio,
T: Cristin Hagans
- PLNT028** **Examining Produce Yield of *Capsicum annuum* in Compost Enriched Soil While Tracking Household Waste Reduction**
James Blaine Bell IV, 18, Senior, Hilltop High School, West Unity, Ohio,
T: Cristin Hagans
- Dublin, USOH50, Buckeye Science and Engineering Fair**
- ANIM049** **Marigold Petals and Tomato Fruit as Feed Additives to Improve Health Attributes of Quail Eggs**
Kara Elizabeth Jones, 15, Sophomore, Central Christian School, Kidron, Ohio,
T: Michelle Jones
- BMEDO57** **Identification of Biomarkers for Cartilage Damage in Osteoarthritis by RNA-Seq and Proteomic Analysis**
Sophie Xufei Zhuang, 16, Junior, Dublin Jerome High School, Dublin, Ohio,
T: Amy Pochodylo
- EGSD052** **Organic Solar Cells and the Investigation of Non-Halogenated-Solvent-Processable Organic Photovoltaics**
Zoltan Erik Kotrebai, 17, Junior, Hawken School, Gates Mills, Ohio, T: Lacy Chick
- EGSD056** **Lignin Assisted Water Electrolysis for Sustainable Hydrogen Production and Lignin Valorization**
Johan DeMessie, 18, Senior, William Mason High School, Mason, Ohio,
T: Karen Young
- PHYS060** **Determining the Abundance of Visible Population III Star Clusters in Proximity to High-Redshift Quasars**
Maxwell Rohan Chandar-Kouba, 18, Senior, Ottawa Hills Junior/Senior High School, Ottawa Hills, Ohio, T: Jeremy Nixon
- TMEDO72** **A Study of the Complex of Human Protein IRF3 and Viral Protein (SARS-CoV-2) ORF7a**
Suneha Dhawan Shelke, 17, Senior, Sylvania Northview High School, Sylvania, Ohio, T: Kathryn Nelson

OKLAHOMA

Bartlesville, USOK02, Bartlesville District Science Fair

BEHA024 Pupil Dilation Responding to Emotional Stimuli

Saskia Pehmoeiler, 16, Sophomore, Bartlesville High School, Bartlesville, Oklahoma,
T: Jessica Strain

MCRO006 Preventing Food Waste by Testing the Effectiveness of Preservatives

Fin Paul Salerno, 15, Freshman, Bartlesville High School, Bartlesville, Oklahoma,
T: Shelley Brown

PLNT006 Determining the Growth Rate of a Lima Bean Plant Through a Development on Hydroponics

Ingeyla Ghorl, 14, Freshman, Bartlesville High School, Bartlesville, Oklahoma,
T: Shelley Brown

Muskogee, USOK05, Muskogee Regional Science and Engineering Fair

ETSD068T Belt or String, Which Is Better?

Phat Tan Nguyen, 18, Senior, JoAnn Marie Sheppard, 17, Senior, Keeghan Christopher Hess, 17, Senior, Muskogee High School, Muskogee, Oklahoma,
T: Janet Lopez

Tulsa, USOK10, Tulsa Regional Science Fair

BMED022 Effect of Daily Exercise on Sleep Efficiency, Percentage of Deep Non-REM Sleep, and Heart Rate Variability

Erica Frances Lambrecht, 17, Senior, Cascia Hall Preparatory School, Tulsa, Oklahoma, T: Chaunna Steen

MCRO052T Enhancing the Effectiveness of the Antibiotic Ampicillin Against *Escherichia coli*

Vincent Peters, 18, Senior, Annie Elizabeth Schloss, 18, Senior, Styriling Murray, 17, Senior, Cascia Hall Preparatory School, Tulsa, Oklahoma, T: Chaunna Steen

Stillwater, USOK50, Oklahoma State Science and Engineering Fair

ANIM039 The Impact of Natural Antioxidants on Color, Quality, and Consumer Acceptability of Ground Beef Patties

Callen Luke Veit, 15, Sophomore, Morrison High School, Morrison, Oklahoma,
T: Tammy Will

EAEV064T Effects of FeHEDTA Pesticide on Cell Regeneration in *Planaria dorocephala*

Rylee Grace Ruddick, 16, Sophomore, Chloe Roshea Robbins, 15, Sophomore, Bartlesville High School, Bartlesville, Oklahoma, T: Jessica Strain

ETSD062T The Use of Microcontrollers To Create a Self-Regulating Environment That Can Sustain an Ecosystem in Extraterrestrial Conditions

Mason Jude Istre, 16, Sophomore, William Steven Soranno, 16, Sophomore, Cascia Hall Preparatory School, Tulsa, Oklahoma, T: Chaunna Steen

OREGON

Gresham, USOR01, Gresham-Barlow Science Expo

ENEVO27T A Novel Adversarial Autoencoder With Latent-Based Optimization to Design De-Novo Ionic Liquids for Post-Combustion Carbon Capture

Arjun Malpani, 15, Sophomore, Siddharth Daniel D'costa, 16, Sophomore, Sunset High School, Portland, Oregon, Jesuit High School, Portland, Oregon,
T: Mario Martinez, T: Lara Shamieh

PLNT027T The Effects of Developing Vegetation in Microgravity

Kalehya Mercedes McNeal, 18, Senior, Andi Herman, 17, Senior, Sam Barlow High School, Gresham, Oregon, T: Neal Bridgnell

TMED027 OncoPharML: A Machine-Learning Approach for Cancer Biomarkers Identification and Multi-Omics-Based Targeted Cancer Drug Prediction

Darsh S. Mandera, 18, Senior, Jesuit High School, Portland, Oregon, T: Lara Shamieh

Beaverton, USOR04, Beaverton-Hillsboro Science Expo

CELL016 Integrating Machine Learning with 3D Organoid Modeling to Identify Biomarkers to Combat Drug Resistance in Cancer

Ekansh Mittal, 17, Junior, Westview High School, Portland, Oregon,
T: Michelle Bilderbeck

- ENBM016** **Spatiotemporal-Aware Glioblastoma Multiforme Tumor Growth Modeling With Deep Encoder-Decoder Networks**
 ### Rishab Kumar Jain, 18, Senior, Westview High School, Portland, Oregon, T: Taylor Kauffman
- MATSO13** **Novel Small Scale Carbon Dioxide Capture Polymer Membrane for Sudden Infant Death Syndrome Prevention**
 Autri Aparajita Das, 16, Sophomore, Sunset High School, Portland, Oregon, T: Korin Riske
- SOFT014** **CompaCT: Fractal-Based Heuristic Pixel Segmentation for Enhanced Lossless Compression of High-Color DICOM Medical Images**
 Taaha Khan, 16, Sophomore, Sunset High School, Portland, Oregon, T: Korin Riske
- Portland, USOR05, Aardvark Science Exposition**
- ANIM010** **The Effect of Circulating ACTH and Insulin Hormones on Equine Temperament**
 Lauren Raine Tittel, 16, Sophomore, Oregon Episcopal School, Portland, Oregon, T: Bettina Gregg
- BEHA004** **Future of Work: The Effect of Social Isolation on Cognition of *Blaptica dubia***
 Yasmin Iyer, 17, Junior, Oregon Episcopal School, Portland, Oregon, T: Bettina Gregg
- EAEV009** **The Effect of Rainwater Origin on the Heavy Metal Content, pH, and Ion Percentage**
 Jiaming Zhang, 15, Sophomore, Oregon Episcopal School, Portland, Oregon, T: Bettina Gregg
- EGSD004** **Urea Concentration on Microbial Fuel Cell Power Output for Applications in Waste Management**
 Nina Kaiser, 16, Sophomore, Oregon Episcopal School, Portland, Oregon, T: Peter Kimball
- SOFT007** **Engineering a Component-Based Programming Language**
 Diego Zhen-Yi Frias, 16, Sophomore, Oregon Episcopal School, Portland, Oregon, T: Bettina Gregg
- Wilsonville, USOR06, CREST-Jane Goodall Science Symposium**
- BEHA007** **Beyond the Nuclear Family: A Century of Representation in Images and Text of Children's Literature**
 Annamika Konkola, 15, Sophomore, West Linn High School, West Linn, Oregon, T: Brian Delfatti
- EAEV015T** **Microscopic Menace: What Are the Effects of Cyanobacteria Blooms on Primary Productivity, Toxicity, and Microorganisms?**
 Melinda Lin#, 17, Senior, Uma Aditi Grover#, 17, Senior, West Linn High School, West Linn, Oregon, T: Julie McDevitt
- EBED012** **ASCEND: Aqueous Spectrometric Copper-Electrolytic Nutrient Detector**
 Aditi Bhaskar, 18, Senior, Wilsonville High School, Wilsonville, Oregon, T: CJ Koll
- TMEDO28T** **Identifying Relationships Between the Gut Microbiome and Melanoma Patients' Responses to Immunotherapy Using Machine Learning Techniques**
 Arush Goswami#, 18, Senior, Anish Goswami#, 18, Senior, Wilsonville High School, Wilsonville, Oregon, West Linn High School, West Linn, Oregon, T: Harold Coller
- Salem, USOR07, Central Western Oregon Science Expo**
- PHYS008** **Simulating the Dynamics, Collisions, and Morphology of Galactic Ultralight Dark Matter Haloes**
 ## Leon Garcia, 18, Senior, Corvallis High School, Corvallis, Oregon, T: Matthew Kirby
- Bend, USOR08, Central Oregon Community College Regional Science Expo**
- CHEM032** **Efficiently Screening the Most Abundant Bioactive Molecular Moiety: *In silico* Structure Property Relationships of Primary Amide Bioisosteres**
 Curran Robert Jacobus, 16, Junior, Bend Senior High School, Bend, Oregon, T: Casie Bullock

