Countries, regions and territories participating in Regeneron ISEF 2026

LEGEND

- **Each # next to the finalist's name indicates previous ISEF participation**
- **An * identifies non-competing projects**
- **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

EAEV069 **Evaluation of an Integrated Biological-Stakeholder Decision Framework for Salinity Management in the Wetlands of Aunu'u, American Samoa**
Kim Gerald Doca Garcia, 17, Senior, Fa'asao Marist High School, Pago Pago, American Samoa, T: Cristy Dizon
https://isef.net/project/228010

EGSD042 **Reducing Fossil Fuel Dependence in American Samoa: Evaluating *Artocarpus altilis* (Breadfruit) as a Sustainable Bioethanol Feedstock**
Rachael Park, 15, Sophomore, Manumalo Academy, Pago Pago, American Samoa, T: Marissa Adolfo
https://isef.net/project/227499

PLNT035 **Novel and Accessible Seed Priming Agent to Enhance Germination and Stress Resilience Under Saline Conditions**
Alana Joserose, 16, Sophomore, Pacific Horizons School, Pago Pago, American Samoa, T: Cassandra Garcia
https://isef.net/project/227238

SFTD043 **A Deep Learning Food Recognition System for Nutritional Assessment and Disease Risk Management in American Samoa**
Yoon Seo Pyo, 17, Junior, Pacific Horizons School, Pago Pago, American Samoa, T: Cassandra Garcia
https://isef.net/project/225797

ARMENIA

Yerevan, Armenia, ARM002, Armenian School Science Festival

ENEV077T **Sorbroot: Adsorption of Heavy Metals From Water Using a Humic-Like Functional Groups Containing Sorbent Derived From Plastic**
Alyona Hakobyan, 17, Junior
Maria Melikyan, 17, Senior
Sofya Seyranyan, 17, Senior
Ayb School, Yerevan, Yerevan, Armenia, T: Lilit Hambardzumyan
https://isef.net/project/227785

PHYS066 **The Enhancement of Forced Atmospheric Water Condensation Using Multilayer Graphene-Coated Porous Ceramic Substrates**
Albert Shahinyan, 16, Senior, National Polytechnic University of Armenia Foundation Yerevan High School, Yerevan, Armenia, T: Rubina Ghazaryan
https://isef.net/project/227704

AUSTRALIA

Oatlands, Australia, AUS004, Australian Science and Engineering Fair

EBED008 **CryoFlow: A Streaming FPGA Architecture for High-Efficiency Cryogenic Electron Microscopy Reconstruction**
Michael James Reeves, 16, Sophomore, Ivanhoe Grammar School, Ivanhoe, Victoria, Australia, T: Rebecca Waese
https://isef.net/project/223878

ENEV010 **A Distributed Solar Photothermal System for Scalable, Chemical-Free Weed Control**
Daniel Edward Cox, 16, Junior, The Scots College Sydney Australia, Sydney, NSW, Australia, T: Stuart Garth
https://isef.net/project/223918

MATS006 **Evaluating the Feasibility of Mycelium-Based Biomaterials as Sustainable Core Components in Surfboard Design and Manufacturing**
Lucy Antonia Zaknic, 19, Senior, Loreto Kirribilli, Kirribilli, NSW, Australia, T: Jonathan Mascorella
https://isef.net/project/223958

PHYS003 **Discovery of 795 New Maunder Minimum Candidates in Kepler Data Using a Novel Autocorrelation Function**
Sarah Huang, 16, Junior, Shanghai American School - Puxi Campus, Shanghai, Shanghai, China, T: Gregory Rose
https://isef.net/project/223977

PHYS005 **Finding the Darkest Sky in an Urban Environment – Integrating the Novel Variable of Vegetation Cover to Improve the Star-Gazing Experience**
Anton Shawn Rajaratnam, 18, Senior, Redeemer Baptist School, North Parramatta, NSW, Australia, T: Stuart Garth
https://isef.net/project/223979

TECA002 **Transforming Reclaimed Sea Glass Into Sustainable Jewellery With Embedded NFC for Environmental Education**
Georgia Lillie Smead, 19, Senior, St Columba Anglican School, Port Macquarie, New South Wales, Australia, T: Justin Munro
https://isef.net/project/224017

TECA013 **Echo-Glove: Assistive Communication Device**
Jayashruthi Palanisamy, 17, Junior, Chevalier College, Burradoo, NSW, Australia, T: Peggy Handley
https://isef.net/project/223998

TMED003 **Investigating Sleep Quality Under Elevated Atmospheric CO_2 in a Simulated Space–Analog Environment**
Anay Ashwin, 16, Sophomore, Haileybury College, Keysborough, Victoria, Australia, T: Henry Willis
https://isef.net/project/224021

TMED005T **NeuroLume: A Novel Framework Towards Multimodal Detection of Alzheimer's Disease Using EEG and Speech Biomarkers With Explainable Machine Learning**
Archie Baker, 17, Junior
Nathanael Guo, 18, Junior
Sydney Grammar School, Darlinghurst, NSW, Australia, T: Steven Tong, T: Zoran Ilic
https://isef.net/project/224023

AZERBAIJAN

Baku, Azerbaijan, AZR001, Azerbaijan Science and Engineering Fair

CHEM057T **An AI-Controlled Underwater Floating Robot for Photochemical Treatment of Cyanide-Contaminated Industrial Wastewaters**
Mikayil Ahmadbayli, 14, Freshman
Banu Ibrahimova, 16, Sophomore
School-Lyceum 6, Baku, Sabail, Azerbaijan, T: Samir Karimov
https://isef.net/project/227602

EBED047T **Low-Cost Wearable System Using Inertial and Pressure Sensors With Machine Learning for Posture Monitoring and Pressure Injury Prevention**
Salman Sadikhzada, 16, Sophomore
Omar Abdullayev, 15, Sophomore
Ganja City Secondary School No. 2 Named After Ahmad Javad, Ganja, Azerbaijan, T: Tural Suleymanov
https://isef.net/project/227562

ENBM076T **A Smart Medical Protection System That Ensures the Safe Storage of Insulin (INsulin) Syringes and Preserves Their Biological Effectiveness by Applying Stabilization (STAbility) Measures Against Temperature Fluctuations**
Shams Nabiyeva, 15, Freshman
Goychak Alizade, 16, Sophomore
Secondary school No 1 Named After Ismat Gayibov, Sumgayit, Sumgayit, Azerbaijan, T: Tural Suleymanov
https://isef.net/project/227076

MATH033 **A Multiplicative Multi-Factor Mathematical Model for Quantifying Team Effectiveness: The Multi-Factor Effectiveness Index (MEI)**
Banu Allahverdiyeva, 16, Junior, Landau School, Baku, Azerbaijan, T: Gulshan Mammadzada
https://isef.net/project/227077

MATH038T **The Relationship Between Mobile Phone Usage and Academic Performance in Azerbaijan**
Ziya Masimov, 15, Freshman
Fakhri Mehdiyev, 16, Sophomore
European Azerbaijan School, Baku, Sabayil, Azerbaijan, T: Gulzar Alizada
https://isef.net/project/227561

PLNT029 **Microscopy for Phytohormone-Induced Alterations in Wheat Callus Cells**
Mehriban Sattarova, 16, Junior, ADA High School, Baku, Azerbaijan, T: Aydan Asgarova
https://isef.net/project/226749

SFTD048T **AI-Powered Financial Literacy Assistant**
Harun Nabiyev, 16, Sophomore
Javid Aghbabali, 15, Sophomore
Dunya School, Baku, Azerbaijan, T: Lala Guliyeva, T: Aqshin Baghirov
https://isef.net/project/226759

BELGIUM

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

SFTD006T **Kivy—Applying Deep Recipe Embeddings for Multimodal Nutritional Analysis Through a System for Augmented Surface Interaction**
Christian Matei Cazacu, 19, Senior
Alexandru Simedrea, 18, Senior
National College of Computer Science "Gr. Moisil" Brasov, Brasov, Romania, T: Manuela Serban
https://isef.net/project/224009

BRAZIL

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

BEHA001 **Mapping of People With Disabilities in the Paraisopolis Favela (PWDs): Cartographic Record for Care in the Unified Health System (PROMAP-SUS)**
Katarina Fraga Sampaio Ribeiro, 18, Junior, Escola Alef Peretz- Unidade Paraisopolis, Sao Paulo, Sao Paulo, Brazil, T: Ednilson Quarenta
https://isef.net/project/223794

BEHA003T **Rescuing Rabbits and Geometric Shapes: Computational Thinking in the 2nd and 3rd Grades of Elementary School**
Julia Godoy Fuso, 19, Senior
Valentina Campos Soares, 19, Senior
Instituto Federal de Mato Grosso do Sul – Campus Nova Andradina, Nova Andradina, MS, Brazil, T: Claudio Sanavria
https://isef.net/project/223796

CBIO001 **IGNIS: Transcriptomic Analysis for Drug Repurposing Across the Gut-Brain Axis**
Gabriela Goes Da Cunha, 18, Senior, Colegio Visconde de Porto Seguro, Sao Paulo, Brazil, T: Francisco Tupy Gomes Correa
https://isef.net/project/223817

EAEV002 **Development of a Hybrid Machine Learning Tool for Rainfall Prediction Based on the Traditional Knowledge of Rain Prophets and Meteorological Data**
Raul Victor Magalhaes Souza, 16, Junior, Escola de Ensino Medio Joaquim de Figueiredo Correia, Iracema, Ceara, Brazil, T: Helyson Braz
https://isef.net/project/223858

EAEV003 **Safety Roots: Soil Monitoring System for Disaster Prevention and Strengthening Family Farming**
Julia Maria Lidoni dos Santos, 16, Sophomore, Instituto Nacional Leva Ciencia, Macapa, Amapa, Brazil, T: Aira Beatriz Cardoso de Souza
https://isef.net/project/223859

ENBM007T **Prototype of Wheelchair Seat Lifting Mechanism: Inclusion and Autonomy**
Maria Luiza de Almeida Pedro, 17, Senior
Laura Costa de Souza, 17, Junior
Instituto Federal do Parana - Campus Londrina, Londrina, Parana, Brazil, T: Grazielli Bueno
https://isef.net/project/223894

ETSD001 **Device to Prevent a Pallet Stacker Rollover**
Gustavo Furlan de Godoi, 18, Senior, Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo, Rio Grande do Sul, Brazil, T: Lucas Gomes
https://isef.net/project/223930

MATS002T **Reusing Banana Plant Pseudostems for the Production of Thermoacoustic Panels in Civil Construction**
Joao Gabriel Backes Ledur, 19, Senior
Gabriel Orth, 18, Senior
Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo, Rio Grande do Sul, Brazil, T: Jader Bernardes, T: Ramon Hans
https://isef.net/project/223954

TMED002 **Birigel: Phytotherapeutic Hydrogel Based on Biri-biri (*Averrhoa bilimbi*) for Natural Treatment of Acne**
Sophia Ramalho Pinheiro, 17, Junior, Escola Santa Teresinha, Imperatriz, Maranhao, Brazil, T: Carlos Sampaio
https://isef.net/project/224020

Sao Paulo, Brazil, BRA002, FEBRACE - Feira Brasileira de Ciencias e Engenharia

BEHA040 **Uncovering Invisible Demographic Patterns of Feminicide in Ceara, Brazil, Through Machine Learning and Cartographic Analysis**
Yanna Francisca Queiroz, 16, Senior, Escola de Ensino Medio Joaquim de Figueiredo Correia, Iracema, Ceara, Brazil, T: Helyson Braz
https://isef.net/project/227118

BEHA041 **Adolescents' Perceptions of Spiders in Sao Paulo's Peripheral Neighborhoods: Challenges and Opportunities for Urban Environmental Education—From Local Environmental Forums to Minimal Environmental Units (UMAs)**
Maria Eduarda Vitorino Alves, 17, Senior, Escola Alef Peretz- Unidade Paraisopolis, Sao Paulo, Sao Paulo, Brazil, T: Ednilson Aparecido Quarenta
https://isef.net/project/227199

EBED035T **SafeSkies: Development of an Autonomous System for Detecting and Tracking Unmanned Hot-Air Balloons and Other Aviation Hazards in High-Risk Areas Using Computer Vision**
Leonardo Paschoal Bartoccini, 17, Senior
Lara Megda Schusterschitz, 17, Senior
Colegio Dante Alighieri, Sao Paulo, Brazil, T: Rodrigo Assirati Dias
https://isef.net/project/225628

ENEV052T **SUSTAINPOLY: Fermentation-Engineered Hydrogel-Based Biopolymers for Agro-Industrial Waste Upcycling and Sustainable Agriculture**
Jordana Silva Mendonca, 18, Junior
Joao Pedro Monteiro Silva, 18, Senior
Davi Oliveira Silva, 17, Sophomore
EEMTI Marconi Coelho Reis, Cascavel, Ceara, Brazil, T: Guilherme Nascimento
https://isef.net/project/225627

FINALIST DIRECTORY

ENEV061 **Peanut Shell Biochar for Indigo Carmine Removal From Wastewater**
Gabriel Mocitaiba Pinheiro, 19, Senior, Instituto Federal da Bahia (IFBA) — Campus Camacari, Camacari, Bahia, Brazil, T: Luciene Santos Carvalho
https://isef.net/project/227099

MCRO029T **Targeting *Klebsiella pneumoniae* Biofilms With Depolymerase-Encoding Bacteriophages: Functional and Genomic Characterization**
Manuela Cristina Segura Bossonaro, 17, Senior
Anna Luisa Lopes Pereira, 17, Senior
Aloisio Jose Pedrosa Portela, 17, Senior
Colegio Militar de Brasilia, Brasilia, Distrito Federal, Brazil, T: Lorena Derengowski
https://isef.net/project/226866

PLNT033 **Plant Extracts as Biostimulants for *in vitro* Orchid Cultivation and Keiki Development, Phase II**
Beatriz Maria Ferreira dos Santos, 17, Senior, Colegio Estadual Jardim Porto Alegre, Toledo, Brazil, T: Dioneia Schauren
https://isef.net/project/227120

PLNT034 **AnisGuard: A Multifunctional Biofungicide of Fennel Seeds for Controlling *Penicillium* spp. in Postharvest Coffee Beans**
Kenisson Morais Brito, 18, Senior, Escola SESI Anisio Teixeira, Vitoria da Conquista, Bahia, Brazil, T: Winne Souza Rocha
https://isef.net/project/227198