- TMEDO18** **DermaScan: Using Convolutional Neural Networks to Detect and Prevent Skin Cancer in Underrepresented Communities by Using an Android App**
Emma Johl Nordstrom, 17, Junior, Trinity Lutheran School, Bend, Oregon, T: Thomas Stueve
- Banks, USOR50, Northwest Science Expo**
- ENEV083** **Smart Wildlife Sentinel (SWS): Preventing Wildlife-Vehicle Collisions and Monitoring Road Ecology With Embedded IoT Systems and Deep Learning**
Alan Peijun Ma, 18, Senior, Jesuit High School, Portland, Oregon, T: Lara Shamieh
- MCRO062** **Mush-Room for Improvement**
Yuankai Alex Gao, 17, Junior, Oregon Episcopal School, Portland, Oregon, T: Bettina Gregg
- PHYS062** **Skew-Axis Cylinder Lens Optical System: Novel Method of Clinical Optometry of Astigmatism, Characterization, Theoretical Modelling, and Implementation**
Alexander Plekhanov, 17, Junior, Beaverton Academy of Science and Engineering, Hillsboro, Oregon, T: Melissa Shell
- PLNT050** **Seed Morphology and Dispersal of *Achyrachaena mollis***
Rachel Catherine Warner, 18, Senior, Oregon City High School, Oregon City, Oregon, T: Elizabeth Scott
- PLNT051T** **Modeling the Impacts of Daikon Cover Crop Water Storage in Dry Farming**
Grace Sato, 18, Senior, Alan James Kolesnikov, 17, Senior, West Linn High School, West Linn, Oregon, T: Geoff Bingham
- ROBO069** **NeuroMotus: An Intelligent Exoskeleton System to Improve Cerebral Palsy Patient Mobility Using Brain Computer Interface**
Ishan Ahluwalia, 17, Junior, Jesuit High School, Portland, Oregon, T: Lara Shamieh

PENNSYLVANIA

- Harrisburg, USPA01, Capital Area Science and Engineering Fair**
- ENBMO84** **Wearable Memory Assistive Device for Dementia and Alzheimer's Patients Using Machine Learning Facial Recognition**
Anshi Paul, 15, Sophomore, Hershey High School, Hershey, Pennsylvania, T: Jason Sibbach
- ROBO074** **A Novel Convolutional Neural Network Random Forest Hybrid Model to Aid in the Identification of Tree Species Using Multispectral and LiDAR Data**
Isaiah Antoine Houssou, 15, Sophomore, Camp Hill High School, Camp Hill, Pennsylvania, T: Amy Diehl
- Lancaster, USPA02, North Museum Science and Engineering Fair**
- BMEDO20** **Immune Checkpoint Regulation in Molecular Subtypes of Endometrial Cancer: Expression of PD-L1 and PD-1**
Dominick Baksh, 16, Sophomore, Lancaster Catholic High School, Lancaster, Pennsylvania, T: Anne Bleistine
- EGSD023** **Which Savonius Vertical-Axis Wind Turbine Is More Efficient: One With a Wind Deflector or One Without?**
Kai Theodore Jasper Unwin-Wisnosky, 14, Freshman, McCaskey High School, Lancaster, Pennsylvania, T: Jo Ellen Wisnosky
- Exton, USPA03, Delaware Valley Science Fairs**
- BCHMO32** **Determining Most Effective Method of Inhibiting Breast Cancer Inducing Protein RAD52, Year 2**
Dhaval Tantry, 18, Senior, Central Bucks High School East, Doylestown, Pennsylvania, T: Mark Hayden
- CBIO051** **CAPCODRE: A Computational Systems Biology and Machine Learning-Based Approach to Predict Cognitive Disorder Risk in the Elderly**
Srilekha Mamidala, 17, Junior, Garnet Valley High School, Glen Mills, Pennsylvania, T: Brenda Frost
- CBIO052** **Machine Learning Identification of Potential PARP-1 Inhibitors for Alzheimer's Disease Treatment**
Yueyi Bao, 16, Sophomore, The Hill School, Pottstown, Pennsylvania, T: Jared Courtney

- CBIO061** **MicroScan: A Computer Vision Tool To Assist Malaria Microscopy Diagnosis**
Anish Kishor Pallod, 15, Freshman, Parkland High School, Allentown, Pennsylvania,
T: Kaitlin Heintzelman
- CELL057** **A Novel Epigenetic Approach for Vascular Elastic Matrix Regeneration:
Evaluating the Proteomic Interactions of siRNA-Based Gene Silencing in the
EGFR Signaling Pathway of Abdominal Aortic Aneurysms**
Rayna Malhotra, 16, Junior, Moravian Academy, Bethlehem, Pennsylvania,
T: Wendy Sheetz
- ENBM076** **Stroke Rehabilitation Crutch Robot With Auto-Follow and Fall Alarming System**
Zeshen Chen, 17, Sophomore, The Hill School, Pottstown, Pennsylvania,
T: Hoda Ehsan
- MCRO066** **Targeting Signaling Molecules of *P. aeruginosa* by Using Mucin as an Anti-
Quorum Sensing Drug: A Novel Design To Evaluate Efficacy in the Context
of Multidrug Resistance**
Maryam Abdel-Azim, 16, Junior, Central Bucks High School East, Doylestown,
Pennsylvania, T: Judith Elinow
- PHYS064** **Adding Kepler Data to a TESS Exoplanet Classification Model: A Novel Approach
in Exoplanet Classification Utilizing Deep Learning**
Jerry Lu Wang, 14, Freshman, Parkland High School, Allentown, Pennsylvania,
T: Kaitlin Heintzelman
- PLNT055** **Correlation Between Various Methods of Fertilizer and Development
of *Salicornia europaea***
Sarah Nicole Taylor, 18, Senior, The Marine Academy of Science and Technology,
Highlands, New Jersey, T: Liza Baskin
- ROBO072** **Rapid Cardiac Screening Using Deep Learning: A Novel Interpretable AI Model
for Cardiovascular Health Assessment**
Samuel Wang, 17, Senior, Germantown Academy, Fort Washington, Pennsylvania,
T: Sarah Kesten
- SOFT043** **Low-Cost Real-Time Silent Communicator for Complete Quadriplegia
(Paralyzed) Patients**
Sonia Leo, 14, Freshman, Moorestown High School, Moorestown, New Jersey,
T: Sean Watson
- TMED064** **Mesenchymal Stem Cell Therapy for Celiac Disease**
Grace S. Yacobe, 16, Sophomore, Academy of Notre Dame de Namur, Villanova,
Pennsylvania, T: Jessica Reid
- Pittsburgh, USPA04, Pittsburgh Regional Science & Engineering Fair**
- CBIO044** **An Iterative Neural Network Based Approach to Automated IFT-20 Sensory
Neuron Identification in *Caenorhabditis elegans***
Arvind Seshan, 18, Senior, Fox Chapel Area High School, Pittsburgh, Pennsylvania,
T: Justin Patterson
- CHEM050** **Photopolymerized Superabsorbent Polymers Prepared From Bio-Resources**
Grace Li Wang, 18, Senior, Franklin Regional Senior High School, Murrysville,
Pennsylvania, T: Todd Binnig
- ENBM067** **An Empirical Evaluation of Textiles for Reusable Menstrual Pads**
Nina Cranor, 17, Junior, Pittsburgh Science and Technology Academy, Pittsburgh,
Pennsylvania, T: Brian Rose
- MCRO050** **Biosynthetic Engineering of Novel Multifunctioning Electroactive Bacterial
Cellulose-Carbon Nanotube Therapeutic Bandages for Rapid Clearance of
Vancomycin-Intermediate *Staphylococcus aureus***
Daniel Levin, 18, Senior, Pittsburgh Allderdice High School, Pittsburgh,
Pennsylvania, T: Janet Waldeck
- PHYS052** **Application of Luminosity Modulus in Exoplanet Transits**
James Terrell, 17, Junior, Sewickley Academy, Sewickley, Pennsylvania,
T: Benjamin Spicer
- SOFT038** **Finding JavaScript Vulnerabilities With Concolic Execution Using Switched
MUS Reduction on Quivers**
Landon Penn Colaresi, 17, Senior, Pittsburgh Allderdice High School, Pittsburgh,
Pennsylvania, T: Janet Waldeck

Reading, USPA05, Reading and Berks Science and Engineering Fair

ANIM031 Visible Light and Its Influence on the Embryonic Viability of the Cricket *Acheta domestica*
Matthew James Ferenz, 17, Junior, Daniel Boone Area High School, Birdsboro, Pennsylvania, T: Dana Godfrey

EAEV037 Experiments to Determine Radon Levels in Household Water and Measure the Effectiveness of Mitigation Options
Paige Hinkle, 15, Sophomore, Wilson High School, West Lawn, Pennsylvania, T: Joseph Melograna

PLNT030 Extraction of Terpene Content in *Humulus lupulus L.* (Common Hops) Varieties
Kamella Gechter, 18, Senior, Conrad Weiser High School, Robesonia, Pennsylvania, T: John Siefert

York, USPA06, York County Science and Engineering Fair

PLNT013 What Is the Effect of the pH of Water Used to Dilute Fertilizers on Mineral Content in Soil?
Amishi Singla, 16, Sophomore, Dallastown Area High School, Dallastown, Pennsylvania, T: Michele Wallace

RHODE ISLAND

Warwick, USRI50, Rhode Island Science and Engineering Fair

CBIO018 VisRNA: Interactive Visualization Platform of ScRNA-Seq Data Reveals Key Driver Genes and Mechanisms of Non-Small Cell Lung Cancer
Xingchuan Ma, 16, Sophomore, Portsmouth Abbey School, Portsmouth, Rhode Island, T: Stephen Zins

CBIO022 Non-Invasive Assessment of Colorectal Cancer Risk Using Machine Learning Models Deployed as Both a Website and API
Bence Lukacsy, 17, Senior, Barrington High School, Barrington, Rhode Island, T: Diana Siliezar

SOUTH CAROLINA

North Augusta, USSC01, Central Savannah River Area Science and Engineering Fair

CBIO021 Multi-Drug Resistance in Advanced-Stage Breast Cancer: A Data Science Approach Analyzing Drug Transporter Gene Amplification and Patient Survival
Nidhi Shenoy, 18, Senior, Lakeside High School, Evans, Georgia, T: David Arrington

Seabrook, USSC02, Sea Island Regional Science Fair

CBIO028 Fingerprint Patterns Being Genetically Inherited Through Biological Relations
Riley Emerson Wilbert, 14, Freshman, Hilton Head Preparatory School, Hilton Head Island, South Carolina, T: George Ramseur

EAEV046 The Effect of Runoff and Eutrophication on Mangroves
Charles Garland Hardwick, 16, Sophomore, Hilton Head Preparatory School, Hilton Head Island, South Carolina, T: George Ramseur

Charleston, USSC03, Low Country Science Fair

ENBM077 MoJoint: A Motion Visualization and Kinematic Analysis Software for Temporomandibular Joint
Angela Mei, 17, Senior, Academic Magnet High School, North Charleston, South Carolina, T: Katharine Metzner-Roop

Columbia, USSC04, USC Central South Carolina Region II Science and Engineering Fair

EAEV045 Microplastics From Mats: How Abiotic Environmental Factors Affect the Degradation of Polyethylene Foam Water Mats Into Microplastics
Carlynn Denise Rychener, 18, Senior, Chapin High School, Chapin, South Carolina, T: Lisa Maylath

ROBO036 Object Recognition With Contextual Reasoning Based Fuzzy Neural Networks for the Uncertainty Output

Andy L. Yang, 16, Junior, Dutch Fork High School, Irmo, South Carolina, T: Jonathan Wheeler

Spartanburg, USSC07, Piedmont South Carolina Region III Science Fair

BEHA023 The Effect of Listening to Music While Taking Standardized Tests

Caroline Rae Watson, 17, Junior, James F. Byrnes High School, Duncan, South Carolina, T: Patricia White

SOUTH DAKOTA

Aberdeen, USSD01, Northern South Dakota Science and Math Fair

BMEDO62T Comparing Potassium Concentration of Potatoes in Varying pH Levels

Jia Yi Wang, 17, Senior, Sophia Uttermark, 18, Senior, Aberdeen Central High School, Aberdeen, South Dakota, T: Charles Hermansen

CHEMO58 A Study on the Kinetics of Thionin

Dustin Joseph Hermansen, 18, Senior, Aberdeen Central High School, Aberdeen, South Dakota, T: Charles Hermansen

EAEV075 The Effects of Magnetism on the Regeneration of Tricladida

Jody Bawek, 17, Junior, Doland High School, Doland, South Dakota, T: Melissa Knox

Brookings, USSD02, Eastern South Dakota Science and Engineering Fair

BEHA059 Conservation and Functional Enrichment of Neurotransmitter Receptors in Addiction

Owen Michael Watson, 17, Junior, O'Gorman High School, Sioux Falls, South Dakota, T: Randy Faustino

CHEMO62T Assessing the Viability of Using Spent Coffee Grounds To Make Cellulose-Based Biodegradable Food Packaging Films

Anika Hooda, 16, Freshman, Sampada Nepal, 17, Junior, Brookings High School, Brookings, South Dakota, T: Laura Hummel T: Srinivas Janaswamy

MCRO063 The Effect of Microgravity on the Gut Microbiome

Alex Kidangathazhe, 14, Freshman, Brookings High School, Brookings, South Dakota, T: Laura Hummel

Rapid City, USSD03, High Plains Regional Science and Engineering Fair

ETSD044 Stealthy Shapes

Louis Rancour, 16, Sophomore, Rancour, Wasta, South Dakota, T: Thomas Rancour

TENNESSEE

Chattanooga, USTN01, Chattanooga Regional Science and Engineering Fair

ETSD061 Axial Compressor Design for High Compression-Low Temperature Brayton Cycle Power Unit With Decoupled Hot and Cold Ends

Ziyang Michael Xing, 18, Senior, Baylor School, Chattanooga, Tennessee, T: Mary Loveless

TMEDO65 An Eye-Opener to Early Detection and Prevention of Alzheimer's and Glioblastoma Brain Tumors: Using a Multi-Output Regression Convolutional Neural Network Model and Smart Contact Lenses to Detect Alzheimer's and Brain Tumors

Anya Parambath, 17, Senior, Girls Preparatory School, Chattanooga, Tennessee, T: Tracie Durham

Knoxville, USTN04, Southern Appalachian Science and Engineering Fair

EGSD050 The Solubility of Noble Gases in Molten Salts

Roxanne Farahi, 17, Senior, Oak Ridge High School, Oak Ridge, Tennessee, T: Jessica Williams

MCRO056 Analysis of Biofilms on Microplastics Sampled From Wastewater Treatment Plant Effluent

Duncan Shawn Arnold, 18, Senior, L&N STEM Academy, Knoxville, Tennessee, T: Bryan Schultz

Memphis, USTN05, Memphis-Shelby County Science and Engineering Fair

TMEDO81 IntelliBind: A Novel Deep-Learning Framework for High-Affinity Antibody Design

Arihant Jain, 15, Sophomore, Mountain View High School, Mountain View, California, T: David Cmaylo

Murfreesboro, USTN06, Middle Tennessee Science and Engineering Fair

- BCHM029** **Investigating Gamma S Crystallin Degradation in Normal and Cataract Lenses**
Michael Dexun Kong, 17, Junior, Montgomery Bell Academy, Nashville, Tennessee,
T: Zhen Wang
- ENBM083** **Optimal Acquisition and Processing Strategies for Accurate and Precise
Neurite Orientation Dispersion and Density Imaging (NODDI) Modeling
of the Spinal Cord**
Chekayli Watney Meyer, 17, Senior, Harpeth Hall, Nashville, Tennessee,
T: Valerie Guenst

TEXAS

Dallas, USTX01, Beal Bank Dallas Regional Science and Engineering Fair

- CBIO001T** **A Novel Application of Machine Learning Algorithms on Toxin Proteins
to Predict Molecular Function**
Ameya Kulkarni, 16, Junior, Praneeth Muvva, 17, Junior, Coppell High School,
Coppell, Texas, T: Holly Anderson
- CELL003** **Attenuation of Methylglyoxal Cytotoxicity With Fisetin Rescue in
*Saccharomyces cerevisiae***
Zehra Jaffery, 17, Junior, Plano West Senior High School, Plano, Texas,
T: Emily Sharma
- EGSD001** **A Halide/Organic Membrane-Free Redox Flow Battery**
Otto Beall, 17, Senior, Plano East Senior High School, Plano, Texas, T: Julie Baker
- MATH004** **The Easiest Hard Problem: A Heuristic Solution to the Two-Way Partitioning
Problem Using Probabilistic Algorithms**
Meryl Zhang, 15, Sophomore, R. C. Clark High School, Plano, Texas,
T: James Lynch
- MATS002** **Pleurotus ostreatus as a More Sustainable Alternative to the Kraft Method
in Papermaking**
Shivani Oviya Nathan, 16, Sophomore, Jasper High School, Plano, Texas,
T: Michele Poovey
- MCRO013** **Designing a Personalized Probiotic to Prevent/Alleviate Type Two Diabetes
and Inflammatory Bowel Disease**
Rohan Jagarlamudi, 16, Junior, Alcuin School, Dallas, Texas, T: Cecilia Mir
- ROBO004** **FISQ: A Few-Shot, Interpretable, and Self-Supervised Quantum Machine
Learning Approach to Automated Real-Time Prediction Across Multiple
Domains**
Shobhit Agarwal, 16, Junior, Rick Reedy High School, Frisco, Texas,
T: Derek McDowell
- SOFT001** **EduBoost: An Interpretable Grey-Box Model Approach to Identify and Prevent
Student Failure and Dropout**
Andy Qin, 17, Junior, Plano West Senior High School, Plano, Texas, T: Emily Sharma
- TMEDO01** **The Earthworm Squirm: Multiple Sclerosis Hypnosis Investigating the
Potentiality of an Alternative, Realistic Cure of *Encephalomyelitis disseminata*
(Multiple Sclerosis) Using the Neoblasts from *Dugesia tigrina* (Planaria)
on *Lumbricus terrestris* (Earthworms)**
Alanna Gabrielle Polyak, 16, Junior, Plano West Senior High School, Plano, Texas,
T: Emily Sharma
- El Paso, USTX02, Sun Country Science Fair**
- BCHM002T** **The Effects of Different Concentrations of Gold Nanoparticles
on *Daphnia magna***
Daisy Corralejo, 16, Sophomore, Ana Sofia Chavarria, 16, Sophomore, Kimora Rae
Bishop, 16, Sophomore, Valle Verde Early College High School, El Paso, Texas,
T: Sarah Welsh
- EBED007** **Optimizing Aero-Stability in Model Rockets Using Advanced Flight Algorithm
and Servo-Actuated Thrust Vector Control**
Rodrigo Valdes, 16, Sophomore, Harmony Science Academy – El Paso, El Paso,
Texas, T: Anais Valdes

- TMED017** **The Disruption of Nicotine Vapor With Medium Chain Triglycerides**
Heidi Danielle Houck, 16, Sophomore, Transmountain Early College High School, El Paso, Texas, T: David Esparza
- Arlington, USTX03, Fort Worth Regional Science and Engineering Fair**
- ANIM009** **Mitigating the Harmful Effects of Radiation Therapy With the Synergistic Effects of Curcumin Bioavailability and Piperine on *Dugesia dorotocephala***
Aliza Tharani, 17, Junior, Colleyville Heritage High School, Colleyville, Texas, T: Sonya Loughran
- BEHA002** **Psychopathy, Intellectual Humility, and Social Media: A Strategy to Prevent School Shootings?**
Maya Shah, 15, Sophomore, Martin STEM School, Arlington, Texas, T: Mudita Shah
- CBIO003** **ENStaDTI: An Ensemble Graph-Learning and Multilayer Stacking-Based Deep Learning Pipeline to Predict Novel Drug-Target Interactions for Large-Scale Drug Repurposing and Drug Discovery**

Shreya Amalapurapu, 18, Senior, Texas Academy of Mathematics and Science, Denton, Texas, T: Alyssa Rodriguez
- CELL001** **TNF Ligand Promotes Angiogenesis in Triple Negative Breast Cancer Through Activation of Inflammatory Regulatory Networks**
Harsh Singh, 16, Junior, Marcus High School, Flower Mound, Texas, T: Swati Singh
- EBED002** **IVY: Intelligent Vision System for the Visually Impaired**