TMED064 **Development and *in vitro* Validation of a Functional Neuroacoustic Modulation System for Neurodegenerative Diseases**
Ada Jamile Gomes de Oliveira, 18, Senior, Military School of Manaus, Manaus, AM, Brazil, T: Roberto Alexandre Alves Barbosa Filho
https://isef.net/project/226970

BULGARIA

Sofia, Bulgaria, BGR001, Bulgarian Science and Innovation Fair

BMED007 **A Machine Learning Pipeline for Gene Regulatory Network Inference: A Case Study on Protamines**
Bozhidara Filipova Puhaleva, 18, Senior, Sofia High School of Mathematics, Sofia, Bulgaria, T: Luchezar Mitrev
https://isef.net/project/223808

MATH006 **Solvability of Meromorphic Equations in Elementary Functions**
Nikola Veselinov Veselinov, 17, Junior, Sofia High School of Mathematics, Sofia, Bulgaria, T: Anatoli Gruncharov
https://isef.net/project/223948

ROBO007 **Per-Axis Weight Deltas for Frequent Model Updates**
Stefan Ivanov Kuyumdzhiev, 18, Senior, High School of Mathematics and Natural Sciences "Vasil Drumev," Veliko Tarnovo, Veliko Tarnovo, Bulgaria, T: Angel Gushev
https://isef.net/project/224000

CANADA

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

BMED053 ***In silico* Design of a PD-1/TCR Bispecific T-Cell Engager for Targeted Immunotherapy in T-Cell Malignancies**
Krishangi Oberoi, 17, Junior, Abbey Park High School, Oakville, Ontario, Canada, T: Tim O'Byrne
https://isef.net/project/227203

CBIO066 **Hidden Loops in Cancer: Persistent Homology Framework for PDAC Transcriptional State Discovery**
Siqi Tan, 15, Sophomore, Iroquois Ridge High School, Oakville, Ontario, Canada, T: Alan Kirkup
https://isef.net/project/227204

EAEV053 **WindDrift: Engineered Real Time Adaptive Platform for Atmospheric and Marine Sensing**
Maria Victoria Polyanska, 16, Sophomore, Garth Webb Secondary School, Oakville, Ontario, Canada, T: Samuel Marchetti
https://isef.net/project/227205

PHYS054 **On Scale Dependent Velocity Fluctuations Generated by Molecular Collisions in Coarse-Grained Fluid Motion as a First Principles Basis for Stochastic Hydrodynamics and Their Implications for Navier-Stokes Smoothness Through Scale Time Limitations of Continuum Averaging**
Tristan Barkman, 17, Senior, Barkman Academy, Brantford, Ontario, Canada, T: Adam Barkman
https://isef.net/project/227207

TMED072 **Computational Sequence-Based Prediction of Creutzfeldt-Jakob Disease (CJD) Using a Nonlinear Synaptic Pruning and Dendritic Integration Spiking Neural Network (NSPDI-SNN) AI Framework**
Jordan LeBlanc, 14, Freshman, Abbey Park High School, Oakville, Ontario, Canada, T: Michael Gallant
https://isef.net/project/227206

Montreal, Canada, CAN004, Montreal Regional Science and Technology Fair

EBED046 **Automated Rider Companion**
Marc-Anthony Mourad, 16, Junior, Laval Senior Academy, Laval, Quebec, Canada, T: Heather Mcpherson
https://isef.net/project/227537

PHYS061T **Scalable Quantum Error Decoding With Sparse Graph Neural Networks**
Kuan Yi Wang, 18, Senior
Bill Xu, 18, Senior
Marianopolis College, Westmount, Quebec, Canada, T: Simon Sabik
https://isef.net/project/227551

SFTD055 **T-Identity — Let's Make Digital Lives Safer**
Yuecheng Ma, 17, Junior, Kells Academy, Montreal, Quebec, Canada, T: Ghanem Raffaat
https://isef.net/project/227538

Trenton, Canada, CAN002, Youth Science Canada — Team Canada

CBIO041 **Explainable AI-Driven Enhancement of *in silico* Drug Screening for Chronic *Toxoplasma gondii* Infection**
Emily Huang, 17, Senior, Laurel Heights Secondary School, Waterloo, Ontario, Canada, T: Jonathan Nelson
https://isef.net/project/225223

CBIO043 **A Multi-Omic "Digital Embryo" Framework to Model Early Human Preimplantation Development *In silico***
Matthew Shen, 17, Senior, Saint Theresa of Lisieux Catholic High School, Richmond Hill, Ontario, Canada, T: Tanya Emmanuel
https://isef.net/project/225248

EBED031 **A Wearable System for Real-Time Detection and Attenuation of Hazardous Visual Stimuli**
Syd (Morgan) Lynne West, 17, Senior, Horton High School, Greenwich, Nova Scotia, Canada, T: Kay Greene
https://isef.net/project/225267

ENEV043 ***In situ* Microplastic Detection Using Holographic Imaging and AI on an Autonomous Bionic Sea Turtle**
Evan Budz, 15, Sophomore, Dr Frank J Hayden Secondary School, Burlington, Ontario, Canada, T: Gilles Quenneville
https://isef.net/project/225229

ENEV045 **SmartFilter: A Universal Non-Fouling MNMP and Non-Polar Pollutant Wastewater Filter**
Justin (Jiaxing) Guo, 15, Sophomore, St. George's School, Vancouver, British Columbia, Canada, T: Kathryn Murray
https://isef.net/project/225247

MCRO017 **Harnessing Inhibition of Efflux to Reverse Antifungal Resistance**
Audrey Esther Cowen, 16, Junior, Riverdale Collegiate Institute, Toronto, Ontario, Canada, T: Matthew Dermer
https://isef.net/project/224945

ROBO030 **CareBotix in Motion II: Integrating Advanced Manipulation, Autonomous Navigation and Social Interaction in a Platform-Agnostic Robotics System**
Imran Alkarim Allarakhia, 16, Sophomore, Abbey Park High School, Oakville, Ontario, Canada, T: Shirley Thang
https://isef.net/project/224944

TMED045 **Neurobiologically Informed Schizophrenia Therapeutics: Multi-Modal Characterization and *in vitro* Modulation of HERV-K–Associated Neuroinflammation**
Sara Waqas, 17, Junior, STEM Innovation Academy High School, Calgary, AB, Canada, T: Zachary Risdon
https://isef.net/project/225240

CHINA

Beijing, China, CHN011, Beijing -Tianjin - Hebei Young Science Fair (BTHYSF)

BEHA026 **Impact of High-Caffeine Intake on Adolescent Brain Development: Epigenetic and Behavioral Perspectives**
Sophia Ji Zeng, 16, Sophomore, Tsinghua International School, Beijing, China, T: Xiaofeng Kang
https://isef.net/project/225189

ENBM049 **From Cognitive Shift Theory to End-to-End Application: An EEG-Based Neurofeedback Framework for Modeling and Regulating ADHD Attentional Dysregulation**
Junzhe Wang, 17, Junior, The High School Affiliated to Renmin University of China, Beijing, Beijing, China, T: Mingxia Xi
https://isef.net/project/225185

ENBM057 **Supercritical CO_2 Decellularization: A Fast and Residue-free Strategy for ECM Preparation**
Zhanhui Gao, 16, Junior, Dulwich College Beijing, Shunyi District, Beijing, China, T: Yosef Karasik
https://isef.net/project/225175

ENBM063 **A Novel Method for Identifying Pollen Allergens Using Chemically Modified Graphene**
Naxi Tian, 17, Senior, Beijing No.80 High School, Beijing, China, T: Xiangde Tang
https://isef.net/project/225421

ENEV049T **A Water-Saving Anti-Splash Squat Toilet**
Guangyu Liu, 18, Senior
Wenjia Zhang, 16, Junior
The Experimental High School Attached to Beijing Normal University, Beijing, China, T: Xiaoqin Feng
https://isef.net/project/225323

ETSD039 **Upper Limb Rehabilitation System Based on Adjustable Resistance of FOC Motor and VR Rhythm Interaction**
Ziwen Zhao, 18, Junior, Beijing Haidian Kaiwen Academy, Beijing, China, T: Xinli Zhang
https://isef.net/project/225394

MATH030 **Market Value Formation of Professional Soccer Players: An Analysis Based on Long-Term Ability and Short-Term Performance**
Tongning Zhang, 17, Junior, Beijing 101 Middle School, Beijing, China, T: Xuefang Cao
https://isef.net/project/226493

MCRO027T **Engineered *E. coli* for Environmental Detection and Degradation of PFAS via a Dual-Fluorescence System**
Yuqian Li, 16, Junior
Siwei Wang, 16, Junior
Beijing No. 5 High School, Beijing, China, T: Hongjun Zhang
https://isef.net/project/225777

PHYS046 **Levitating Fluid Dynamics Under Vertical Vibration**
Siyuan Li, 17, Junior, Beijing 101 Middle School, Beijing, China, T: Yue Xu
https://isef.net/project/225767

SFTD042 **Spatiotemporal Self-Attention-Based Biomimetic Carnivora Visual System for Table Tennis Trajectory Prediction**
Zhanran Li, 18, Senior, Beijing National Day School, Beijing, China, T: Yan Song
https://isef.net/project/225766

Chengdu, China, CHN008, Sichuan Science Fair

BMED004 **Searching for "Smart-and-Sex" Genes — Evolutionary Driver for Neuron and Germ Cell Development in Primates**
Andrea Qian Lei, 17, Junior, Shanghai High School International Division, Shanghai, China, T: Hui Liao
https://isef.net/project/223805

CBIO005T **When Mitochondria Lose Their "Wiggle": Cholesterol-Induced Membrane Rigidity Stalls Drp1-Driven Fission in Metabolic Syndrome and Alzheimer's Disease—A Multi-omics and Biophysical Modeling Study**
David Yin, 17, Junior
Lin Zhang, 17, Junior
Shanghai Foreign Language School Affiliated to SISU, Shanghai, China, T: Shoubo Lu
https://isef.net/project/223821

CELL002 **Variable Analysis Identifies Two NDUFS5 Transcripts as Key Regulators in Alzheimer's Disease**
Yanjun Liu, 17, Junior, Shanghai High School International Division, Shanghai, China, T: Hui Liao
https://isef.net/project/223834

ETSD006T **A Fully Self-Developed Open-Source 17 kW High-Temperature Superconducting Applied-Field Magnetoplasmadynamic Thruster for Efficient Deep Space Exploration**
Yulan Sheng, 15, Sophomore
Ryan Zhao, 19, Senior
BASIS International School Hangzhou, HangZhou, ZheJiang, China, T: Chantal Rudman
https://isef.net/project/223935

TMED004T **Targeting ALS With Drug Repurposing: A Systems Biology Approach Validated in *C. elegans* Models**
Manning Chi, 17, Junior
Jessica Yunlan Lee, 17, Junior
Fudan International School, Shanghai, China, T: Jieying Ding
https://isef.net/project/224022

Chongqing, China, CHN010, Chongqing Adolescent Science & Technology Innovation Contest

ANIM014 **The Role of Immune-Inflammatory Response in the Process of Salamander Tail Regeneration and Its Intervention Measures: A Preliminary Study**
Jinyao Xu, 16, Junior, Chongqing Yucai Secondary School, Chongqing, China, T: Jing Xia
https://isef.net/project/224166

EGSD010 **Research on Energy Supply System for Low-Power Devices Based on Temperature Difference and Piezoelectric Conversion**
Jiuyan Li, 18, Senior, Chongqing Nankai Secondary School, Chongqing, Chongqing, China, T: Peng Ran
https://isef.net/project/224160

PHYS014T **Study on the Stability of Vertically Vibrating Liquid Layers: From Suspension to Multistate Instability**
Hanwen Hu, 18, Junior
Zhichen Tang, 17, Junior
Chongqing Yucai Secondary School, Chongqing, China, T: Jing Xia
https://isef.net/project/224085

PHYS026T **Design and Analysis of an Improved Compact Catadioptric Cassegrain System With Multi-Edge Suppression and Depth-Assisted Imaging**
Jingyu Li, 17, Junior
Hanyang Lin, 17, Junior
Ruoxi Luo, 15, Sophomore
High School Affiliated To Southwest University, Chongqing, Chongqing, China, T: Yin Tang
https://isef.net/project/224332

ROBO015 **Towards Intelligent Sharing: Risk-Aware Decision-Focused Reinforcement Learning for Shared Parking Allocation**
Xiuqi Liu, 17, Junior, Chongqing Bashu Secondary School, Chongqing, Chongqing, China, T: Yating Zhang
https://isef.net/project/224165

Shanghai, China, CHN009, Shanghai Science Seed Olympiad

BEHA013T **The AIFE Engine: A Computational Framework to Quantify and Forecast the Great Labor Reallocation**
Yintong Chen, 15, Freshman
Zichun Qiu, 16, Sophomore
Liqian Yan, 16, Sophomore
Shanghai Starriver Bilingual School, Shanghai, China, T: Tong Shen, T: Hanjue Shen
https://isef.net/project/224154

CHEM023 **Kidney Guard: A Far-Red Chemiluminescent Probe Platform for Early and Point-of-Care Detection of Acute Kidney Injury**
Jianzhi Chu, 16, Junior, Shanghai Pinghe Bilingual School, Shanghai, China, T: Lucheng Wang
https://isef.net/project/224328

EGSD014 **Machine Learning Guided and Accelerated Development of Semiconductor Photothermal Materials Using Doping Strategy to Modify Bandgap for Enhancing Solar Water Evaporation**
Ao Wang, 17, Junior, Shanghai Foreign Language School Affiliated to SISU, Shanghai, China, T: Yejun Chen
https://isef.net/project/224291

ETSD021 **A Dual-Degree-Freedom Ankle-Foot Rehabilitation Device Equipped With AI and Based on Artificial Pneumatic Muscles to Assist Walking by Adapting the Gait**
Zimu Wang, 16, Sophomore, Shanghai Pinghe Bilingual School, Shanghai, China, T: Lucheng Wang
https://isef.net/project/224422

MCRO009 **A Nano-Chitin and HACC Multilayer System for Remediating Severely Eutrophic Waters via Oxygenation, Bacterial Inhibition, and Nutrient Stabilization**
Jinxuan Wu, 16, Sophomore, Shanghai Pinghe Bilingual School, Shanghai, China, T: Yinghe Lv
https://isef.net/project/224415

PHYS082 **FireAIDSS: AI-Driven Intelligent Drone Swarm System for Wildfire Monitoring and Prediction**
Yecheng Gong, 18, Senior, Shanghai Foreign Language School Affiliated to SISU, Shanghai, China, T: Haobin Zhu
https://isef.net/project/224416

ROBO021 **An Ellipsoidal Remote Wireless Robot for Wetland Ecological Monitoring**
Qiyun Zheng, 16, Sophomore, Shanghai Foreign Language School Affiliated to SISU, Shanghai, China, T: Haobin Zhu
https://isef.net/project/224421

TECA020 **CaRF: Enhancing Multi-View Consistency in Referring 3D Gaussian Splatting Segmentation**
Yuwen Tao, 17, Junior, Shanghai Pinghe Bilingual School, Shanghai, China, T: Tingting Han
https://isef.net/project/224290

CHINA, HONG KONG SPECIAL ADMINISTRATIVE REGION

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

BMED002T **Novel Fusion Protein Approach in Slowing Glaucoma Progression With Computational and Mathematical Modelling**
Wing Kiu Lao, 17, Sophomore
Yik Yin Marcus Lau, 17, Junior
Hei Lam Elvina Ngai, 16, Sophomore
Pui Ching Middle School, Hong Kong, China, Hong Kong Special Administrative Region, T: Wai Yan Hui, T: Kwan Sin Kei
https://isef.net/project/223803

CHEM001T **Synthesis of Uniform-Sized Silver-Cysteine-Functionalized Superparamagnetic Iron(II, III) Oxide Nanoparticles (SPIONs) Under Aerobic Condition and Its Potential Application in Chiral Separation**
Pak Hang Chan, 16, Junior
Marcus Hok Yin Cheung, 17, Junior
Man Shun Tam, 16, Junior
King's College, Hong Kong, China, Hong Kong Special Administrative Region, T: Bob Lui
https://isef.net/project/223844

ENBM001 **The Pain-Aware Exoskeleton: A Lower Body Assistive System With Integrated BCI for Real-Time Pain Assessment**
Choham Tracy Zhang, 17, Junior, Harrow International School Hong Kong, Hong Kong, China, Hong Kong Special Administrative Region, T: William Bussey
https://isef.net/project/224082

ENBM013T **Next Generation Cancer Therapeutics: Peptide Binder Impairing Oncogenic KRAS Signalling by Inhibition of KRAS–PDEδ Interaction**
Hiu-Nam Isabella Chan, 17, Senior
Sum Yee Wong, 18, Senior
Yi Lam Wong, 18, Senior
Kowloon True Light School, Hong Kong, China, Hong Kong Special Administrative Region, T: Kwan Wai Chan
https://isef.net/project/223900

PHYS001 **Pressure-Enhanced Close-Contact Melting in Phase Change Materials: An Investigation of Butter as a Thermal Management Solution**
Guangxi Lucas Sun, 15, Sophomore, Chinese International School, Hong Kong, China, Hong Kong Special Administrative Region, T: Ross Clouting
https://isef.net/project/223975

CHINA, MACAO SPECIAL ADMINISTRATIVE REGION

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

EGSD002T **Titanium Sulfide-Iodine Hybrid Catalyst Promote Solid-Solid Redox Reaction for All-Solid-State Lithium-Sulfur Battery**
Lok Ieng Lou, 17, Junior
Chi Kin Pun, 18, Junior
Pui Ching Middle School, Macau, China, Macao Special Administrative Region, T: Ka Kong Chan
https://isef.net/project/223882

ENBM002T **SteadiGrip: An Accessible, Low-Cost, Multi-Modal AI-Driven Wearable Platform for Parkinson's Diagnosis and Personalized Closed-Loop Rehabilitation**
Sin Ieok Chao, 18, Senior
Yexiang Huang, 18, Senior
Hoi Wing Wu, 18, Senior
Hou Kong Middle School, Macao, Macao, China, Macao Special Administrative Region, T: Keng Iam Tai
https://isef.net/project/223889

ENBM003 **Supramolecular Layer-by-Layer Engineered Probiotics for Inflammatory Bowel Disease Therapy**
Zi Han Yang, 18, Senior, Pui Ching Middle School, Macao, China, Macao Special Administrative Region, T: Hio Fai Io
https://isef.net/project/223890

ETSD002 **A Universal Kinematic Assist Platform Based on Active Floating-Drive Mechanism: Achieving Load-Adaptive Traction and Passive Freewheeling**
U Ian Min, 16, Sophomore, Pui Ching Middle School, Macao, China, Macao Special Administrative Region, T: Haonian Min
https://isef.net/project/223931

MCRO002T **Enhancing Butyrate Production Using a Gut Bacteria–Derived EPS-Blend: Implications for Type 2 Diabetes**
Chi Kio Hong, 16, Junior
Si In Yuan, 17, Senior
Escola Kao Yip, Macao, China, T: Wai Lam Chao
https://isef.net/project/223968

ROBO002T **Pre-Capture Intelligent Trapping System With Multi-Feature Animal Re-Identification**
Nok Him Isaac Lau, 16, Junior
Hiu Yan Lin, 18, Junior
Escola Kao Yip, Macao, China, T: Chi Chon Ng
https://isef.net/project/223995

CHINESE TAIPEI

Taipei, Chinese Taipei, TWN001, Taiwan International Science Fair

ANIM009 **Effects of Deubiquitinase Scrawny on Histone Modifications and *Drosophila* oogenesis**
Kuan-Yu Shih, 18, Senior, The Affiliated Senior High School of National Taiwan Normal University, Taipei City, Chinese Taipei, T: Ming-Chia Lee
https://isef.net/project/223791

BEHA010 **Investigating Neural Correlates of Reading Immersion and Preferences Across Novel Genres: An fMRI Study**
Sofia Terrazas Lien, 16, Junior, Taipei First Girls High School, Taipei City, Chinese Taipei, T: Wen-Jui Kuo
https://isef.net/project/223616

CELL013T **Identification and Functional Analysis of Lipid Droplet Autophagy Receptors From 48 Candidates**
Er-Yen Lin, 17, Junior
Yu-Ching Pi, 17, Junior
Taipei First Girls High School, Taipei City, Chinese Taipei, T: Chia-Wei Lee
https://isef.net/project/224091

CHEM014 **Dual-Functional Vaccine Adjuvant for Amplifying Immunity**
Meng-Hsuan Lee, 17, Junior, Taipei First Girls High School, Taipei City, Chinese Taipei, T: Yu-Pu Juang
https://isef.net/project/223614

EAEV016T **Experimental Investigations of Natural Convection Phenomena in the Estuarine Waters of Isfjorden, Arctic Region**
Yi-Han Lu, 15, Freshman
Yi-Chen Yang, 15, Freshman
Yu-Pei Yeh, 14, Freshman
Taipei Municipal Long Men Junior High School, Taipei City, Chinese Taipei, T: Ying-Chieh Chen
https://isef.net/project/223617

EBED011 **Multimodal Spatial Awareness Assist Device for Patients With Single-Sided Deafness**
Pang-Hao Chen, 17, Senior, Taipei Municipal Chien Kuo High School, Taipei City, Chinese Taipei, T: I-Chun Liu
https://isef.net/project/223621

EGSD006 **A New Class of Thermoelectric Material – Electrical Power From Coconut-Fibers and Carbon Nanoparticles**
Anita Huang, 17, Junior, Taipei Fuhsing Private School, Taipei City, Chinese Taipei, T: Ma-Hsuan Ma
https://isef.net/project/223886

ENBM022 **Ultrasensitive Anticancer T-Cell Isolation From High Bystander Noise via Immunobiology-Inspired Microfluidics**
Sean Lo, 17, Senior, Taipei Municipal Chien Kuo High School, Taipei City, Chinese Taipei, T: Tsui-Hua Liu
https://isef.net/project/223615

ENEV024T **Sustainable Energy Harvesting in Aeration Tank Using Flexible Piezoelectric Membrane**
Jo-Hsin Chen, 17, Junior
Yun-Fei Chen, 17, Junior
Ni Xuan Tsou, 17, Junior
Taipei JingMei Girls High School, Taipei City, Chinese Taipei, T: Wei-Song Hung
https://isef.net/project/223620

MATH008 **Projective Generalization of Foci and Isogonal Cubics Loci of Complete Quadrilaterals**
Pin-Chun Lu, 18, Senior, Taipei Municipal Chien Kuo High School, Taipei City, Chinese Taipei, T: Chih-Hong Yao
https://isef.net/project/223950

MATH009 **Digraphs From a New Josephus Transformation**
Jia-Ying Lin, 16, Junior, Taipei First Girls High School, Taipei City, Chinese Taipei, T: Tsung-Ying Yang
https://isef.net/project/223951

ROBO014T **AphaSpeak: A Real-Time Multimodal System to Enhance Expressive Communication for Individuals With Aphasia**
Chia-Wei Chuang, 18, Senior
Xuan Yu Lin, 18, Senior
National Hualien Senior High School, Hualien City, Hualien County, Chinese Taipei, T: Shan-Yu Liu, T: Yi-Hsiung Chao
https://isef.net/project/223619

CZECH REPUBLIC

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

BCHM041 **Development of Immunochromatographic Assays Based on Photon-Upconversion Nanoparticles**
Klara Hasova, 18, Junior, Gymnazium Brno, Kienova, Prispevkova Organizace, Brno, South Moravian Region, Czech Republic, T: Zdenek Kaderabek
https://isef.net/project/227920

BCHM043 **Predicting Intestinal Drug Absorption Using Mucin-Drug Interaction Analysis**
Adela Podholova, 17, Sophomore, Doctrina Podjestedske Gymnazium Liberec, Liberec, Liberecky Kraj, Czech Republic, T: Vladimir Krivsky
https://isef.net/project/228019

CELL042 **The Influence of Neurotransmitters on IGF-2 and IGF2R Expression in Cell Models**
Metodej Svoboda, 18, Junior, Gymnazium Zikmunda Wintra Rakovnik, Rakovnik, Central Bohemian, Czech Republic, T: Tomas Kopriva
https://isef.net/project/227921

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

BEHA002 **Beyond Words: Integrating Hand-crafted and 3D-Printed Prototypes Into Bereavement Psychotherapy for School-Age Children**
Jan Homola, 19, Junior, Gymnazium Praha 6 Arabska 14, Prague, Czech Republic, T: Alena Horackova
https://isef.net/project/223795

BMED003 **Evaluation of New FLT3 Inhibitors as New Drugs in Acute Myeloid Leukemia**
Amalie Koblovska, 18, Junior, Masarykovo Gymnazium, Pribor, Prispevkova Organizace, Pribor, Moravskoslezsky Kraj, Czech Republic, T: Svatava Sumbalova
https://isef.net/project/223804

CHEM002 **The Study of Possibilities of Using Diazonium Salt of Activated Ester for Peptide Cyclization**
Lucie Ovcacikova, 18, Junior, Gymnazium Olomouc - Hejcin, Olomouc, Olomoucky Kraj, Czech Republic, T: Lucie Kalandrova
https://isef.net/project/223845

EBED003 **SIFR Smart insole: The Cutting-Edge Wearable**
Jiri Racansky, 18, Junior, Gymnazium Brno-Reckovice, Brno, Jihomoravsky Kraj, Czech Republic, T: Katerina Vídenkova
https://isef.net/project/223874

SFTD005 **SEDAS: Design and Implementation of an AI-Driven ATC Simulator to Reduce Personnel Needs**
Daniel Pojhan, 20, Senior, Grammar School at Mikulasske Namesti, Plzen, Czech Republic, T: Jan Hosnedl
https://isef.net/project/224008

DENMARK

København, Denmark, DNK001, Unge Forskere

BMED001 **Designed for Men, Prescribed to Women. CYP1A2 Activity During the Menstrual Cycle**
Amanda Refslund Ravn, 18, Senior, Nordsjaellands Grundskole og Gymnasium, Horsholm, Denmark, T: Marianne Johansson
https://isef.net/project/223802

ETSD009 **A Comprehensive Study on the Design, Analysis, and Practical Application of Elliptical Annular Wing Aircraft**
Alexander Berg Puggaard, 17, Junior, H.C. Orsted Gymnasiet i Lyngby, Kongens Lyngby, Denmark, T: Nicolai Stabell
https://isef.net/project/223938

PLNT004 **Replacing Pollution With Symbiosis: Nitrogen Fixating Sainfoin and Its Applicability in a Danish Agricultural Transition**
Freja Weiss Nielsen, 19, Senior, Fredericia Gymnasie, Fredericia, Syddanmark, Denmark, T: Peter Knudsen
https://isef.net/project/223989

EGYPT

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

BEHA048T **TrauVibe: A Non-Invasive Vibrotactile Wearable Band for Neural Fingerprint and Multimodal Physiological Detection of PTSD With ACT-Based Monitoring**
Mohammed Mosaad Abdallah Ezzat, 17, Junior
Mahmoud Mohammed Kaddour, 16, Junior
Obour STEM School, Obour, Kalubya, Egypt, T: Eman AboSeif
https://isef.net/project/227409

BEHA049T **NeuroShield: Personalized Adaptive Filtration and Clinical Trigger Mapping for Photosensitive Epilepsy**
Mariam Ahmed Fayez Khafaga, 16, Junior
Hana Mohamed Mousa, 17, Junior
Obour STEM School, Obour, Kalubya, Egypt, T: Hala Hala Osman, T: Hala Osman
https://isef.net/project/227555

BMED056T **Autologous Tumor-Derived Immunotherapy: A Novel Approach to Eliminating Cancer Without Chemotherapy or Radiation**
Eyad Moustafa Ghanem, 15, Sophomore
Zeyad Alaa Hassan Mohamed, 17, Senior
Fakous Military High School, Faqous, Al-Sharqia Governorate, Egypt, T: Ghada Abdelkader, T: Yasmine Salah
https://isef.net/project/227407

CBIO072 **Simulating Quantum-Coherence Dynamics in ALS Neuronal Ion Channels via Lindblad Master Equation: A Computational Biophysics Approach**
Zainab Mahmoud Zahran, 18, Junior, Galal Official Language School, Shubra Masr, Cairo, Egypt, T: Neven Nashed
https://isef.net/project/227410

ENBM086T **Nano-Enabled Encapsulation for Doxorubicin**
Razan Mohamed Abdelwadoud Emam, 16, Junior
Nour Hamied, 17, Junior
STEM October 11th District High School, October City, Giza, Egypt, T: Safaa Ezzat
https://isef.net/project/227526