Sarang Goel, 17, Junior, Texas Academy of Mathematics and Science, Denton, Texas, T: Alyssa Rodriguez
- ETSD005** **Energy Consumption Prediction Using Machine Learning With State-Based Appliance Features Identified by Design of Experiments**

Eshan Chandra Singhal, 17, Senior, The Oakridge School, Arlington, Texas, T: Jeffrey Farley
- MATH005T** **Using Mathematical Modeling to Create Non-Gerrymandered Congressional Voting Maps**
Jayanth Narasimha Pandit#, 18, Senior, Ethan Aditya Rebello, 16, Junior, Zachary Christopher Li, 17, Senior, Texas Academy of Mathematics and Science, Denton, Texas, T: Alyssa Rodriguez
- Weslaco, USTX04, Rio Grande Valley Regional Science and Engineering Fair**
- CHEM031T** **What's Cooking? Effects of Cookware and Cooling Materials on Air Quality**
Vivian Alexa Mayorga, 18, Senior, Maritza Cantu, 18, Senior, James Pace High School, Brownsville, Texas, T: Dora Lopez
- EBED015** **Incorporating a Micro Embedded Optical Heart Rate Sensor to Wirelessly Monitor ER Patients' Biomarkers**

Ashley Gabriela Nunez, 18, Senior, James Pace High School, Brownsville, Texas, T: Dora Lopez
- ENBM019** **The Fabrication of Electrospayed Minocycline Loaded PLGA Microparticles**
Julio Alec Ledezma, 18, Senior, Brownsville Early College High School, Brownsville, Texas, T: Samuel Ortiz
- MATH015** **A Computational Epidemiological Review of Socioeconomic Disparities as Risk Factors for Lung Disease Across Texas Counties**

Dyllan Mackenzie Lozano-Lomeli, 18, Senior, James Pace High School, Brownsville, Texas, T: Dora Lopez
- MATS018T** **An Approach to Reduce Microplastic Pollution Using Green Chemistry**
Sofia Isabella Estrada, 17, Junior, Ava Elizabeth Davies, 17, Junior, James Pace High School, Brownsville, Texas, T: Ashley Saenz
- SOFT013** **A.I. Tic-Tac-Toe**
Claudio Reyes, 16, Junior, Harmony School of Innovation— Brownsville, Brownsville, Texas, T: Salvador Pina
- Houston, USTX05, Science Engineering Fair of Houston**
- ANIM004** **Is Your Cat or Dog Really Spayed?: A Novel Test to Diagnose Ovarian Remnant Syndrome**
Melina Kumar, 15, Sophomore, Clear Lake High School, Houston, Texas, T: Robin Mayeaux

BEHA003 **Anxi: A Novel Natural Language Processing System for the Detection and Prevention of Anxiety Disorders**
 # Pranav Somani, 18, Senior, College Park High School, The Woodlands, Texas, T: Joseph Ewbank

CBIO008T **Monco: A Novel Deep Learning Pipeline to Predict Drug Candidates for the Inhibition of EZH2 Cofactors in Pediatric Neuroblastoma**
 Jaagat Prashar, 17, Junior, Jaanak Prashar, 17, Junior, Jordan High School, Fulshear, Texas, T: Oscar Le

CHEM002T **Engineering a Cost-Effective and Biodegradable Cellulosic Battery Composition**
 Shivani Mundra#, 17, Junior, Madelyn Puza#, 17, Junior, College Park High School, The Woodlands, Texas, T: Stephanie Marts

EAEV002 **An Analysis Into the Removal of Microplastics From Water Using Oil-Based Ferrofluids**
 Rishab Ghosh, 17, Junior, College Park High School, The Woodlands, Texas, T: Larissa Coffee

ENBM013T **DiaVest II: A Non-Invasive Glucose Monitoring System for Diabetes Management**
 Rohan Mehta, 16, Junior, Roshan Mehta, 16, Junior, Shreyas Vatts, 18, Junior, College Park High School, The Woodlands, Texas, T: Joseph Ewbank

ETSD001T **ArmAssist: A Lightweight, Concealable Active Arm Support That Empowers Victims of Muscular Atrophy**
 Donovan Jose Burke, 16, Sophomore, Henry Fernando Aceves, 15, Sophomore, College Park High School, The Woodlands, Texas, T: Joseph Ewbank

MATH011 **Ending States of a Special Variant of the Chip-Firing Algorithm**
 Rich Wang, 18, Senior, William P. Clements High School, Sugar Land, Texas, T: Diana Morgan

MATS003 **Programmable Matter II: Optimizing Logical Topology and Automating Manufacture of a Microscale, Self-Reconfigurable Swarm Robotic System**
 ### Sohi Sanjay Patel, 17, Senior, College Park High School, The Woodlands, Texas, T: Stephanie Marts

PHYS002 **Investigating the Effect of Qubit Entanglement on Quantum Decoherence**
 Jesse Daniel Miller, 16, Sophomore, College Park High School, The Woodlands, Texas, T: Joseph Ewbank

PLNT009T **Optimization of Starch Content in Lemna minor Through Modified Environmental Conditions**
 Felix Yizhuo Li, 17, Junior, Anshul Ashesh Desai, 17, Junior, College Park High School, The Woodlands, Texas, T: Stephanie Marts

ROBO012T **An Autonomous Over-the-Board Chess Solution for Players in Isolated Conditions**
 Landon Patrick Doughty, 16, Sophomore, Ayaan Javaid Dhuka, 16, Sophomore, Caiman Antonio Moreno-Earle, 15, Sophomore, Saint John's School, Houston, Texas, T: Franco Posa

Kilgore, USTX06, East Texas Regional Science Fair

CHEM012 **Sunsick: Finding the Right Formula**
 Addison Jane Barnes, 15, Sophomore, Hughes Springs High School, Hughes Springs, Texas, T: Lindsy Boles

Laredo, USTX07, United Independent School District Regional Science Fair

BEHA001 **An Innovative Non-Humanoid Automaton to Ameliorate Children With Social Emotional Learning Uncommunicative Skills**
 Sofia Ivana Vela, 17, Junior, John B. Alexander High School, Laredo, Texas, T: Veronica Villarreal

Lubbock, USTX08, South Plains Regional Science and Engineering Fair

MCRO005 **Identifying Novel Modes of Inhibition of *C. pusillum* and *B. subtilis* Bacteria, Against Deadly Bat Fungus, *Pseudogymnoascus destructans* (Year 8)**
 # Calvin Kirtley Harold Carpenter, 17, Junior, All Saints Episcopal High School, Lubbock, Texas, T: Penny Carpenter

- SOFT003** **A Robust and Interpretable Deep Neural Network Algorithm for Leukemia Identification in Peripheral Blood Smear Cells**
Leonardo Amato Regis de Farias, 18, Senior, Lubbock High School, Lubbock, Texas, T: Milene de Farias
- Odessa, USTX09, Permian Basin Science & Engineering Fair**
PLNT002 **Why So Dry? Comparing Hydrogels to Conserve Water in Soil**
Mateya Grace Trees, 14, Freshman, San Angelo Home School, San Angelo, Texas, T: Janice Trees
- San Antonio, USTX11, Alamo Regional Science and Engineering Fair**
ANIM011 **Investigating the Link Between Visual Impairment and Ischemia-Reperfusion Injury: Potential Interventions To Mitigate Damage**
Joanna Sohn, 16, Junior, Keystone School, San Antonio, Texas, T: Jason Nydegger
- ANIM020** **Does Constant Blue or Orange Light Accelerate Butterfly Development?**
Josephine Elizabeth Schultz, 15, Sophomore, Winston Churchill High School, San Antonio, Texas, T: Theodore Schultz
- BMED008** **Influences of a Maternal High-Fat Diet (HFD) and Serotonin Transporter (SERT) Deficiencies on Cognitive Flexibility**
Amber Rebecca Elizalde, 18, Senior, Health Careers High School, San Antonio, Texas, T: Erin Snow
- CBIO009** **Advancing Autoimmune Disease Treatment With AI-Assisted Gene Expression Analysis**
Sarah Cross, 18, Senior, Keystone School, San Antonio, Texas, T: Jason Nydegger
- CBIO010** **Multi-Dimensional Interpretable Interaction Network (MDiIN) for Modeling Aging Health and Mortality**
Hannah Guan, 17, Senior, BASIS San Antonio Shavano Campus, San Antonio, Texas, T: Sarah Chavez
- ETSD006** **Converting a Gas Engine To Use Compressed Air**
Victor Robert Moran, 17, Junior, John Jay Science and Engineering Academy, San Antonio, Texas, T: Gilbert Huizar
- TMED014T** **Investigating the Effect of Traumatic Brain Injury and THIP on Short-Term Memory in *Drosophila melanogaster* Using Aversive Phototoxic Suppression**
Niraj Om Srivastava, 16, Junior, Abby Miriam Montemayor, 16, Junior, Keystone School, San Antonio, Texas, T: Jason Nydegger
- Waco, USTX12, Central Texas Science and Engineering Fair**
MATH001 **Is Benford's Law Irrational?: Does Benford's Law Apply to the Decimal Digits of Irrational Numbers?**
Abigail Marie Olmstead, 15, Freshman, Greater Waco Christian Home Educators, Waco, Texas, T: Kim Olmstead
- Austin, USTX13, Austin Energy Regional Science Festival**
BCHM004T **A Novel Approach to Treating Parkinson's Disease With Amino Acids to Alleviate LRRK2 Gene Mutation Symptoms in *C. elegans* Evaluated via the Use of Multidimensional Analysis Methods**
Rajvi Rakesh Babaria##, 17, Senior, Halley Madyson Compuesto#, 18, Senior, Vista Ridge High School, Cedar Park, Texas, T: Rhonda Christman
- BMED009** ***In silico* Accelerated Drug Discovery and Development Utilizing Human Physiological Modeling and Simulation**
Aaron George, 16, Sophomore, Saint Dominic Savio Catholic High School, Austin, Texas, T: Pam Koo
- EBED009** **A Novel Approach to Series Elastic Actuation in Neurorehabilitative Soft Robotics Using Resistance Pressure Sensors to Rotate Servo-Controlled Appendages Accurately**
Amisha Sao, 17, Junior, Round Rock High School, Round Rock, Texas, T: Marla Menchaca
- MATH012** **Improving Contemporary Mathematical Models of Metastatic Cancer to Predict Optimal Treatment: Analyzing Glycolysis, Treatment, and PACC Quiescence**
Caitlin Elaine Garrett, 17, Junior, Vandegrift High School, Austin, Texas, T: Justyne Biddle