PLNT042T **PlantFeel: A Real-Time System to Translate Plant Bioelectrical Signals Into Visual Emotional Feedback**
Menna Ismail Elsadek, 17, Junior
Rahaf Ehab Mohamed Mohamed, 17, Sophomore
Al-Ealam Distinguished Governmental Language School, Ismailia, Ismailia, Egypt, T: Hend Ali
https://isef.net/project/227601

SFTD054T **IntelliDent: Machine Learning Approach for Dental Deficiency Detection**
Abdelrahman Mohamed Eliwa Agam, 18, Senior
Ahmed Ramadan Saleh, 18, Senior
Ismailia STEM High School, Ismailia, Egypt, T: Randa El Afify
https://isef.net/project/227408

SFTD057T **TikCare: A Novel DOM-Integrated Pipeline for the Real-Time Detection and Obfuscation of Harm Proliferation in Algorithmic Video Feeds**
Sohibe Mohamed Behairy, 17, Junior
Youssef Ahmed Hassona, 18, Junior
Obour STEM School, Obour, Kalubya, Egypt, T: Ebtehal Reda
https://isef.net/project/227599

TMED080T **Multi-Dimensional Migraine: A Comprehensive AI-Assisted Framework for Headache Diagnosis, Risk Detection, and Patient Experience Enhancement**
Mohamed Amr Abdelhamid, 17, Junior
Mahmoud Mohamed Ibrahim, 17, Junior
Obour STEM School, Obour, Kalubya, Egypt, T: Rehab Alzeiny
https://isef.net/project/227553

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

EBED021 **Carbon Fiber Drone for Advanced Radiation Mapping With CsI Scintillation Source Spectroscopy and MDE Techniques, 31 wt% Nano-Boron Carbide Aluminum Lithium-Ion Battery Neutron Shielding, and Polyurethane Foam Decontamination**
\# Ahmed Mohammed Abdelkhalek Mohammed, 20, Senior, Applied Technology School for Nuclear Energy in El-Dabaa, El-Dabaa, Matruh, Egypt, T: Tarek Nagla
https://isef.net/project/224503

MATS028 **Design and Synthesis of a Hierarchical Nanocomposite for Selective Capture and Visible-Light-Driven Destruction of PFAS**
\# Mariam Elsounbaty, 18, Senior, Dakahlia STEM School, Gamasa, Dakahlia, Egypt, T: Rabab Shalof
https://isef.net/project/224505

ROBO022 **FlexiGripper**
Salma Ashraf Kshaf, 17, Junior, El Shaheed Eid Fathy School, Tanta, Gharbia, Egypt, T: Reda Ghaly
https://isef.net/project/224504

SFTD025T **V8-Scanner: Adaptive AI-Assisted Vulnerability Detection System**
Ibrahim Salah Abohatab, 17, Senior
Khaled Mohamed Abouelmaaty, 18, Senior
We Alexandria For Applied Technology, Sidi Gaber, Alexandria, Egypt, T: Sherif Radwan
https://isef.net/project/224527

TMED025 **Modulation of FOXP3 Expression and Regulatory T-Cell Activity by Gum Rosin-Modified Ointment: A Multi-Phase Preclinical and Clinical Study for Psoriasis Treatment**
\# Ibrahim Ali Badran, 18, Senior, Dakahlia STEM School, Gamasa, Dakahlia, Egypt, T: Alaa Abdelghafar
https://isef.net/project/224513

FINALIST DIRECTORY

ESTONIA

Tartu, Estonia, EST001, Estonian Young Scientist Contest

ENEV006T **Autonomous Artificial Intelligence-Based Monitoring Device for Monitoring the Deep-Sea Coral Restoration Process**
Robin Merisalu, 18, Senior
Gregor Siimon, 19, Senior
Ralf Saarmets, 18, Junior
Tallinn Mustamae State Upper Secondary School, Tallinn, Harjumaa, Estonia, T: Liia Tammes
https://isef.net/project/223914

GERMANY

Hamburg, Germany, DEU001, Jugend Forscht

EAEV001T **The Moon as the Earth's Mirror**
Claire Patricia Dillmann, 18, Junior
Sienna Drack, 17, Senior
Oskar-von-Miller-Gymnasium, Munich, Bavaria, Germany, T: Lorenz Drack
https://isef.net/project/223857

EBED001 **Developing an Open Source WLAN Driver and Stack for the ESP32**
Simon Neuenhausen, 18, Senior, Alexander-von-Humboldt Gymnasium, Neuss, NRW, Germany, T: Philipp Kollat
https://isef.net/project/223872

EGSD001T **The World's Second Edible and Rechargeable Battery**
Elisabeth Marie Fischermann, 18, Senior
Tom Kressbach, 18, Senior
Julius-Echter-Gymnasium Elsenfeld, Elsenfeld, Bavaria, Germany, T: Roland Full
https://isef.net/project/223881

ETSD003 **BuoyEnergy – A Mobile, Autonomous, and Energy-Self-Sufficient Research Buoy**
Louis Gerard Gunter Schwarzlose, 18, Senior, Heilwig Gymnasium, Hamburg, Germany, T: Antje Coblenz
https://isef.net/project/223932

MCRO001T **Bacteria on the Menu 2.0**
Misha Hegde, 16, Junior
Mia Soleil Maurer, 16, Sophomore
Schuldorf Bergstrasse, Seeheim, Darmstadt-Dieburg, Germany, T: Petra Leidert
https://isef.net/project/223967

PHYS002 **What Would a Warp Drive Actually Look Like? Visualizing Warp-Drive Spacetimes in General Relativity**
Mads Rabbel, 19, Senior, Gymnasium Reutershagen, Rostock, Germany, T: Kirsten Mantau
https://isef.net/project/223976

SFTD002 **C2P-Net: Reconstructing Hidden Anatomy in Middle Ear Imaging Using Novel Complete-to-Partial Non-Rigid 3D Registration Methodology**
Chenpan Li, 18, Senior, Martin-Andersen-Nexo-Gymnasium, Dresden, Sachsen, Germany, T: Peng Liu
https://isef.net/project/222884

TECA017 **EyeR Glasses: Engineering and Development of Modular and Technically Efficient Smart Glasses**
Jonathan Florin Baschek, 17, Junior, Bischofliches Cusanus-Gymnasium, Koblenz, Rhineland Palatinate, Germany, T: Simon Hoffling
https://isef.net/project/223877

GHANA

Accra, Ghana, GHA001, MISE Research Program

CBIO086 **AI-Optimized Multi-Gene Guide RNA Design for Salt-Tolerant Tomatoes**
Dhruv Jain, 16, Junior, Lincoln Community School, Accra, Greater Accra, Ghana, T: Ronny Polle
https://isef.net/project/227860

ROBO059T **The Urgency Axis: Mapping Crisis Severity Representations in Large Language Models**
Yaw Obeng Omane Boamah, 16, Junior
Qi Wang, 17, Junior
Ghana International School, Accra, Greater Accra, Ghana, T: Pravish Sainath
https://isef.net/project/227861

GUAM

Piti, Guam, TEGU01, Guam Island-Wide Science Fair

MATS081 **A Novel Poly(L-Lactic Acid) and Polycaprolactone Composite With Bismuth Oxide Nanoparticles for a Biodegradable, Radiopaque Stent Material**
\# Alexander Cruz, 16, Junior, Father Duenas Memorial School, Chalan Pago, Guam, T: Colin Perez
https://isef.net/project/227705

HUNGARY

Budapest, Hungary, HUN001, National Scientific and Innovation Olympiad

CHEM006 **Development of Peptide-Drug Conjugates Targeting Glioblastoma Cells**
Lili Szokolai, 18, Senior, ELTE's Radnoti Miklos Affiliated Secondary School, Budapest, Hungary, T: Gyorgy Lang
https://isef.net/project/223849

ENEV002 **A Coastal Underwater Seabed Waste Bin: Design, Development, and Stability Analysis**
Laura Ivanka, 15, Freshman, British International School Budapest, Budapest, Hungary, T: Jozsef Majoros
https://isef.net/project/223910

INDIA

NEW DELHI, India, IND001, IRIS (Initiative for Research and Innovation in STEM)

BEHA050 **Debaters and Creators: How Debate Experience Relates to Creativity**
Aadith Kacholia, 17, Junior, American School of Bombay, Mumbai, Maharashtra, India, T: Peter Pallett
https://isef.net/project/227575

BEHA052 **Unburden: A Mobile-Based, AI-Driven Emotional Support System for Children Affected by Bullying**
Agastya Desai, 16, Junior, Jamnabai Narsee International School, Mumbai, Maharashtra, India, T: Samir Jale
https://isef.net/project/227598

CBIO075 **X-TREME-OMICS: A Novel Systems Biology Framework for Probing Genetically Complex Multisystem Disorders**
Anirjit Chandra, 16, Sophomore, Delhi Public School Whitefield, Bangalore, Karnataka, India, T: Sumana Das
https://isef.net/project/227605

CBIO081T **SERISCOPE: A Low Cost Edge-AI System for Fertility and Disease Assessment of Tassar Silkworm Eggs**
Suryakanta Lenka, 16, Sophomore
Tripathy Divyajyoti Senapati, 16, Senior
Dav Public School, Bhubaneswar, India, T: Tanmay Nayak
https://isef.net/project/227694

CELL043 **The Effect of Prokaryotic Translation Initiation Factor Overexpression on *Escherichia coli* Growth Under Temperature-Induced Stress**
Hridank Garodia, 18, Senior, Dhirubhai Ambani International School, Mumbai, Maharashtra, India, T: Abhimanyu Basu
https://isef.net/project/227935

CELL045 **Method of Autologous Primary Hair Follicles Preparation in 3D Culture**
\# Zara Namjoshi, 18, Senior, Ecole Mondiale World School, Mumbai, Maharashtra, India, T: Alka Goel
https://isef.net/project/228274

FINALIST DIRECTORY

EAEV063 **MannKaaval: A Framework for Detection and Monitoring of Sand Mining Using Interpretable Machine Learning and Causal Inference**
Ashwanth Sivakumar, 17, Junior, CPS Global School, Chennai, Tamil Nadu, India, T: Rama Mylavarapu
https://isef.net/project/227597

EAEV066 **From Satellite Observations to Submesoscale Ocean Dynamics: Geostrophic Field Smoothing and Diffusion-Based Reconstruction**
Jayveer Sachin Kochhar, 17, Senior, Dhirubhai Ambani International School, Mumbai, Maharashtra, India, T: Abhimanyu Basu
https://isef.net/project/227780

EGSD045 **Nature-Inspired Cooling System Using Silicone Prototype: Modelling and Experimental Validation**
Palash Bharti, 17, Senior, Jayshree Periwal International School, Jaipur, Rajasthan, India, T: Minal Jain
https://isef.net/project/227582

ENBM087 **NanoClear: Removal of Microplastics From Human Blood**
Suramrit Singh Kohli, 17, Junior, American School of Bombay, Mumbai, Maharashtra, India, T: Evelyn Marolf
https://isef.net/project/227574

ENEV060 **Aqua Flux : Passive Vortex-Driven insert for Accelerated Urban Drainage and Waterlogging Mitigation**
Aadya Kanchan, 17, Junior, Vidyashilp Academy, Bengaluru, Karnataka, India, T: Kalai Selvi
https://isef.net/project/227088

MATH026 **Dynamic Coprime Labeling: A Novel Framework for Cryptographic Safe Prime Generation on k-Uniform Hypergraphs**
Anushka Vivek Tonapi, 17, Junior, Alpine Public School, Bengaluru, Karnataka, India, T: Jayalaxmi Shastry
https://isef.net/project/225724

MATS078T **CircuHeal: An Azobenzene-Based Photochemical Switching and Conductive Filler Reinforced Dual-Layer Polymer Film for Space Electronics Repair**
Dhruv Jain, 17, Junior
Dhruv Punjabi, 17, Junior
Jayshree Periwal International School, Jaipur, Rajasthan, India, T: Minal Jain
https://isef.net/project/227691

MATS079T **EcoFog: A Novel Composite Mesh for Passive Water Collection From Fog and High Relative-Humidity Environments**
Mrityunjay Gupta, 16, Junior
Diivij Todi, 17, Junior
Jayshree Periwal International School, Jaipur, Rajasthan, India, T: Ayush Periwal
https://isef.net/project/227692

MATS080 ***Basella alba*: A Novel Source for the Preparation of a Biopolymer Film to Detect Food Spoilage**
Magilvathani Rajasimhan, 16, Senior, Maharishi Vidya Mandir Senior Secondary School, Tenkasi, India, T: Agalya Devi
https://isef.net/project/227693

PHYS052 **Vacuum Polarization Effects From Dark Fermion Loops in Z' Mediator Models and Their Impact on Angular Observables in Rare B-Meson Decays**
Suhani Gupta, 16, Junior, Amity International School, Gurugram, Haryana, India, T: Sangeeta Malhotra
https://isef.net/project/227090

PHYS062 **Quantum Decoherence in Reissner-Nordström Spacetime: A Multi-Channel Computational Framework**
Rishav Anand Kumar Jha, 16, Junior, Shree L. R. Tiwari Degree College of Arts, Commerce & Science, Thane, Maharashtra, India, T: Nivedita Parida
https://isef.net/project/227572

PHYS063 **Adaptive Peierls Phase Modulation for Quantum State Routing in Multi-Photon Systems Under Decay and Disorder**
Aditya Yadav, 17, Junior, Jayshree Periwal International School, Jaipur, Rajasthan, India, T: Minal Jain
https://isef.net/project/227573

PLNT043 **Leaf Dust Accumulation Analysis: Spectroscopy and Computer Vision for Plant Stress**
Arham Jain, 17, Junior, Neerja Modi School, Jaipur, Rajasthan, India, T: Juanita Wazz
https://isef.net/project/227603

SFTD063T **AEGIS: A Secure Distributed Framework for Privacy-Preserving Multi-Institutional Data Analysis**
Meetushi Goel, 17, Senior
Mradul Umrao, 16, Junior
Jayshree Periwal International School, Jaipur, Rajasthan, India, T: Minal Jain, T: Pratibha Asthana
https://isef.net/project/227926

TMED087T **AI-Assisted Electrochemical Biosensor for Mutation-Specific Detection of Antibiotic Resistance and Virulence in *Helicobacter pylori* Infections From Stool Samples**
Rachvik Arora, 17, Junior
Gautam Mahesh, 16, Junior
Greenwood High International School Bangalore, Bangalore, Karnataka, India, T: Sahana Rao
https://isef.net/project/227688