- MATS010** **Carbon Dioxide Capture and Storage Utilizing Metal Hydroxides and Biochar**
Grace J. Huh, 16, Sophomore, Westwood High School, Austin, Texas,
T: William Davis
- ROBO013** **REPNET: A Reproductive Training Architecture for Reinforcement Learning Neural Networks**
Tiernan Lindauer, 18, Senior, Vista Ridge High School, Cedar Park, Texas,
T: Jacob Hoffman
- TMEDO10** **The Cross-Application of Oxidative Stress Conceptualizations to Inflammatory Microglia's Role in Neurological Diseases for Candidate Drug Discovery**
Amna Siddiqui, 16, Sophomore, Austin Peace Academy, Austin, Texas,
T: Nahed Abougalala
- Laredo, USTX14, Laredo Independent School District Science Fair**
- EAEV014** **Cognitive Regeneration of Planaria**
Giselle Luna, 16, Sophomore, Dr. Dennis D. Cantu Early College High School, Laredo, Texas, T: Lorena Castaneda
- Corpus Christi, USTX15, Coastal Bend Regional Science Fair**
- ENBM001** **Heat Screen: A Novel Approach to Monitoring Heat Stress**
Cuauhtemoc Zamora, 16, Sophomore, Veterans Memorial High School, Corpus Christi, Texas, T: Porfirio Zamora
- TMEDO04** **Translational Approach To Develop N-Acetylneuraminic Acid (Neu5Ac) as Biomarker for the Diagnosis of Alzheimer's Disease (AD), Year Two Project**
Sharmada Palakurthi, 15, Freshman, W.B. Ray High School, Corpus Christit, Texas,
T: Pedro Benavidez
- Burkburnett, USTX16, Red River Regional Science and Engineering Fair**
- TMEDO06** **Optimizing Machine Learning Models to Predict the Likelihood of Stroke With State-of-the-Art Accuracy**
Saianiruddh Reddy Chada, 17, Junior, Rider High School, Wichita Falls, Texas,
T: Bryce Henderson
- College Station, USTX50, Texas Science and Engineering Fair**
- BEHA041** **DSM Diagnosis Is Dead: Novel, AI-Powered Biopsychosocial Fingerprinting for Depressive, Anxiety, Trauma, and Stress Disorders**
Siddhu Pachipala, 18, Senior, College Park High School, The Woodlands, Texas,
T: Susan Caffery
- BMEDO44** **Proliferous Metabolics: Targeting Nucleotide Metabolism in Cancer Chemotherapy**
Jason Chris Xu, 18, Senior, Plano West Senior High School, Plano, Texas,
T: Emily Sharma
- EAEV062** **Computational Modeling of CO₂ Migration and Trapping in Geologic Formations for Risk Assessment of Carbon Sequestration Impacting Carbon Footprint**
Shaunak Pandey, 17, Junior, Vandegrift High School, Austin, Texas,
T: Justyne Biddle
- EAEV065T** **Comprehensive Dataset Utilizing Meteorological and Topographical Feature Data for Next-Day Wildfire Spread Prediction**
Aditya Singirikonda, 16, Junior, Anish Goel, 18, Senior, Texas Academy of Mathematics and Science, Denton, Texas, T: Alyssa Rodriguez
- EBED035T** **ChroniSense: Developing a Wearable Device for the Dynamic Detection, Tracking, and Mitigation of Chronic Pain**
Rohit Karthik Pillutla, 16, Sophomore, Inu Baek, 16, Sophomore, College Park High School, The Woodlands, Texas, T: Joseph Ewbank
- EGSD051** **Engineered Phototropism: Improving the Energy Efficiency of Residential-Use Solar Tracking Using Soft-Bodied Thermal Expansion**
Ricardo Victorio, 16, Junior, College Park High School, The Woodlands, Texas,
T: Joseph Ewbank

- MATSO43** **Synthesis of a Sustainable Bio-Nanocomposite Coating to Reduce Post-Harvest Agriculture Losses**
Raj Mhetar, 17, Junior, College Park High School, The Woodlands, Texas,
T: Stephanie Marts
- MCRO046** **Combating Pseudomonas Resistance: Cloning of the ampC Gene Encoding for Beta-Lactamase and Development of a Non-Toxic Allosteric Inhibitory Cocktail Therapy to Eradicate *Pseudomonas aeruginosa***

Shriya Prakash Bhat, 18, Senior, Plano East Senior High School, Plano, Texas,
T: Julie Baker
- PHYS046T** **A Deep Learning Based Hierarchical Labeling and Generative Sampling Framework for Classifying Particle Jets for Generalizable Tagging**
Yash Sembali, 16, Junior, Mihir Lal Relan, 17, Junior, Michael E. DeBaKey High School for Health Professions, Houston, Texas, T: Cody Meng
- PLNT044** **Agro-Rhizoremediation: Rhizoremediation With Agro-Transformed *Oryza sativa* to Facilitate Arsenic Degradation *in situ* (Year III)**

Prisha Bhat, 15, Sophomore, Plano East Senior High School, Plano, Texas,
T: Julie Baker
- ROBO049** **VisiAide: A Multifaceted Self-Learning AI Assistant for the Visually Impaired Using a Novel Context-Based Approach**
Dhroov Veeral Bharatia, 14, Freshman, Vines High School, Plano, Texas,
T: Susan Waldron
- SOFT032T** **AIM-AI: An AI-Based Natural Language Processing Approach To Reducing Fatal Risks of Medical Imaging in Patients Through Automated Imaging Order Selection**
Rohan Dharua, 17, Junior, Videet Mehta, 16, Junior, William B. Travis High School, Richmond, Texas, T: Matthew Hindmarch

UTAH

- Farmington, USUT01, North Davis Area Science and Engineering Fair**
- BEHA013** **Gender Preferences in Character Archetypes of Western US High School Students**
Grace M Gunn, 17, Senior, Farmington High School, Farmington, Utah,
T: Jana Barrow
- CELL015** **Cancer and CRISPR: A Story of Two Assays**
Neve Eliza Bawden, 14, Freshman, Millcreek Junior High School, Bountiful, Utah,
T: Kristin Bates
- MCRO009** **Effects of Sound Exposure on the Phosphorus Uptake of Polyphosphate-Accumulating Organisms**

Thanaphone Glenn Shields, 17, Junior, Syracuse High School, Syracuse, Utah,
T: Nannette Gunty
- MCRO012** **Carbonation vs. Bacterial Growth in Naturally Carbonated Springs**
Kristina Marie McCammon, 18, Senior, Farmington High School, Farmington, Utah,
T: Jana Barrow
- TMED016** **Colored LED Strip Lights vs. Blood Pressure**
Zoe Alene Wayment, 15, Freshman, West Point Junior High School, West Point, Utah, T: Haylie Tracy
- Cedar City, USUT02, Southern Utah Science and Engineering Fair**
- BMED032** **The Correlation Between Physical Activity and Balance in the Elderly**
June Alicia Bryant, 16, Junior, Success Academy DSU, St. George, Utah,
T: Megan Liljenquist
- CHEM047** **Synthesis and Characterization of Manganese Desert Rose Nanoparticles: A Fourth Year Study**

Taytum Oakden Stratton, 18, Senior, SUCCESS Academy–SUU, Cedar City, Utah,
T: Kimberly McCollum
- ETSD059** **Replica of an Acoustic Liner Simplified**
Allison Munro, 16, Junior, SUCCESS Academy–SUU, Cedar City, Utah,
T: Micah Jackson

Ogden, USUT03, Weber Area Science and Engineering Fair

- EAEV072 The Use of Bio Plastics Made From Bio Materials in Connection to Deforested Ecosystem Viability**
Lauren Paige Gorsline, 18, Senior, Weber High School, Pleasant View, Utah,
T: Lareen Radle
- EGSD043T Geometric Structures Effect on the Aerodynamic Efficiency of Semi Fairings**
Dakota Weston, 18, Senior, Matheus Jonathan Horton, 18, Senior, Fremont High School, Plain City, Utah, T: Robert Riley
- ETSD036 The Effect of Carbon Fiber on the Shear Capacity of a Bolt Within a Lap Joint**
Logan Scott Hancey, 17, Junior, Fremont High School, Plain City, Utah,
T: Robert Riley
- PLNT038T New Development of Graft Between a Select Scion and Durable Weed Root Systems To Form a Productive Hybrid**
Oakely Marriott##, 18, Senior, Keiley Mitchell#, 18, Senior, Fremont High School, Plain City, Utah, T: Robert Riley T: Robert Riley

Provo, USUT04, Central Utah STEM Fair

- BMEDO42 Assessing the Photoreceptor Expression in Retinal Organoids From a Patient With Rhodopsin Copy Number Variation**
Sarah Lee, 17, Junior, Timpview High School, Provo, Utah, T: Joy Petrucka
- EAEV055 Biomechanical and Biological Accumulation of Lead in Ants at a Shooting Range**
Talmage Wallace, 16, Sophomore, Salem Hills High School, Salem, Utah,
T: Kellie Roberts
- EGSD029 Electrifying Lake Mud, Part 4! More Power**
Fianna Jean Smith, 16, Sophomore, Herriman High School, Herriman, Utah,
T: Jane Harward
- PHYS051 Improvements on Schlieren Imaging**
Matthew William Dolinar, 16, Sophomore, American Fork High School, American Fork, Utah, T: Robert Adamson