IRAQ

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

ANIM032T **Ecofeeder**
Barin Zardasht Ahmed, 18, Sophomore
Sofia Basak Hama Salih, 16, Sophomore
United Science International School, Sulaimaniyah, Sulaimaniyah, Iraq, T: Salih Rasool
https://isef.net/project/225571

BMED069 **The Negative Health Effects of Wastewater Accumulation in the Streets of Duhok**
Aeden Omer Khalid Okaidat, 16, Sophomore, Ronaki Duhok Ishik Girls College, Duhok, Iraq, T: Lawen Hama
https://isef.net/project/228260

ENEV080T **Waste to Fuel: Biodiesel Production**
Alhamzah Ghazwan Taha Alnabri, 16, Junior
Yousif Ahmed Rashid, 16, Junior
Baghdad Ishik Boys College, Baghdad, Iraq, T: Zanyar Ahmed
https://isef.net/project/227826

PHYS079 **A Novel Analytical Model for Identification O1 Strange Quarks via Relativistic Ultra-Fast Timing Method**
Haya Haider Adel Almulla, 16, Junior, Basra Ishik Girls' College, Basra, Iraq, T: Selcuk Aydemir
https://isef.net/project/228067

ROBO063 **Astonix: Developing an Intuitive Gesture-Controlled Interface for High-Precision Robotic Manipulation in Hazardous Environments**
Omar Barzanji, 16, Sophomore, Erbil Ishik Boys College, Erbil, Iraq, T: Jegr Jabbar
https://isef.net/project/228069

IRELAND

Dublin 16, Ireland, IRL002, SciFest

ENBM009 **CAPILL: Compliance Aid Promoting Independent Living Long-term**
Ronan Lyons, 18, Senior, Lanesboro Community College, Lanesborough, Longford, Ireland, T: Mary O'Brien
https://isef.net/project/223896

SFTD001 **M.A.N.T.I.S. — Muon Analysis for Non-Invasive Tomography and Image Simulation: Simulating Atmospheric Muon Flux for Remote, Non-Invasive Subsurface Imaging**
Zack Micheal O'Leary, 15, Freshman, Clongowes Wood College SJ, Clane, Kildare, Ireland, T: Yvonne Nolan
https://isef.net/project/222532

SFTD004 **Advancing Post-Quantum Lattice-Based Cryptography by Developing Efficient Shortest Vector Problem Approaches**
Addison Carey, 16, Sophomore, Celbridge Community School, Celbridge, Co. Kildare, Ireland, T: Zita Murphy
https://isef.net/project/224007

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

MATS005T **Sheep Strength II: Using Sheep Wool to Reinforce Concrete — Finding the Most Effective, Market Friendly Form of Sheep Wool as a Strengthening Agent for Concrete in Comparison to Polypropylene Fibers**
Aoife Fadian, 17, Junior
Jessica Una O'Connor, 17, Junior
Ursuline College, Sligo, Sligo, Ireland, T: Anthony Carolan
https://isef.net/project/223957

ISRAEL

Jerusalem, Israel, ISR001, The Israeli Young Scientists Contest

EGSD049 **WT Green Microalgae Under Changing Light: Patterns of Physiology and Hydrogen Production**
Eyal Aharon Zaksh, 17, Junior, Ironi Alef Modiin, Modi'in-Maccabim-Re'ut, Jerusalem Province, Israel, T: Mirit Barashi
https://isef.net/project/227786

PHYS068 **Characterization of Dark Plasmonic Modes in Silver Nano-Bowties**
Liam Yaakov Rokach, 17, Senior, De Shalit High School, Rehovot, Israel, T: Ronit Ben Zeev
https://isef.net/project/227787

PHYS072 **Validation of Exoplanet Candidate TOI-6034.01**
Shahar Odelia Galantzan, 18, Senior, Katzir High School, Rehovot, Israel, T: Roslyn Zetner
https://isef.net/project/227840

ITALY

Milano, Italy, ITA001, I Giovani e le Scienze

CBIO062 **NeuronPlot: A Dynamical Systems View of a Neuron**
Luca Pompili, 18, Senior, Liceo Scientifico E. Torricelli, Bolzano, Bolzano, Italy, T: Laura Cocciardi
https://isef.net/project/226762

CHEM038T **Liesegang Structures and Self-Organization for Smart Biomaterials**
Victoria Bonomelli, 17, Senior
Alessia Facchinetti, 18, Senior
Matilde Mazzini, 17, Senior
Istituto Tecnico Industriale G. Omar, Novara, Italy, T: Celestino Fontaneto
https://isef.net/project/225778

EAEV059T **The New Frontier in Mediterranean Mycology: *Terana caerulea,* Spectroscopic and Ecological Characterization and Biosensory Applications**
Giuseppe Marino, 18, Senior
Andrea Minervini, 18, Senior
Gabriele Pasquale Tullio, 18, Senior
IISS Galileo Ferraris, Molfetta, BA, Italy, T: Maria Rubino
https://isef.net/project/227502

ENEV072T **FEATHERTECH- Sustainable Innovation for the Reclamation of Water Contaminated by Hydrocarbons**
Eva Consoli, 17, Senior
Mathias Graziosi, 17, Senior
Luca Santarelli, 18, Senior
Istituto Istruzione Superiore Galileo Galilei, Jesi, Italy, T: Massimiliano Loroni
https://isef.net/project/227563

PHYS049 **From the Impact of Radon to Forecasting: the Different Shades of Environmental Radioactivity**
\# Nicola Trucco, 17, Junior, Deutsche Schule Genua, Genova, Liguria, Italy, T: Jonas Wagner
https://isef.net/project/226572

JAPAN

Tokyo, Japan, JPN001, Japan Students Science Awards

ANIM023T **"Female Spot" of Stag Beetle Larvae is a Symbiont Organ**
Toma Ishibashi, 17, Junior
Taichiro Ishizuka, 17, Junior
Maamu Kawai, 16, Sophomore
Shizuoka Prefectural Yaizu Chuo High School, Yaizu-shi, Shizuoka-ken, Japan, T: Yuichi Yaoi
https://isef.net/project/224526

BEHA015 **Reinforcement Learning-Based Modeling of Alzheimer's Disease**
Koto Sakama, 18, Senior, Shonan Shirayuri Gakuen Junior and Senior High School, Fujisawa, Kanagawa, Japan, T: Miwa Kurihara
https://isef.net/project/224433

CHEM026 **Environmentally Friendly Oxidation of Primary Amines Inspired by the Traffic Light Reaction**
Shinohara Rio, 17, Junior, Sakado High School of Saitama Prefecture, Sakado-shi, Saitama, Japan, T: Hideaki Teramoto
https://isef.net/project/224432

PHYS027 **Do Magnetic Forces in Matter Act Solely on the Boundary Surfaces? Evaluating the Formulations of Minkowski, Helmholtz and Lorentz**
Shunsuke Kita, 18, Senior, Senior High School at Komaba, University of Tsukuba, Setagaya-ku, Tokyo, Japan, T: Takuya Imaizumi
https://isef.net/project/224436

PHYS033 **Egg Dynamics: Internal Viscous Damping of Rotation and Aerodynamic Drag Stabilize Pendulum Motion**
Yuki Tezuka, 15, Sophomore, Utsunomiya Junior College Attached High School, Utsunomiya City, Tochigi, Japan, T: Takao Sugo
https://isef.net/project/224922

PLNT017 **Learning Without a Brain: Habituation and Stimulus Discrimination in *Mimosa pudica* Explained by Mechanosensitive Channel Desensitization**
Kazuhiro Komatsu, 18, Junior, Nagano Prefectural Suwa Seiryo High School, Suwa, Nagano, Japan, T: Yoshifumi Yokozawa
https://isef.net/project/224431

Tokyo, Japan, JPN002, Japan Science & Engineering Challenge

ANIM018 **Quantitative Analysis of Angle-Dependent Surface Coloration on Sashimi: Testing Thin-Film Interference, Muscle-Fiber Structural Color, and Optical Activity**
Go Kato, 18, Senior, Tokyo Gakugei University Senior High School, Setagaya-ku, Tokyo, Japan, T: Kojiro Otani
https://isef.net/project/224294

ANIM019T **Quantitative Analysis of Antennal Movements Triggering Trophallactic Behavior in Honeybees Using DeepLabCut, a Deep Learning-Based Markerless Pose-Tracking Tool**
Riku Kuniya, 17, Junior
Hiroto Nishino, 18, Junior
Yasuda Gakuen Junior and Senior High School, Sumida-ku, Tokyo, Japan, T: Naoki Kojima
https://isef.net/project/224295

ANIM020 **Mechanisms of Bacterial Adhesion Inhibition in Skin Mucus of Barred Mudskipper (*Periophthalmus argentikineatus*)**
Shun Kono, 17, Junior, Ehime Prefectural Nagahama High School, Ohzu, Ehime, Japan, T: Iwasaki Ayaka
https://isef.net/project/224298

FINALIST DIRECTORY

BCHM010 **Drug Repositioning for Novel Genome Engineering: Technology With High Therapeutic Efficacy and Low Side Effects**
Sophia Rei Nagasaka, 17, Senior, Tokyo Metropolitan Hibiya High School, Chiyoda-ku, Tokyo, Japan, T: Keita Sato
https://isef.net/project/224301

CHEM018T **Metal-Ion-Induced Spontaneous Formation of a Photocurrent-Generating Surface-Bound Complex in the Ninhydrin Reaction**
Ayano Ishida, 17, Senior
Haruto Nakamura, 17, Junior
Takumi Togo, 17, Junior
Oita Uenogaoka High School, Oita, Oita, Japan, T: Shinichirou Takahashi, T: Sinichirou Takahashi
https://isef.net/project/224297

CHEM019T **Designing a Novel Catalyst for the Haber-Bosch Process Under Mild Conditions**
Mahiro Hayashi, 18, Senior
Kosei Kabeya, 18, Senior
Kaede Nomura, 18, Senior
Nagoya Koyo Senior Highschool, Showa-ku, Nagoya, Aichi, Japan, T: Takuto Kubota
https://isef.net/project/224313

CHEM020T **Atmosphere-Controlled Thermal Decomposition of Magnesium Ammonium Phosphate Hexahydrate Without Ammonia Loss for Fertilizer Recovery and Transport**
Yuki Sakai, 17, Junior
Hiromasa Yamamoto, 17, Junior
Shimane Prefectural Matsue Higashi High School, Matsue, Shimane, Japan, T: Masami Hara
https://isef.net/project/224314

EGSD013T **Electricity-Free Thermal Transfer From Rice Fields Into the Ground Using a Heat Pipe Featuring Dramatically Enhanced Water Phase-Change and Circulation**
Arisa Ando, 17, Junior
Suzuka Sakagawa, 17, Junior
Masa Sato, 17, Junior
Shizuoka Kita High School, Shizuoka-City, Shizuoka-Pref., Japan, T: Takagi Yuji
https://isef.net/project/224289

PHYS021 **Sampling the Complete Configuration Space of Origami and Linkages Using Markov Chain Monte Carlo**
Hikaru Kuribayashi, 17, Senior, Sapporo Kaisei Secondary School, Sapporo, Hokkaido, Japan, T: Thomas Belshaw
https://isef.net/project/224286

PHYS022 **Morphological Evolution of Diving Beetles (*Dytiscidae*) From a Fluid Dynamics Perspective**
Kai Miyajima, 17, Junior, Sapporo Kaisei Secondary School, Sapporo, Hokkaido, Japan, T: Kazuma Fujii
https://isef.net/project/224287

PHYS023 **Equilibrium Between Rotation and Gyration in the Precession of Pencil Caps**
Haru Chiba, 18, Senior, Miyagiken Sendai Daisan High School, Sendai-shi Miyagiken, Japan, T: Jun Murata
https://isef.net/project/224300

ROBO019 **Autonomous Underwater Vehicle (AUV) for Real-Time 3D Microplastic Concentration and Toxicity Mapping via Deep Learning and Integrated Microscopy**
Yugo Igarashi, 17, Junior, The American School In Japan, Tokyo, Tokyo, Japan, T: Laura Pitale
https://isef.net/project/224302

TECA006 **Kintsugi 4D: Image-Based Kintsugi-Aware Framework for Fragment-Level 3D Point-Cloud Reconstruction and Chronicle Integration**
Nao Uematsu, 17, Junior, Oin High School, Bunkyoku, Tokyo, Japan, T: Natsuki Hiratsuka
https://isef.net/project/224299

JORDAN

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

BEHA012 **Developing an Enhancement Tool for Arabic Speaking Children at Risk of Dyslexia**
\# Sima Omar Saleh Al-Shaghnobi, 15, Sophomore, King's Academy, Madaba-Manja, Jordan, T: Rana Matar
https://isef.net/project/224095

EBED012 **Design and Real-Time Implementation of an Embedded Anti-Jamming UAV Communication Architecture Using Adaptive Frequency Hopping, Intelligent Channel Switching, and Hybrid Optical Fiber Backup Control System**
\## Ahmad Khalil Hussein Fatafta, 17, Senior, Islamic Educational College - Jubeiha, Amman, Jordan, T: Khaled Khader
https://isef.net/project/224086

EGSD029 **GSFG: An Autonomous, Decentralized Continuous-Flow Micro-Refinery for the Direct Partial Oxidation of Flared Methane to Methanol**
Omar Abdelqader Alhourani, 14, Freshman, Islamic Educational College - Jubeiha, Amman, Jordan, T: Khaled Khader
https://isef.net/project/225420

ENBM024T **GuardianLink: A Personalized Neuro-Cardiological Health-Monitoring System for Real-Time Heart Arrhythmia Detection, Prediction, and Analysis Through an Adaptive Machine Learning Framework With an ECG Necklace and Biometric Smartwatch**
Kareem Ali Abuelhumos, 16, Junior
Adam Hani Ali, 16, Sophomore
International Academy — Amman, Amman, Jordan, T: Mohammad Abu Hatab
https://isef.net/project/224111

ENBM025T **Smart Foot Device for Early Detection of Peripheral Neuropathy**
Raneem Faisal Alsmadi, 17, Junior
Sama Sakher Fadaleh, 16, Junior
Jubilee School, Amman, Jordan, T: Sawsan Abu Jamma'ah, T: Sawsan Abu Jamma'ah
https://isef.net/project/224152

ENEV026T **Development of a Sustainable Water Filtration System Using Plant-Based Silver Nanoparticles Synthesized From Olive Leaves for Enhanced Removal of Bacterial Contamination in Drinking Water, Targeting Emergency Situations and Water-Scarce Regions**
Sadeen Raed Mah'D Al-Mubaidin, 17, Junior
Russil Khaled Mansour Awamleh, 16, Junior
Jubilee School, Amman, Jordan, T: Sawsan Abu Jamma'ah
https://isef.net/project/224155

ENEV028 **SymbiOS: Electrostatic Capture and Enzymatic Degradation of Airborne Microplastics**
Jowana Rami Samih Tubaila, 16, Sophomore, International Academy - Amman, Amman, Jordan, T: Susan Ibrahim
https://isef.net/project/224221

MATH013T **Novel Metric Operator Theory: A Solution to a Longstanding Open Problem in Operator Theory and Quantum Mechanics**
Majd Abdullah Tawfiq Jallad, 17, Senior
\# Tawfiq Abdullah Tawfiq Jallad, 17, Senior
Firas Al-Ajlouni School, Amman, Jordan, T: Fuad Kittaneh
https://isef.net/project/224151

PHYS015 **A Novel Approach to Precision Determination of V_{ub} Using Strange-Quark Fragmentation in Semileptonic Bs Decays**
Salma Osama Nabulsi, 17, Junior, Ibn Rushd National Academy, Amman, Na'ur, Jordan, T: Fouad Majdalawi
https://isef.net/project/224094

PHYS016 **Photometric Signatures of Exoplanet Host Stars Are Detectable Without Transit Signals: Evidence From Self-Supervised Light Curve Embeddings**
Adnan Ashraf A. Manna, 18, Senior, International Independent Schools 2, Amman, Jordan, T: Sawsan Rabi
https://isef.net/project/224107

PLNT009 ***In vitro* Evaluation of the Antagonistic Potentials of Two *Trichoderma* Species Against Different *Fusarium* Isolates to Assess Isolate Dependent Responses in Plant Disease Suppression**
Shahed Ra'ed Abedalhamid Alma'aitah, 17, Junior, Jubilee School, Amman, Jordan,
T: Sawsan Abu Jamma'ah
https://isef.net/project/224096

PLNT010 **The Effects of Caffeine on *Glycine max* (Soybean) Morphology and Genomics**
Noor Abuelem, 14, Freshman, Al Ra'ed Al Arabi School, Amman, Jordan,
T: Hanan Abu-Zayyad
https://isef.net/project/224097

PLNT012T **Design, Development and Experimental Evaluation of a Nano-Enhanced Botanical Oil Formulation as a Sustainable and Environmentally Friendly Alternative to Conventional Chemical Pesticides for the Effective Control of Whitefly: A Dose–Response and Time-Dependent Study**
Aya Mohamed Abozeid, 17, Junior
Salam Omar Mohammad Oduibat, 16, Sophomore
Um AlSummaq Secondary School North, Amman, Jordan, T: Saida Bteibet
https://isef.net/project/224108

TMED018T **Pathogenic Forecasting: An AI-Integrated Dual-Environment Smart System for Real-Time Prediction of Hypertension and Chronic Kidney Disease**
Malik Yousef Abdalla Aljawarneh, 17, Junior
Ibrahim Bilal Alshyab, 17, Junior
Abdallah Khaled Mayyas, 16, Sophomore
Yarmouk University Model School, Irbid, Irbid, Jordan, T: Ali Dababi
https://isef.net/project/224110

TMED020T **JomedAI: A Fully Deployed Artificial Intelligence Platform Integrating 23 Independent Deep Learning Models Across 13 Organ Systems, 1,808 Validated Clinical Statistical Scoring Models, and AI-Powered Drug-Drug Interaction Detection for Early Disease Diagnosis, Interactive Clinical Reasoning and Medication Safety**
Jafar Mutaz Naji Aburadi, 16, Junior
Husam Basem Rajab Al-Hayek, 16, Sophomore
King Abdullah II for Excellence — Muqabilin, Amman, Jordan, T: Asma Hasan
https://isef.net/project/224153

KAZAKHSTAN

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

CBIO057 **Modeling and Optimization of Microbial Fuel Cells Using Artificial Intelligence to Enhance Energy Generation Efficiency**
Sayan Kerimbay, 15, Freshman, M.Kh. Dulati Specialized School #8, Shymkent, Shymkent, Kazakhstan, T: Yuliya Kisseleva
https://isef.net/project/225725

EAEV057 **AtmosNano: Development of a Low-Cost CubeSat Platform for Real-Time Atmospheric Monitoring**
Altynay Otetileu, 16, Junior, Nazarbayev Intellectual School of Science and Mathematics in Turkistan, Turkistan, Zhana Qala, Kazakhstan, T: Galym Khudaibergen
https://isef.net/project/227363

ROBO041 **SGProtoNet: Semantic-Guided Prototypical Networks for Multi-Label Few-Shot Medical Image Classification**
Arnur Duisenbayuly Artykbay, 17, Junior, Nazarbayev Intellectual School of Physics and Math, Taraz City, Taraz City, Kazakhstan, T: Mirlan Jussambayev
https://isef.net/project/226752

SFTD044T **KazLib: A Student-Centric Digital Platform for Academic Planning and Performance Simulation**
Aslan Basharov, 16, Sophomore
Nurkeldi Bolysbay, 16, Sophomore
Taldykorgan Bilim Innovation Lyceum, Taldykorgan, Zhetysu Region, Kazakhstan,
T: Nauryzbay Umirzak
https://isef.net/project/226506

SFTD049T **Neuralese: A Visual-Interactive Platform for Neural Network Development With Topology-Aware Optimization**
Mikhail Issakov, 16, Sophomore
Rakhim Nurmukhanbetov, 16, Sophomore
Panfilov Specialized School-Lyceum No. 54, Almaty, Kazakhstan,
T: Dina Amirkanova
https://isef.net/project/226760

KENYA

Nairobi, Kenya, KEN001, Kenya Science and Engineering Fair

BEHA036T **C-MAP Braille, a Confusion Mapping Adaptive System for Accelerated Braille Literacy**
Tiya Harji Bhudia, 15, Freshman
Rehan Sajid Chaudhary, 14, Freshman
Gauri Yadav Yadav, 17, Sophomore
Shree Cutchi Leva Patel Samaj School, Nairobi, Kenya, T: Laban Chweya
https://isef.net/project/226958

EBED041T **Temporal Fingerprint Degradation in Sub-Zone Wi-Fi RSSI Occupancy Classification: Quantifying the Accuracy to Energy Transfer for Recalibration Optimized HVAC Control**
Shaanvi Nilesh Gorasiya, 14, Freshman
Maryam Mohamed Said, 16, Sophomore
Naxtra Saini, 16, Sophomore
Shree Cutchi Leva Patel Samaj School, Nairobi, Kenya, T: Laban Chweya
https://isef.net/project/226959

ENBM070T **OralSense: A Passive Multi-Biomarker Smart Toothbrush for Early Detection of Gingival Disease and Pre-Diabetes Risk**
Marzouq Haji Jama, 16, Sophomore
Misha Suresh Khetani, 14, Freshman
Shreeni Shailesh Patel, 16, Sophomore
Shree Cutchi Leva Patel Samaj School, Nairobi, Kenya, T: Laban Chweya
https://isef.net/project/226960

ENBM071T **Development of a Low-Cost Pressure Mapping System for Early Detection of Ischemic Labor Injury, Towards Prevention of Obstetric Fistula**
Saumya Saini, 15, Freshman
Shivya Saini, 14, Freshman
Peponi School, Nairobi, Nairobi, Kenya, T: Laban Chweya
https://isef.net/project/226961

ROBO043T **MARS-KSL: A Multi-Angle Robustness Framework for Kenyan Sign Language Recognition Using View-Invariant Landmark Normalization and Hybrid LSTM-Transformer Deep Learning**
Mohamed Khalid Ahmed, 15, Sophomore
Sean Isaac Murigi, 15, Sophomore
Tejveer Singh, 14, Freshman
Shree Cutchi Leva Patel Samaj School, Nairobi, Kenya, T: Laban Chweya
https://isef.net/project/226962

KUWAIT

Kuwait, Kuwait, KWT001, Kuwait Science and Engineering Fair

EGSD032 **Optimizing Bioelectric Energy From Algae Using Electrode Design and Series-Parallel Connections Architecture**
Mariam KH. E. E. R Alqallaf, 16, Junior, Al Nibras International Bilingual School, Farwaniya District, Jeleeb Al-Shuyoukh, Kuwait, T: Ali Saleem
https://isef.net/project/225640

EGSD050 **UV-Active Azobenzene/Perovskite Composites; Impacts on Energy Efficiency**
Bashayer F. M. KH Alhadan, 16, Junior, Al Nibras International Bilingual School, Farwaniya District, Jeleeb Al-Shuyoukh, Kuwait, T: Enas Parkar
https://isef.net/project/227838

ETSD041T **AI-Driven Optimization of Drilling Operations in Oil and Gas Wells**
Mohamad Omar Aldhabayan, 17, Senior
Khaled A. Y. A. Aljumaa, 17, Senior
Ahmad Aladwani High School, Asima, Aidelya, Kuwait, T: Ali Maalla
https://isef.net/project/225641

LATVIA

Riga, Latvia, LVA001, Latvian Student Scientific Research Conference

EAEV005 **Influence of Synoptic Factors on Rainfall During the Impacts of Cyclone "Kirsty" in the Central Parts of Latvia**
Martins Bergsteins, 18, Senior, Jelgava State Gymnazium, Jelgava, Zemgale, Latvia, T: Ilze Rumbeniece
https://isef.net/project/223861

MATS004 **Synthesis of Low-Density Porous Ceramics by Spark Plasma Sintering of Cenospheres and Fe_2NiO_4**
Aleksis Baduns, 18, Senior, Engineering High School of Riga Technical University, Riga, Latvia, T: Beate Kruze
https://isef.net/project/223956

LUXEMBOURG

Luxembourg, Luxembourg, LUX001, National Contest "Jonk Fuerscher"

PHYS034 **The Geometry of the Milky Way's Dark Matter Halo: Bayesian Inference of Kinematic Properties Across Stellar Streams and the Galactic Rotation Curve**
Harald Gustav Gunnerus Sveen, 17, Junior, International School of Luxembourg, Luxembourg, T: Natasha Petersen
https://isef.net/project/224923

MALAYSIA

Putrajaya, Malaysia, MYS001, National Schools Science Innovation and Engineering Competition

CBIO008 **PRISM: A Biologically-Consistent Machine Learning Framework for Protein Function Prediction and Drug Target Discovery**
Muhammad Faiz Bin Anuar, 17, Junior, Kolej PERMATA Insan, Nilai, Negeri Sembilan, Malaysia, T: Siti Munirah Binti Mohd
https://isef.net/project/223824

CHEM007T **P.C.E.N.S.O: Pomegranate Peel Crude Extract and Neem Seed Oil as a Novel, Cost-Effective and Eco-Friendly Termite Control Agent**
Teng Way How, 15, Freshman
Yi Zhe See, 15, Freshman
Chung Ling High School Penang, Georgetown, Penang, Malaysia, T: Whey Cheng Heah
https://isef.net/project/223850

CHEM008T **Spent Coffee Ground Biochar and Zinc Oxide Nanoparticles Composite as a Novel, Cost Effective Biosorbent and Photocatalyst for Synthetic Dye Removal**
Zhe Jin Lim, 17, Junior
Yan He Tan, 16, Junior
Chung Ling High School Penang, Georgetown, Penang, Malaysia, T: Whey Cheng Heah
https://isef.net/project/223851

EAEV010T **MethanoX: Machine-Learning-Guided Identification and Validation of Tropical Fruit-Derived Antimicrobials to Mitigate Methane Emissions in Rice Paddy Soils**
Ahmad Haneef Ezra Bin Ahmad Fadzil, 15, Sophomore
Ahmad Ahnaf Sharique Bin Mohd Asrol Shahariwan, 16, Sophomore
Sekolah Sultan Alam Shah, Putrajaya, Wilayah Persekutuan, Malaysia, T: Zairulhusni Wan Zein Md Zein
https://isef.net/project/223866

EBED010 **E-Vision: Helping the Blind Experience the World Again**
Jun Ren Jayden Tan, 15, Junior, Sekolah Menengah Jenis Kebangsaan Jit Sin, Bukit Mertajam, Penang, Malaysia, T: Heiana Nadia Binti Hamzah
https://isef.net/project/223880

ENEV016T **From Agricultural Waste to Ocean Rescue? CocoQuill Oil Sorbent: An Effective and Eco-Friendly Synergistic Coconut Fiber–Chicken Feather Sorbent for Oil Spill Cleanup**
Elisha Edna Anak Frandic, 16, Junior
Liew Chin Hua, 16, Sophomore
Phang Wan Ning, 16, Junior
SMK Lake, Bau, Sarawak, Malaysia, T: Chung Sze Meang
https://isef.net/project/223923

MEXICO

Saltillo, Mexico, MEX004, FEMECI - Feria Mexicana De Ciencias E Ingenierias

MATS047 **pH-Responsive Biofilms as Sensors for Smart Management of Complex Wounds**
Sheila Judith Camacho Pastrana, 17, Senior, Instituto Profesional en la Ensenanza y Formacion Humana S.C Plantel Aeropuerto, Toluca, Estado de Mexico, Mexico, T: Mariana Rodriguez Trujillo
https://isef.net/project/225527

PLNT027 ***In vitro* Culture of *Gymnopodium floribundum* (Dzidzilché) as an Alternative for Conservation and Sustainable Use**
Eli Camila Chan Gomez, 18, Senior, Centro de Bachillerato Tecnologico Agropecuario No. 13, Merida, Yucatan, Mexico, T: Suemy Terezita Echeverría Echeverría
https://isef.net/project/225529

PLNT028T **Functional Biopolymer Films Based on Apple Flour for the Development of Biodegradable Capsules Supplemented With Beneficial Microorganisms for Agricultural Applications**
Jose Carlos Bueno Osuna, 17, Senior
Lucia Samantha Gallegos Hernandez, 17, Senior
Ricardo Orozco Hernandez, 17, Senior
Centro de Bachillerarto Tecnologico Agropecuario Numero 90, Cuauhtemoc, Chihuahua, Mexico, T: Beatriz Ogaz Sandoval
https://isef.net/project/225572

NEW ZEALAND

Wellington, New Zealand, NZL001, Aotearoa New Zealand National Science and Technology Fair