Salt Lake City, USUT05, University of Utah Science and Engineering Fair

- ETSD027T A Novel Approach to Electric Aircraft Engines Using Thorium Dioxide Coated Tungsten Carbide Fins for Thrust Generation**
Evan Skyler Weinstein#, 16, Sophomore, Aiden Shah Gandhi#, 16, Sophomore, Eli Daniel Hatton#, 16, Sophomore, Rowland Hall- Lincoln Street Campus, Salt Lake City, Utah, T: Padmashree Rida
- PHYS033 Investigating the Origins of Hot Neptunes From Radial Velocity Data**
Sophie Yinuo Zheng, 16, Junior, Rowland Hall- Lincoln Street Campus, Salt Lake City, Utah, T: Padmashree Rida
- ROBO032T Developing an LSTM-Based Model for Accurate Sign Language Recognition Through Hand Keypoint Detection**
Cole NenLi Chu, 16, Junior, Alex Antonio Hernandez Juarez, 16, Junior, West High School, Salt Lake City, Utah, T: Enrique Arce-Larreta
- TMEDO33 Identification and Analysis of Metabolic Inhibitors in Ctnnb1-Driven Hepatocellular Carcinoma (HCC)**
Audrey Yimin Su, 16, Junior, Skyline High School, Salt Lake City, Utah, T: Kimberley Evason

Ogden, USUT07, Harold W. & Helen M. Ritchey Science and Engineering Fair of Utah

- BMEDO35 Proteoglycans and Their Effects on Cancer Cell Migration**
Denali Emilie Isaacs-Perman, 16, Sophomore, Northern Utah Academy for Math, Engineering and Science, Layton, Utah, T: Debbie Titmus
- ENEV045 Building an Attachable Device to Capture Carbon Dioxide Emissions From a Lawnmower**
Christina Zhang, 17, Junior, InTech Collegiate High School, North Logan, Utah,
T: Tracy Davidson
- MCRO040 Fighting the Emerging Antibiotic Resistance in Wastewater**
Angela Zhan, 15, Sophomore, Logan High School, Logan, Utah, T: Christina Howell

MCRO041 Antimicrobial Effects of Tris (Ethylenediamine) Cobalt(III) Chloride - Cobalt Complex
Addison Leigh Cook, 14, Sophomore, Northern Utah Academy for Math, Engineering and Science, Layton, Utah, T: Debra Titmus

VERMONT

Northfield, USVT50, Vermont Science, Technology, Engineering and Mathematics Fair
PHYS047 Investigating the Role of Excitonic Quantum Coherence in the Light-Harvesting Process of Photosynthesis
Elias Leventhal, 17, Junior, Champlain Valley Union High School, Hinesburg, Vermont, T: David Punihaole

VIRGINIA

Arlington, USVA01, Northern Virginia Science and Engineering Fair
BCHM011 Analysis of Anti-Inflammatory Compounds in Drug Absorption and Calculated Transdermal Permeability Utilizing the Parallel Artificial Membrane Permeability Assay (PAMPA)
Olivia Grace Bartrum, 17, Junior, Wakefield High School, Arlington, Virginia, T: Dan Harris

MCRO021 Characterization and Genomic Analysis of Novel *Acinetobacter baumannii* Phages EAb3 and EAb7 for the Treatment of Multidrug-Resistant Infections
Julia Rose Brodsky, 17, Senior, H-B Woodlawn Secondary Program, Arlington, Virginia, T: Eric Young

Charlottesville, USVA02, Virginia Piedmont Regional Science Fair
ENBM029 Tracking Essential Tremors
Aditya Ranjit Biswas, 16, Junior, Colonial Forge High School, Stafford, Virginia, T: Susan Easter

TMED029 Haloperidol Inhibits Inflammasome Activation via LAMTOR1 and Reduces the Risk of Rheumatoid Arthritis
Vidya Ambati, 16, Sophomore, Albemarle High School, Charlottesville, Virginia, T: Brian Werner

Fairfax, USVA03, Fairfax County Regional Science and Engineering Fair
ANIM032 Effect of Larval Crowding of the Zophobas morio Beetle on Consumption of Polystyrene Foam
Elizaveta Igorevna Plis, 15, Sophomore, Falls Church High School, Falls Church, Virginia, T: Tina Masciangioli

EGSD025 Investigating the Efficacy of Dye-Sensitized Solar Cells Utilizing Multiple Sources of Anthocyanin
Danial Jawad Syed, 16, Sophomore, Hayfield Secondary School, Alexandria, Virginia, T: Julie Riley

ENEV040T ARM: Streamlining Recyclable Waste Identification With Highly Scalable Deep Learning Algorithms
Frank Chang, 17, Junior, Jason Yoo, 16, Junior, Stephen Tsai, 16, Junior, Chantilly High School, Chantilly, Virginia, T: Allison Maher T: Tom Usry

PHYS034 Implementing a Hybrid Quantum-Classical Neural Network by Utilizing a Variational Quantum Circuit for Detection of Dementia
Ryan Kim, 16, Junior, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia, T: Mark Hannum

PHYS035 Gravity-Darkened Atmospheric Modeling of Exoplanets: Insights From KELT-9b
Ronit Kapur, 17, Junior, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia, T: Whitney Louchen

PLNT032 The Effect of Chlorine (ppm) on the Lead Phytoremediation Rate in *Lemna minor*
Aayush Shivashankar, 16, Sophomore, Chantilly High School, Chantilly, Virginia, T: Latha Shankar

- ROBO033** **Hybrid Plasticity: Adaptive, Brain-Like Artificial Intelligence via Prefrontal Cortex Inspired Meta-Learning**
Rohan Kalahasty, 17, Junior, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia, T: Katherine Phillips
- SOFT023** **Simulated Brokerage for Novice Investors**
Samuel Hyrum Stankiewicz, 15, Freshman, West Springfield High School, Springfield, Virginia, T: Yaara Crane
- TMEDO37T** **Predicting Monkeypox via Deep Learning-Driven Primary Morphology Analysis**
Sara Angela Becker, 16, Sophomore, Kyan Yang, 16, Sophomore, James Madison High School, Vienna, Virginia, T: Jyosthna Vallampati
- TMEDO42T** **OtoScan: A Novel, Inexpensive System for Comprehensive Diagnosis of Middle Ear Infections With an Intelligent Mobile Otoscope**
Sritan Motati, 17, Junior, Omkar Kovvali, 17, Junior, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia, T: Jennifer James
- Crozet, USVA04, Shenandoah Valley Regional Science and Engineering Fair**
- PHYS043** **Mid-Infrared Variability of Active Galactic Nuclei in Cosmic Voids**

Anish Sachin Aradhey, 18, Senior, Harrisonburg High School, Harrisonburg, Virginia, T: Myron Blosser
- PLNT042** **The Effects of Gravitropism on Seed Germination**
Tyler Jenkins, 17, Junior, Shenandoah Valley Governor's School, Fishersville, Virginia, T: Andrew Flick
- Lynchburg, USVA05, Central Virginia Regional Science Fair**
- ETSD020** **The Effect of Degradation on a Full Synthetic vs. Conventional Motor Lubricant's Tribological Performance**
Micajah Cole Mason, 17, Junior, Central Virginia Governor's School for Science and Technology, Lynchburg, Virginia, T: Michele Chamot
- MCRO020** **Got Milk? Comparing the Acid Production of Bifidobacterium infantis When Grown in Different Milks**
Jason Chen, 17, Junior, Central Virginia Governor's School for Science and Technology, Lynchburg, Virginia, T: Michele Chamot
- Manassas, USVA06, Prince William-Manassas Regional Science and Engineering Fair**
- BEHA028** **Food for Thought: Can Intermittent Fasting and Ketosis Ameliorate Dementia by Decreasing Tau Hyperphosphorylation and Neuroinflammation in *Drosophila melanogaster*?**

Rania Sophia Lateef, 16, Sophomore, Charles J. Colgan Sr. High School, Manassas, Virginia, T: Lorian Pawlik
- BMEDO56T** **Modeling the Effect of Hyperglycemia on the Fertility of *Caenorhabditis elegans***
Layla Moussavi, 17, Junior, Raeanne Ferrer, 16, Sophomore, Lyla Bianca Browne, 17, Junior, Governor's School at Innovation Park, Manassas, Virginia, T: Elizabeth Romano
- ENBM052** **NephroNet: A Novel Program for Identifying Renal Cell Carcinoma and Generating Synthetic Training Images With Convolutional Neural Networks and Diffusion Models**
Yashvir Sabharwal, 16, Sophomore, Battlefield High School, Haymarket, Virginia, T: Julia Renberg
- ETSD031** **The Effect of Propeller Design on Underwater Remotely Operated Vehicle Speed**
Hannah Brooke Jansen, 16, Sophomore, Patriot High School, Nokesville, Virginia, T: Faren Ahrens
- MATS038T** **The Creation of Longer Lasting Concrete: An Analysis on the Infusion of Bacteria and Aggregates Into Cement Concrete to Increase Durability at Varying Temperatures by Examining the Substances Following Water Absorption**
Lani Kari Lin-Kissick, 16, Junior, Hanna Marina Aklil, 16, Junior, Governor's School at Innovation Park, Manassas, Virginia, T: Elizabeth Romano

Ashburn, USVA07, Loudoun County Science and Engineering Fair

- BEHA035** **Determining the Impact of *Hericum erinaceus* on Aggression in Socially Isolated *Drosophila melanogaster***
Zoe DeWitt, 17, Junior, Stone Bridge High School/The Academy of Science, Ashburn, Virginia, T: Andrew Allshouse
- EBED026** **Creating a Light Speed Linear Algebra Accelerator With Silicon Photonics**
Jagadeepm Maddipatla, 17, Junior, Rock Ridge High School, Ashburn, Virginia, T: Dylan Cashman
- EGSD027** **Evaluating the Effectiveness of Plant-Microbial Fuel Cell Energy Derived From Traditional House Plants**
Samantha Brown, 18, Senior, Academies of Loudoun, Leesburg, Virginia, T: Trevor Barry
- ETSD035** **Production and Comparison of Re-Extruded Filament From Recycled PET Plastic Bottles for Use in 3D Printing**
Tyler Matthew Smith, 17, Senior, Academies of Loudoun, Leesburg, Virginia, T: Michael Croly
- TMED043** **The Antihypertensive Effect of L-Ergothioneine (ET) on Angiotensin I-Converting Enzyme (ACE) Inhibitory Activity and Nitric Oxide (NO) Production to Effectively Prevent and Treat Cardiovascular Diseases**
Aryaa Agarwal, 17, Senior, Academies of Loudoun, Leesburg, Virginia, T: Zachary Minchow-Proffitt