BCHM003 **Surface Mediated Enzyme Sequestration by Ingested HDPE Macroplastics in a Biomimetic King Penguin Intestinal Model**
Sophie Maree Ineson, 17, Senior, Southland Girls' High School, Invercargill, Southland, New Zealand, T: Brenda Goodwill
https://isef.net/project/223493

ENEV018 **Wool That Breathes: Integrating Porous Micro-Crystals and Structural Modelling on NZ Wool to Develop the Foundation for Passive CO_2 Capturing Textiles**
\# Jesse Rumball-Smith, 18, Senior, Wellington College, Wellington, New Zealand, T: Phil Kendon
https://isef.net/project/224080

NIGERIA

Benin City, Nigeria, NGA003, Genius National Science Expo

ENBM006 **A Wearable Pulse-Based Music Recommendation System for Stress Management in Athletes**
Oluwatoni Daniel Ojo, 17, Senior, Eton College, Windsor, Berkshire, United Kingdom, T: Richard Hardy
https://isef.net/project/223893

ENEV003T **Eco-Thread Technology: Transforming Waste Plastic Bottles to Laundry Ropes and Baskets**
Joshua Ogheneochukwo Okpara, 17, Junior
Victoria Onoshoagbe Opoku, 15, Junior
Kosofe Senior College Ketu, Agboyi Ketu Kosofe Lagos, Lagos State, Nigeria, T: Aderonke Abidoye
https://isef.net/project/223911

MATS003 **Production of Low-Cost Sanitary Pads From Waste Banana Trunks**
Mary Claret Somtochukwu Onyenwe, 14, Junior, Government Science and Technical College, Abuja, Nigeria, T: Margaret Ofordum
https://isef.net/project/223955

NORTHERN MARIANA ISLANDS

Saipan, Northern Mariana Islands, NMI001, Northern Mariana Islands Science & Engineering Fair

MATS056T **HAFAD-AID: A Mechanoadaptive Carbonate Interfacial Platform Enhancing Early Stage Coral Transplant Stability and Microfouling Resistance to Promote Reef Scale Restorative Feedback**
\# Ja Young Kim, 18, Senior
\# Dong Gyu Lee, 18, Senior
\# Dong Hyun Lee, 18, Senior
Saipan International School, Saipan, Northern Mariana Islands, T: April Liske-Clark
https://isef.net/project/226504

PHYS057 **A Universal Physics-Informed Variational Quantum Framework: From LIGO-Derived Gravitational Wave Black Hole Parameter Estimation to Molecular Hamiltonian Mapping for *de novo* Pan-Cancer Therapeutic Discovery**
Reggie Castro, 19, Senior, Marianas High School, Saipan, Northern Mariana Islands, T: Kadi Camacho
https://isef.net/project/227361

TMED052 **Neuro-Ocular Biomarkers of ADHD: A Predictive Modeling Approach Using Fundus Photography With Retinal Dysfunction To Estimate Symptom Severity**
\# Irene J. Park, 18, Junior, Saipan International School, Saipan, Northern Mariana Islands, T: April Liske-Clark
https://isef.net/project/225654

OMAN

Muscat, Oman, OMN001, Oman National Science Fair

BEHA005T **AI-Based System for Analyzing and Supporting Student Engagement in the Classroom**
Abdul Rahman Khalid Al Balushi, 14, Freshman
Ibrahim Mohammed Al Zarouni, 15, Freshman
Saad Bin Abi Waqqas School, Shinas, North Al Batinah, Oman, T: Khalfan Al Maqbali
https://isef.net/project/223798

ENBM012T **Real-Time EEG-Based Machine Learning System with Behavioral Feedback to Support Attention in Children With ADHD**
Al Hussain Ali Al Balushi, 16, Junior
Abdulrahman Yousuf Al Farsi, 17, Senior
Al Batinah School, Liwa, North Al Batinah, Oman, T: Abdullah Al Rushdi
https://isef.net/project/223899

ENEV008T **Plasmonic–Photocatalytic Ophiolite Based Passive System for the Treatment of Oilfield Produced Water**
Ward Badar Al Balushi, 15, Sophomore
Remas Qais Al Bulushi, 16, Sophomore
Al Amal School, Barka, South Al Batinah, Oman, T: Fakhriya Al Shibani
https://isef.net/project/223916

PAKISTAN

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

CBIO009T **Designing Safer Microbial Plastic Degraders: CasTune — An Optimized dCas13d-IF3 Framework for Higher PETase Production in *E. coli***
Ahmed Hassan, 18, Senior
Muhammad Nairab Ishaq, 17, Senior
Cadet College Hasanabdal, Attock, Punjab, Pakistan, T: Muhammad Ashiq, T: Muhammad Abrar
https://isef.net/project/223825

TECA003 **Applied Vibrotactile Systems**
Muhammad Faiq Quraishi, 17, Junior, Engro Grammar School, Daharki, Sindh, Pakistan, T: Amen Sohail
https://isef.net/project/224018

PHILIPPINES

Pasig City, Philippines, PHL001, Philippines Science Fair

BMED038 **Biogenic Synthesis of *Averrhoa bilimbi L.* (Kamias) Flower Silver Nanoparticles and Their Mechanistic Induction of Apoptosis in HepG2 Cell Line: An Integrated *in silico* and *in vitro* Study**
Eureka Heragrace Aladad Tuya, 18, Senior, Labangal National High School, General Santos, South Cotabato, Philippines, T: Sheryl Rose Joy Leysa
https://isef.net/project/225385

CBIO052T **Modelling the Ecological Dynamics Between the Coconut Scale Insect (*Aspidiotus rigidus*) Infestation on Coconut Trees (*Cocos nucifera*) With *Comperiella calauanica* as the Biological Control**
Lady Nikki Beatrice Meode Dongon, 17, Senior
Allen Laurence Carpio Lambert, 18, Senior
Jahna Bhec Tulin Lauz, 18, Senior
Baybay City Senior High School, Baybay City, Leyte, Philippines, T: Rey Ian Pelaez
https://isef.net/project/225422

EGSD028T **WinDTurbinePower: A Novel Hybrid Dimple-Tubercle Blade Configuration Integrating Physics-Informed Gaussian Process (PIGP) for Power Coefficient (Cp) Optimization**
Nathan Andrew Punzalan Canilao, 15, Freshman
Asher John Salenga Garcia, 15, Freshman
Pierre Phoella Goingco Ilagan, 15, Freshman
Angeles City Science High School, Angeles City, Pampanga, Philippines, T: Lolita Bautista
https://isef.net/project/225382

ENBM060 **KARTHOS: An AI-Integrated Robotic Assistant for Early Breast Cancer Detection via Mammogram Classification, Heatmap Segmentation, and Guided Self-Examination**
\# Margareth Jalandoon Ac-ac, 17, Senior, Sumaliring High School, Siaton, Negros Oriental, Philippines, T: Aiza Abingayan
https://isef.net/project/225384

ENBM061T **Biogenic Hydroxyapatite From *Batissa violacea* Shells For Hap/Carboxymethyl Cellulose/Polyvinyl Alcohol Hydrogel as Potential Bone Extracellular Matrix-Mimicking Infill in Biodegradable 3D-Printed Polylactic Acid/Hap Scaffolds**
Jan Izel Landingin Bacuyag, 18, Senior
Angelica Mae Frugal Berenguel, 18, Senior
John Carlo Gabuyo Mayormita, 18, Senior
Lal-lo National High School, Lal-lo, Cagayan, Philippines, T: Frazcel Serna
https://isef.net/project/225402

MATS044 **ILLUMINA: Interface-Engineered Lignin Luminescent UV-Responsive Multijunction Integrated Nodal Anode Architecture for Equatorial UV Photon Conversion**
Marc Fritzter Villas Tamayo, 18, Senior, Bansud National High School Regional Science High School for Mimaropa, Bansud, Philippines, T: Lorie Malaluan
https://isef.net/project/225386

PHYS044 **Serial Crystallography-Optimized Sample Preparation With MYELIn: Novel Homogeneous Protein Microcrystal Yield Density Control via Sequential Pulsed Electric Fields and Ultrasonic Irradiation**
\# Charly David Tawatao Manuel, 17, Senior, Alaminos City National High School, Alaminos City, Pangasinan, Philippines, T: Kris Cristhopher Dela Cruz
https://isef.net/project/225383

SFTD045T **ViSMo: An AI-Integrated Vital Status Monitoring Robot With IoT for Intensive Home-Based Care, Solitary Individuals**
Jose Rafael Ong Cayabyab, 17, Junior
Cassandra Aubrey Cervantes Lipango, 16, Junior
Eirah Gabrielle Abila Riduca, 17, Junior
Quezon City Science High School, Quezon City, Philippines, T: Genevieve Vasquez
https://isef.net/project/226540

POLAND

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

ENEV001 **Novel Interferometric Detection of Nitrate and Phosphate Runoff to Protect Marine Ecosystems and Rural Water Supplies**
Jagoda Sulek, 16, Junior, II Liceum Ogolnoksztalcace z Oddzialami Dwujęzycznymi im. Stefana Batorego, Warsaw, Masovian Voivodeship, Poland, T: Ewa Barylska
https://isef.net/project/223909

MATS001 **The Future of Soft Robotics: 3D Printing Magnetic Shape-Memory Materials With Arbitrary Magnetisation**
Emil Pajak, 19, Senior, V Liceum Ogolnoksztalcace z Oddzialami Dwujęzycznymi im. Andrzeja Struga w Gliwicach, Gliwice, Silesian Voivodeship, Poland, T: Blazej Tomiczek
https://isef.net/project/223953

TMED001T **Novel ACE-I Inhibitory Peptides Derived From *Limnospira platensis***
Paulina Jadwiga Duszynska, 19, Senior
Marta Truszczynska, 18, Senior
I Liceum Ogolnoksztalcace im. Mikolaja Kopernika, Gdansk, Pomorskie, Poland, T: Monika Kozlowska, T: Barbara Chyra
https://isef.net/project/224019

PORTUGAL

Porto, Portugal, PRT001, Portuguese Contest for Young Scientists

BMED011T **Blood Block – Development of Suberin Bioactive Membranes Enriched With Tannins Targeting Anti-Hemorragic Properties**
Afonso Vigario Amaral, 19, Senior
Maria Martins Canela, 18, Senior
Jose Miguel Costa, 18, Senior
Colegio Luso-Frances, Porto, Portugal, T: Rita Rocha
https://isef.net/project/223812

PUERTO RICO

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

BCHM018 **Characterizing the Binding Affinity of Second-Generation HIV Maturation Inhibitors to Viral Protein Targets Using Solution NMR Spectroscopy**
Ariana Angelie Adorno-Vazquez, 18, Senior, Escuela Especializada en Ciencias, Matemáticas y Tecnología, Caguas, Puerto Rico, T: Shirley Martinez-Laureano
https://isef.net/project/225184

BMED037 **Kallikrein-Kinin System Modulation to Preserve Neurovascular Integrity After Organophosphate Exposure**
Lorena Pachiardi, 16, Junior, Cupeyville School, San Juan, Puerto Rico, T: Keishla Crespo
https://isef.net/project/225282

CHEM035 **Design and Synthesis of Novel Azo–Estradiol Conjugates: Effects of Para-Substituents on Radical Scavenging Activity**
Ricardo Antonio Rovira-Denton, 18, Senior, Colegio San Ignacio de Loyola, San Juan, Puerto Rico, T: Carol Gonzalez
https://isef.net/project/225180

EBED033T **EcoSense-CH4: Using Mobile Technology to Monitor Methane Emission for Sustainable Environmental Management**
Mikael Camacho Casiano, 17, Senior
Mateo Camacho-Casiano, 17, Junior
Colegio Rosa-Bell, Guaynabo, Puerto Rico, T: Yajaira Torres De Jesus
https://isef.net/project/225287

ENBM045 **Engineering a Rehabilitation Prototype to Restore Mobility in Individuals With Severe Walking Impairments**
Yaziel Quiles Olan, 18, Senior, Vigotsky Bilingual Academy, Barceloneta, Puerto Rico, T: Juan Torres
https://isef.net/project/225009

MATS042 **RegoCrete-BGX: Engineering a Fiber-Reinforced Multi-Aggregate Concrete for Future Space Constructions**
Eduardo Alonzo Ayarza-Freyre, 15, Freshman, Colegio Rosa-Bell, Guaynabo, Puerto Rico, T: Yajaira Torres - De Jesús
https://isef.net/project/225176

MATS043T **InfectoGuard-RSiM2: Engineering a Hybrid Bioactive Patch for Targeted Topical and Intradermal Antimicrobial Therapy in Skin Infections**
Kamila Zoé Rotger-Costas, 18, Senior
Miranda Sanz- Alvarez, 17, Senior
Colegio Rosa-Bell, Guaynabo, Puerto Rico, T: Yajaira Torres-De Jesús
https://isef.net/project/225283

PHYS035 **Development of a Small-Aperture Radio Telescope Network for Continuous Real-Time Detection of Transient Radio Signals**
Pablo Federico Nazario Sanchez, 16, Junior, Baldwin School of Puerto Rico, Guaynabo, Bayamón, Puerto Rico, T: Zacha Ortiz
https://isef.net/project/224940

PLNT023 **Physiological Signatures of Salinity-Induced Osmotic Stress in Reforested *Stahlia monosperma*: Implications for Species Conservation**
Ricardo Antonio Sanchez-Wangen, 18, Senior, Colegio San Ignacio de Loyola, San Juan, Puerto Rico, T: Carol Gonzalez
https://isef.net/project/225212

Mayaguez, Puerto Rico, TEPR01, Puerto Rico Math Fair

MATH019 **A Generalized Theory of Divisor Topologies in the Framework of Tau-Factorization**
Austin Dennis Johnson, 17, Junior, Centro Residencial de Oportunidades Educativas de Mayaguez, Mayaguez, Puerto Rico, T: Edwin Benvenutti
https://isef.net/project/224924

MATH020 **A Framework for Model-Less Causal and Non-Causal Time-Series Forecasting**
Emilio Cabrera-Isaza, 16, Junior, Centro Residencial de Oportunidades Educativas de Mayaguez, Mayaguez, Puerto Rico, T: Edwin Benvenutti
https://isef.net/project/224925

MATH021 **Computational and Statistical Analysis Maximum Growth in the Collatz Conjecture: Evidence of a Scaling Law and Local Arithmetic Structure**
Jan Carlos Rivera Porras, 17, Senior, Dr. Pedro Albizu Campus, Ponce, Puerto Rico, T: Esperanza Soto Rivera
https://isef.net/project/224926