Roanoke, USVA08, Western Virginia Regional Science Fair

- BMED024** **Collagen XIX Point Mutant Leads to Schizophrenia Related Behaviors Due to Synapse Impairment in Mice**
Claire Wei, 18, Senior, Roanoke Valley Governor's School for Science and Technology, Roanoke, Virginia, T: Mark Levy
- CELL029** **Effect of AGX-51 on Human Lung Fibroblasts**
Aanandi Parashar, 16, Junior, Hidden Valley High School, Roanoke, Virginia, T: Sandra Reedy
- EAEV032** **Measuring the Effects of Climate Change on Arctic Rivers**
Franziska Borneff, 17, Junior, Hidden Valley High School, Roanoke, Virginia, T: Neha Karandikar

Yorktown, USVA09, Tidewater Science and Engineering Fair

- BED033** **Designing and Prototyping and LIDAR Based Haptic Navigation Vest for the Visually Impaired and Special Forces**
Joshua Steven Bryant, 18, Senior, Ocean Lakes High School, Virginia Beach, Virginia, T: Allison Graves
- MATH036** **A Mathematical Model for Traffic Flow Risk Management Applied to Hampton Roads Emergency Evacuation**
Kevin Hou, 15, Sophomore, Princess Anne High School, Virginia Beach, Virginia, T: Jana Eggleston

Radford, USVA10, Blue Ridge Highlands Regional Science Fair

- ETSD012** **Anti-Lock Brakes Applied to a Bicycle**
Jesse William Dulaney, 17, Junior, Southwest Virginia Governor's School, Pulaski, Virginia, T: Matthew Frazier
- MATH018** **Exploring Collatz Conjecture**
Davis Allen Reitzel, 17, Junior, Southwest Virginia Governor's School, Pulaski, Virginia, T: Greg Riffe

Richmond, USVA13, Metro Richmond Science and Engineering Fair

- ENBMO32** **Development of Novel Stimulator To Reduce Electromagnetic Interference During Transcranial Magnetic Stimulation**
Aryan Mhaskar, 17, Junior, Mills E. Godwin High School, Henrico, Virginia, T: Kelly Ostrom
- MATH026** **Optimizing Quantum Annealing to Advance Graph Coloring Algorithms**
Anooshka Pendyal, 17, Junior, Deep Run High School, Glen Allen, Virginia, T: Thang Dinh

Roanoke, USVA50, Virginia State Science and Engineering Fair

- ANIM054T Feasting Fruit Flies: Evaluating the Effect of Selected Ayurvedic Plant Extracts on the Mood, Memory, and Fertility of *Drosophila melanogaster***
Fayza Mehrin, 17, Junior, Madison Shae Nally, 18, Senior, Ellie Minchae Kim, 17, Junior, Governor's School at Innovation Park, Manassas, Virginia,
T: Elizabeth Romano
- ETSD066T HypeFL: A Novel Blockchain-Based Architecture Using Federated Learning and Cooperative Perception for a Fully-Connected Autonomous Vehicle System**
Mihika Amit Dusad, 16, Junior, Aryaman Khanna, 16, Junior, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia, T: Selma Yilmaz
- ROBO068 Brain Tumor Segmentation and Classification Based on Deep Learning, Attention Mechanisms, and Energy-Based Uncertainty Predictions**
Zachary Schwehr, 16, Sophomore, Mills E. Godwin High School, Henrico, Virginia,
T: Dana Delano
- SOFT049 MoodBox: Vocal Screening for Depression and Gamified Relief**
Shinyoung Jeon, 17, Junior, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia, T: Katherine Phillips

WASHINGTON

USWA01, Mid-Columbia Regional Science and Engineering Fair

- ENBMO30 AmEyeDrunk? The Future of Intoxication Detection**
Advaita Motkuri, 15, Sophomore, Richland High School, Richland, Washington,
T: Krystal Bass
- PHYS028 Controlled Triangular Edge-Asymmetries as Means of Increasing Diode Efficiency in a Single Layer Superconductor**
Ourania-Maria Glezakou-Elbert, 17, Senior, Hanford High School, Richland, Washington, T: Brian Palmer
- SOFT021 CamVisors: Cost-Effective Real-Time Object Detection Using Contrastive Captioners for the Blind**
Matthew Yao, 15, Sophomore, Walla Walla High School, Walla Walla, Washington,
T: Korrie Beemer

Orting, USWA02, Discovery Regional Science and Engineering Fair

- ETSD053 Wind-Powered Flight: Exploring the Potential of Dynamic Soaring for Unmanned Aerial Vehicles**
Kevin Shen, 16, Sophomore, Olympia High School, Olympia, Washington,
T: Brian Wright

Dallas, USWA03, Central Sound Regional Science & Engineering Fair

- BMEDO25 Deciphering a Sleeping Pathogen: Uncovering Novel Transcriptional Regulators of Hypoxia-Induced Dormancy in *Mycobacterium Tuberculosis***
Rohak Jain, 16, Junior, Interlake High School, Bellevue, Washington, T: Pankaj Jain
- ENEV039 Biomimicry of the Boxfish: A Computational Analysis and Wind Tunnel Study of Aerodynamic Drag Reduction of Class 8 Heavy Vehicle Trailers**
Vedant Srinivas, 16, Junior, Eastlake High School, Sammamish, Washington,
T: John Stratton
- MATS027 Carbon Dot and Cyanoacrylate Fuming Method for Latent Fingerprint Detection**
Nikki Taleghani, 16, Junior, Nikola Tesla STEM High School, Redmond, Washington,
T: Kate Allender
- SOFT027 MemSpark: Artificially Intelligent Virtual Reality System for Non-Intrusive Therapy and Evaluation of Dementia**
Kosha Upadhyay, 16, Junior, Bellevue Senior High School, Bellevue, Washington,
T: Snehal Upadhyay
- TMEDO32 Uncovering the Epileptogenic Brain Networks With Independent Component Analysis and Deep Learning: A Novel and Comprehensive Framework for Scalable and Generalizable Seizure Prediction With Unimodal Neuroimaging Data in Pediatric Patients**
Bliss Singhal, 16, Junior, Issaquah High School, Issaquah, Washington,
T: Sylvia Law

Vancouver, USWA04, Southwest Washington Science and Engineering Fair

EGSD039T Tesla Turbine: Outdated or Modern Innovation?
Alexandria McNutt, 16, Sophomore, Jenny Wang, 16, Sophomore, Camas High School, Camas, Washington, T: Brianna Abraham

Spokane, USWA05, Eastern Washington Regional Science and Engineering Fair

ANIM033 The Potential Use of the *Hydra vulgaris* Toxin Hydrumacin-1 as an Antibiotic Agent Against the Coral Bacterium *Vibrio coralliilyticus*
Jessica Joy Palmer, 18, Senior, Joel E. Ferris High School, Spokane, Washington, T: Darci Hastings

CBIO023 Structural Basis for the Allosteric Modulation of GABAA Receptors by Diazepam
Padmaja Senthil Kumar, 17, Junior, Lewis & Clark High School, Spokane, Washington, T: Eric Strate

EAEV036 The Application of Mycorrhizal Inoculation to Increase Agricultural Productivity and Carbon Sequestration in Hugelkultur Systems
Kaia Olson, 18, Senior, Joel E. Ferris High School, Spokane, Washington, T: Darci Hastings

Silverdale, USWA50, Washington State Science and Engineering Fair

BEHA047 Quantifying Depression: An Art-Based Approach to Reducing the Self-Report Bias in Diagnosing Depression Using Koch's Baum Test and Color Psychology
Saachi Sharma, 16, Junior, Nikola Tesla STEM High School, Redmond, Washington, T: Kate Allender

CBIO054 Uncovering the Benefits of Ultrasound: Effects on Colocalization of Microglia and Amyloid-Beta Plaque in Alzheimer Mouse Models
Jamie Claudia Kwon, 16, Sophomore, Forest Ridge School of the Sacred Heart, Bellevue, Washington, T: Corina Rahmig

CBIO055 Early Detection of Cancer Using Microbial Taxonomic and Functional Information
Yue Ding, 17, Junior, Nikola Tesla STEM High School, Redmond, Washington, T: Kate Allender

CBIO056 HeLU-DTI: Drug Target Interaction Prediction via Heterogeneous Graph Neural Networks and Large Language Models
Andy Ye, 17, Junior, Eastside Preparatory School, Kirkland, Washington, T: Ted Scott

ENBM078 The Sweet Spot: Non-Invasive Blood Glucose Monitoring Using Spectroscopy and Machine Learning
Tanaya Sharma, 16, Junior, North Creek High School, Bothell, Washington, T: Sunil Sharma

SOFT044 Dimensionality Reduction and Optimization of the GloVe Words Database Using Principal Component Analysis and Birch Clustering
Nishka Kacheria, 16, Junior, Interlake High School, Bellevue, Washington, T: Phillip Allen

TMED068 Identification of Novel Diagnostic Neuroimaging Biomarkers for Autism Spectrum Disorder Through Convolutional Neural Network-Based Analysis of Functional, Structural, and Diffusion Tensor Imaging Data Towards Enhanced Autism Diagnosis
Annie Adhikary, 16, Junior, Nikola Tesla STEM High School, Redmond, Washington, T: Kate Allender

WEST VIRGINIA

Keyser, USWV01, Eastern Panhandle Science and Engineering Fair

ENEV002 Mealworms and Polystyrene Foam: If Mealworms Are Fed Only Polystyrene Foam, Does Their Frass Contain Styrene and Benzene?
Andrew Stone, 16, Sophomore, Washington High School, Charles Town, West Virginia, T: Jessica Russler

ROBO002 **Ophidia Vision: Inside the Terrarium Lab**
Sydney Renee Bostic, 15, Sophomore, Spring Mills High School, Martinsburg, West Virginia, T: Jana Woofter

Charleston, USWV50, West Virginia State Science and Engineering Fair
CELL018 **Consequences of a DOT-1.1 Deletion on Germ Cell Components in *Caenorhabditis elegans***

Jeeya Patel, 17, Senior, George Washington High School, Charleston, West Virginia, T: Alla Grishok

CHEM009 **Assessing the Habitability of Exoplanets: An Integrated Framework Incorporating Similarity Evaluation and Kinetic Theory of Atmospheric Gases**

Lauren Shen, 17, Junior, Morgantown High School, Morgantown, West Virginia, T: William Gibson

WISCONSIN

Glendale, USWI02, Nicolet Science and Engineering Fair

MCRO029 **Gut-Skin Axis Theory: A Novel Approach to Alleviating Eczema Symptoms by Identifying Direct Relationships Between the Gut and Skin Bacteria**

Jason Shao, 17, Junior, Nicolet High School, Glendale, Wisconsin, T: Stephanie Rasmussen

Milwaukee, USWI03, University School of Milwaukee - Science Fair

CBIO007 **SARS-CoV-2 Variant Analysis Using Discrete Fourier Transform**

Aidan Wang, 17, Junior, University School of Milwaukee, Milwaukee, Wisconsin, T: Robert Juranitch

CELL008 **Transcriptomic Profiles of NK Cells in Patients With Hepatocellular Carcinoma: An Exploratory Framework to Unlock Their Therapeutic Potential**

Anjali George, 16, Junior, University School of Milwaukee, Milwaukee, Wisconsin, T: Robert Juranitch

ENEV014 **Innovative Ion-Exchange Method for Recycling Used LiFePO₄ Battery Cell Cathodes**

Aditya Pillai, 18, Senior, University School of Milwaukee, Milwaukee, Wisconsin, T: Robert Juranitch

Madison, USWI04, Capital Science and Engineering Fair

CHEM029 **How Does Dissolved Oxygen Content in PPM as Measured by the Winkler Titration Method and Temperature Measured in Celsius Vary Throughout the Summer at Different Depths Measured in Meters in Lake Mendota?**

Ella Marie Whiffen, 17, Senior, Madison Country Day School, Waunakee, Wisconsin, T: Michelle Kramer

TMEDO30 **BaymaxGPT: Employing Speech for Early and Automated Diagnosis of Neurodegenerative Disorders (Parkinson's Disease) Using a ChatGPT-Based Deep Learning Architecture**

Jonathan Crawford, 18, Senior, University School of Milwaukee, Milwaukee, Wisconsin, T: Robert Juranitch

Fond du Lac, USWI50, Badger State Science and Engineering Fair

BCHM036 **MAPing Out the Road for Preserving Donor Liver Viability from Ischemia-Reperfusion Injury: Unlocking the Secrets of the MAP Kinase Pathway in a Rat Model**

Krish Vasudev, 17, Junior, University School of Milwaukee, Milwaukee, Wisconsin, T: Robert Juranitch

ENBMO47 **Low-Field MRI Super-Resolution With Densely Engineered U-Net++ Network: Improving Resolution and Contrast of Portable MRI With Nested U-Net Architecture, Enabling Low-Cost Bedside Neurological Imaging on a Global Scale**

Aryan Kalluvila, 18, Senior, Hartford Union High School, Hubertus, Wisconsin, T: Matthew Rosen

ETS009 **Design, Construction, and Testing of a Passenger-Capable eVTOL Hexacopter**
Ethan Mark Zentner, 18, Senior, Nicolet High School, Glendale, Wisconsin,
 T: Stephanie Rasmussen

WYOMING

Greybull, USWY01, Northern Wyoming District Science Fair

EAEV003 **Reducing Potential Groundwater Contamination From Coal Fly Ash:
Developing a Unique Bentonite/Zeolite Matrix Barrier**
Riley Elizabeth Thomas, 18, Senior, Greybull High School, Greybull, Wyoming,
T: Joel Kuper

Laramie, USWY50, Wyoming State Science Fair

TMED031 **Non-Invasive microRNA-based Diagnostics for the Detection
of Multiple Cancers**
Grace Zhou, 16, Junior, Laramie High School, Laramie, Wyoming, T: Hai Hu

UNITED STATES VIRGIN ISLANDS

Frederiksted, United States Virgin Islands, TEVIO2, Good Hope Country Day School Science Fair

EGSD057 **Sustainable Gutter Water Energy**
Cai Gwilliam, 15, Freshman, Good Hope Country Day School, Kingshill, United States
Virgin Islands, T: Maranda Wood

ENEV069 **Testing the Tensile Strength of Cordage Made of Fibers From Plants Found
on St. Croix**
Anil Prasad, 17, Senior, Good Hope Country Day School, Kingshill, United States Virgin
Islands, T: Maranda Wood

VIETNAM

Ha Noi City, Vietnam, VNM001, Ha Noi Science Fair

BCHM030 **Injectable Multifunctional Hydrogel Dressing Composed of Alginate
and *Rhodomyrtus tomentosa* Herbal for Chronic Wound Treatment**
Thanh Khoa Nguyen, 17, Junior, Huynh Man Dat Upper Secondary for the Gifted,
Rach Gia, Kien Giang, Vietnam, T: Thi Phuong Le

BMED059T **Biocompatibility and Radioprotective Activity of Squid Ink-Derived Nanomelanin
on Human Umbilical Cord-Derived Mesenchymal Stem Cells**
Trong Phuc Nguyen, 18, Senior, Duc Manh Vu, 18, Senior, Le Hong Phong High School
for the Gifted, Nam Dinh, Nam Dinh, Vietnam, T: Thanh Xuan Tran

CBIO066T **The Neuropharmacological Effects of Leaves and Fruits Essential Oils
From *Litsea cubeba* Based on Network Pharmacology**
Thi Mai Anh Nguyen, 18, Senior, Binh Giang Binh Nguyen, 18, Senior, HUS High School
for Gifted Student, Hanoi, Vietnam, T: Son Hoang

ETSD057T **CEREPAD: Assistive Device for Neurological and Musculoskeletal for Spastic
Cerebral Palsy Children**
Hoang Ha Anh Le, 18, Senior, Duc Dung Vu, 15, Sophomore, Tran Phu Gifted High
School, Hai Phong, Vietnam, T: Thi Hai Ly Nguyen

MATS051T **Research on the Synthesis of Super Absorbent Polymer Materials From Tapioca
Starch and the Applicational Production of Flame-Retardant Hydrogel**
Thao Uyen Le, 17, Junior, Le Viet Hoang Nguyen, 16, Junior, Tuyen Quang Upper
Secondary for the Gifted, Tuyen Quang, Tuyen Quang, Vietnam,
T: Chau Thien Hoang

ROBO064T **I-Krobs: Robot That Dispenses Oral Sodium Iodine i-131 Radiotherapy Capsules
for Patients With Thyroid Diseases**
Trung Kien Do, 15, Sophomore, Duc Soat Nguyen, 15, Sophomore, Tran Phu Gifted
High School, Hai Phong, Vietnam, T: Thi Hai Ly Nguyen

ROBO065T **Quadruped Robot Model Assisting With Searching and Rescuing People
in Landslide-Stricken Areas**
Minh Duc Le, 17, Junior, Le Trung Kien Nguyen, 17, Junior, Le Hong Phong High School
for the Gifted, Ho Chi Minh, Vietnam, T: Thinh Le

ZIMBABWE

Harare, Zimbabwe, ZWE001, Zimbabwe National Science Fair

- EAEV013** **Development of a Novel AI Last-Minute Flood Forecasting and Warning Gadget Using IOT and Deep Learning**
Tinevimbo Musingadi, 18, Senior, Mabvuku High School, Harare, Harare, Zimbabwe, T: Brighton Mawakise
- EGSD005** **A High-Performance Polyaniline Brick Supercapacitor: A Novel Approach to the Electrical Energy Crisis**
Ruvarashe Moyo, 17, Junior, USAP Community School, Harare, Mashonaland East, Zimbabwe, T: Neil Wary
- EGSD006** **The Great Azolla Event II: Harnessing Electrical Energy From Oxidative Phosphorylation During Respiration in Aquatic Flora, *Azolla filiculoides***
Tatenda Shamiso Mazambani, 18, Senior, Princeton Institute, Mutare, Manicaland, Zimbabwe, T: Monica Chikwangwani
- EGSD007** **Solar Energy Number 1: The Best Solution to Zimbabwe's Electricity Problems**
Lionel Takudzwa Mawoneke, 18, Senior, Saint Dominic's High School Mutare, Mutare, Manicaland, Zimbabwe, T: Milton Magobeya
- EGSD008T** **Hydrogen Production by Artificial Photosynthesis Through the Photocatalytic Splitting of Water in the Presents of Sunlight and a Photo Catalyst**
Tanyaradzwa Tracy Manhara, 18, Senior, Audrey Chimimba, 18, Senior, Tanatswa Mhiti, 18, Senior, Queen Elizabeth Girls' High School, Harare, Zimbabwe, T: Memory Mutema
- ENEV020** **A Low-Cost Soil Moisture-Based Automated Irrigation Control System With Web Application**
Tinotenda Mawera, 14, Freshman, Millenial Academy, Harare, Zimbabwe, T: Gilbert Mawera
- ROBO011** **Sign Language Interpreter With Built in Translator**
Joanette Bubuya Bugalo Ngwenya, 17, Senior, Dominican Convent High School, Bulawayo, Zimbabwe, T: Phathisa Mlotshwa
- SOFT010** **Education for All Through Low-Cost Mobile Technology: Using an Automated SMS Chatbot to Send Educational Content Through Text Messages and Text Modules**
Cosmas Tadiwanashe Mandikonza, 18, Senior, Marist Brothers Nyanga High School, Mutare, Manicaland, Zimbabwe, T: Stephen Sowa
- SOFT016** **UScore App: Creating an Easy, Efficient and Effective Record Management System for Underserved Schools**
Makanaka Dzvurumi, 17, Senior, Peterhouse Girls School, Marondera, Mashonaland East, Zimbabwe, T: Sam Satumba