Mayaguez, Puerto Rico, TEPR10, SESO Regional Science Fair

EGSD031 **Acid Catalyzed *in situ* Transesterification of *Sargassum* for Biodiesel Production**
Eduardo Gabriel Martinez, 15, Sophomore, Southwestern Educational Society, Mayaguez, Puerto Rico, T: Melissa Segarra
https://isef.net/project/225606

Ponce, Puerto Rico, TEPR02, Arecibo Regional Science Fair

BEHA022 **Influence of Social Networks on the Social Acceptance of Adolescents Between the Ages of 14 and 16 Years Old**
Isabela Sofia Negron Lopez, 15, Freshman, Brigida Alvarez Rodriguez Mathematics and Science High School, Vega Baja, Puerto Rico, T: Heidy Canales
https://isef.net/project/224928

ETSD030 **Design and Construction of a Sound Activated Treat Dispensing Machine for Dogs Triggered by High Intensity Auditory Stimuli of 103 dB as a Counterconditioning System**
Camila Cristina Gomez Acevedo, 17, Senior, Brigida Alvarez Rodriguez Mathematics and Science High School, Vega Baja, Puerto Rico, T: Heidy Canales
https://isef.net/project/224927

FINALIST DIRECTORY

MCRO018 **Antibiotic Combinations as an Alternative Strategy Against Bacterial Resistance in *Pseudomonas aeruginosa* and *Staphylococcus aureus***
Jatzier Rodriguez Millan, 17, Senior, Padre Aníbal Reyes Belen, Hatillo, Puerto Rico, T: Zaian Lopez Ramos
https://isef.net/project/224989

Ponce, Puerto Rico, TEPR03, Bayamon Regional Science Fair I

EGSD021 **Natural Electricity (Electro-Botany)**
Biancamar Lozada, 15, Sophomore, Adela Rolon Fuentes, Toa Alta, Puerto Rico, T: Frances Perez Arce
https://isef.net/project/225003

MCRO020 ***Kalanchoe pinnata* as a Natural Antibiotic**
Emily Marie Gonzalez Menendez, 18, Senior, Escuela Bilingue Especializada en Ciencias y Matematicas Papa Juan XXIII Secundaria, Bayamon, Puerto Rico, T: Noralejandra Moreno
https://isef.net/project/225004

SFTD033T **KeyserKat— A Learning App for Twelfth Graders**
Ian Sebastiane Malaret Lopez, 18, Senior
Sofia Victoria Vargas Santiago, 17, Senior
Escuela Bilingue Especializada en Ciencias y Matematicas Papa Juan XXIII Secundaria, Bayamon, Puerto Rico, T: Noralejandra Vazquez
https://isef.net/project/225000

Ponce, Puerto Rico, TEPR04, Caguas Regional Science Fair

BEHA025 **MindfulSpace: Your Ideal Emotional Assistant**
Kelvin Isaac Hernandez Vazquez, 17, Junior, Specialized School of Science and Mathematics Genaro Cautino Vazquez, Guayama, Puerto Rico, T: Glorivee Guzman
https://isef.net/project/224993

EAEV030 **Evaluation of *Sargassum* as an Oleophilic Material for Mitigating Oil Spill in Seawater**
Angelique Enid Suarez de Jesus, 17, Senior, Specialized School of Science and Mathematics Genaro Cautino Vazquez, Guayama, Puerto Rico, T: Glorivee Guzman
https://isef.net/project/224992

PHYS038 **Magnetic Shields for Mars: A Model of Planetary Protection Against Solar Wind**
Amaury Lemuel Colon Aguirre, 17, Junior, Escuela Especializada en Idiomas Rafael Pont Flores, Aibonito, Puerto Rico, T: Shiomayra Rodriguez
https://isef.net/project/225021

Ponce, Puerto Rico, TEPR05, Humacao Regional Science Fair

EAEV031 **Capture by Nature: Lichens as Bioindicators of Air Pollutants**
Emmanuel Soto Lopez, 15, Sophomore, Montessori Guillermo Riefkohl, Patillas, Puerto Rico, T: Carmen Gonzalez Suren
https://isef.net/project/225019

ETSD033 **Design and Analysis of a Magnetic Axial Flux Transmission and Generator for Wind Turbines**
Derick Kennyel Rivera, 17, Senior, Centro Residencial de Oportunidades Educativas de Ceiba, Ceiba, Puerto Rico, T: Wilmarys Alvira
https://isef.net/project/224986

SFTD031 **Novel Synergization of Lunar Chronobiology, Genotypic Stress Analysis and CNN-LSTM Architectures for Hyper-Localized Climate-Adaptive Agricultural Planning**
Jacob Richard Rivera, 17, Senior, Centro Residencial de Oportunidades Educativas de Ceiba, Ceiba, Puerto Rico, T: Wilmarys Alvira
https://isef.net/project/224987

Ponce, Puerto Rico, TEPR06, Ponce Regional Science Fair

ANIM027 **Probiotic Modulation of Microplastic- Induced Locomotor Dysfunction in *Caenorhabditis elegans*: A Functional Model of Environmental Toxicity**
Sebastian Alexis García Rodriguez, 18, Senior, Centro Residencial de Oportunidades Educativas de Villalba, Villalba, Puerto Rico, T: Yaharie Olivera Olivera
https://isef.net/project/224956

CHEM033 **Effect of the Three-Dimensional Geometry of an Electrode on the Electron Transfer Process Through Electrochemical Analyses**
Jonuel Pinto Garriga, 18, Senior, Dr. Pedro Albizu Campus, Ponce, Puerto Rico, T: Kathia Rodriguez Negron
https://isef.net/project/224988

MATS036 **Mechanical Performance Evaluation of 3D-Printed TPU and PLA Fibers Compared to Commercial PE/PP Artificial Turf Under Variable Temperature Conditions**
Marcos Yahir Echevarría, 17, Junior, Specialized School in Science and Math Thomas Armstrong Toro, Ponce, Puerto Rico, T: Jonathan Plaza
https://isef.net/project/224957

SFTD050 **RQI-Audit: Variance Attribution and Automated Statistical Certification of Random Number Generators Across Programming Language Environments**
Jose Julian Rodriguez Munoz, 18, Senior, Dr. Pedro Albizu Campus, Ponce, Puerto Rico, T: Jonatan Plaza
https://isef.net/project/226963

Ponce, Puerto Rico, TEPR09, San Juan Regional Science Fair

EAEV035T **Sustainable Bioplastics for Marine and Terrestrial Biomes**
Amira Lees Diaz Trinidad, 18, Senior
Noraliz Lyanne Rodriguez Velez, 18, Senior
Escuela Especializada en Ciencias y Matematicas Juan A. Corretjer, San Juan, Puerto Rico, T: Sheila Rosado Rodriguez
https://isef.net/project/225318

TMED039 **Machine Learning Model for Early Identification of Vocal Patterns Associated With Glottic Carcinoma Risk by Analysis of Voice Biomarkers and Life Habits**
Inara Pilar Rivera, 16, Sophomore, The San Juan Math, Science and Technology Center, San Juan, Puerto Rico, T: Laura Rivera
https://isef.net/project/225187

Sabana Grande, Puerto Rico, TEPR08, Mayaguez Regional Science Fair

EBED030 **Integrating Satellite-Derived Imagery and Aerial Drone Mapping With Wave Data for the Analysis of Coastal Erosion Dynamics**
Rodrigo Alberto Viqueira, 17, Junior, CROEM HS, Mayaguez, Puerto Rico, T: Diana Rodriguez
https://isef.net/project/225188

ETSD035 **Pure Rotation for Better Design: Developing a Rotary Vane Combustion Engine for Portable Energy Generators**
Adriaan Josue Carrero, 17, Senior, Dr. Carlos González High School, Aguada, Guaniquilla, Puerto Rico, T: Edmarian Ayala
https://isef.net/project/225201

MATS038 **Recycled PET for 3D Printing and How the Filament Dimension Influences Strength and Quality in 3D Printed Parts**
Lucas Daniel Riveros Aguilera, 18, Senior, Luis Munoz Marin High School, Anasco, Puerto Rico, T: Luz Florian
https://isef.net/project/225182

QATAR

Doha, Qatar, QAT001, The National Student Research Fair

BMED070 **Screening and Evaluation of Plant Extracts That Are Used in Qatari Skin Depigmenting Folkloric Recipe for Their Safety and Tyrosinase Inhibitory Effects Using Zebrafish *in vivo* Model**
Maryam Mohammed Alabdulmalik, 17, Senior, Umm Hakim Girls Secondary School, Maamoura, Ma'amora, Qatar, T: Ayat Eltayeb
https://isef.net/project/228326

CELL040 **Pristimerin Mediated Anticancer Potential in Multiple Myeloma**
Fatima Jabor Al-bureshaid, 18, Senior, Al-Andalus Primary Preparatory Secondary Private School for Girls, Doha, Qatar, T: Safa Etoom
https://isef.net/project/227606

EGSD044T **Solar Thermoelectric Autonomous Drip Irrigation Using Industrial By-Product Carbon Ink for Sustainable Farming (STEP-Dripp-AI)**
Asia Alhag Abdelmouti, 19, Senior
Noof Ahmad AL-Yafei, 18, Senior
Al Wakra Independent Secondary School for Girls, Doha, AL-Wakra, Qatar, T: Eman Sakr
https://isef.net/project/227570

ENEV086 **Plastic Mushrooms: Biodegradation of Polyethylene Using *Pleurotus ostreatus***
Razan Jaafar Alosta, 17, Junior, Hartford American School, New Al thumama, Doha, Qatar, T: Nadia Kaadan
https://isef.net/project/228009

ROBO051T **AI-Driven Real-Time Coral Reef Health Monitoring Using Underwater Imaging**
Khalid Ismail Almansouri, 18, Senior
Mohammed Almeraikhi, 17, Senior
Qatar Science and Technology Secondary School for Boys, Doha, Ain Khalid, Qatar, T: Ali Alsaari
https://isef.net/project/227616

SFTD058T **Gharsa: A Multimodal RGB—Thermal Deep Learning Tool for Plant Disease Detection**
Alanoud El-Kady, 18, Senior
Wasan Maher Hussein Taha, 18, Senior
Aminah Bint Wahb Secondary School for Girls, Fereej Kulaib, Doha, Qatar, T: Fatma Mnassri
https://isef.net/project/227607

REPUBLIC OF MOLDOVA

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

MATS014 **Argon-Ion Plasma Defect Engineering of GaN Memristors for Multilevel Conductance and Quantized Synapses in Leaky-Integrate and Fire Networks**
Ruxanda Silosiev, 17, Junior, Theoretical Lyceum "Spiru Haret", Chisinau, Republic of Moldova, T: Victor Ambroci
https://isef.net/project/224098

MATS027 **Multi-objective Optimisation Modelling of Biodegradable Chitosan/pEGDA Hydrogels for Contact Lens Applications**
Gabriel Diug, 18, Senior, Liceul Academie de Stiinte a Moldovei, Chisinau, Republic of Moldova, T: Ion Burcovschi
https://isef.net/project/224469

ROMANIA

Suceava, Romania, ROM001, Romania Science and Engineering Fair

CHEM009T **ChromaVer: Computer Vision Assisted Multimodal Colorimetric Sensing System Based on Anthocyanins and Curcumin pH-Responsive Indicators for Real-Time, Non-Invasive Assessment of Packaged Meat Freshness**
Shaan Stefan Salian, 19, Senior
Surya Silviu Salian, 16, Freshman
Informatics Liceum Grigore C. Moisil, Iasi, Romania, T: Popa Lacramioara
https://isef.net/project/223852

ENEV004T **AirLab - An Adaptive UAV-Based System for Reducing Uncertainty in Atmospheric Dispersion Modelling**
Dragos Andrei Bernea, 16, Sophomore
Maia Anastasia Sandu, 17, Sophomore
Radu Andrei Teodosiu, 16, Sophomore
National College of Computer Science "Gr. Moisil" Brasov, Brasov, Romania, T: Manuela Serban
https://isef.net/project/223912

ETSD004T **Active Boundary-Layer Control for Mitigating Shock Wave-Induced Separation and Drag in Transonic Flight for Blended Wing Aircraft**
Andru Nicolae Buscu, 17, Junior
Diana Ilinca Negreanu, 17, Junior
Andrei Suna, 18, Junior
International Computer High School of Bucharest, Bucharest, Romania, T: Flavian Georgescu
https://isef.net/project/223933

ROBO003 **ECOGuard — Autonomous Drone for Selective Waste Collection in Large, Hazardous or Inaccessible Environments, Based on Deep Neural Networks and Advanced Artificial Intelligence Methods for Automatic Detection and Classification**
Vlad Alexandru Sofronea, 18, Junior, Informatics Liceum Grigore C. Moisil, Iasi, Romania, T: Mirela Tibu
https://isef.net/project/223996

ROBO004T **Neuroadaptive EEG-Based Neurofeedback Systems for Attention Regulation**
David Gheorghica Istrate, 17, Junior
Mihai Robert Beu, 19, Senior
Adrian Robert Zama, 18, Senior
Colegiul National "Mircea Cel Batran" Constanta, Constanta, Romania, T: Ramona Radulescu
https://isef.net/project/223997

SAUDI ARABIA

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

BCHM030 **Cryo-EM Structure of Human DNA Polymerase δ Inhibited by Aphidicolin: Implications for Cancer and Structure-Based Drug Design**
Saleh Ahmed Alshehri, 17, Senior, Dar AlFikr Schools, Jeddah, Makkah, Saudi Arabia, T: Aysar Alomari
https://isef.net/project/227318

BEHA046 **3D-Printed Buccal Films for Transmucosal Antidepressant Delivery and Personalized Dose Tapering**
Tala Hisham Awliyaa, 17, Senior, Al Zikr Schools, Jeddah, Makkah, Saudi Arabia, T: Amani Otaini
https://isef.net/project/227353

BEHA047 **HyperPhase DuoTab - A Dual-Drug Biphasic Release System for Personalized Hypertension Management**
Joumana Ahmed Alamoudi, 17, Senior, Al Moktashef International School, Jeddah, Makkah Al-Mukarramah, Saudi Arabia, T: Unber Khan
https://isef.net/project/227355

BMED055 **PPARγ–PGC-1α-Mediated Mitochondrial Biogenesis in Fibromyalgia: From PQQ Evaluation to Rosiglitazone Repurposing**
\# Juan Rayan Hindi, 17, Senior, Dar AlFikr Schools, Jeddah, Makkah, Saudi Arabia, T: Athere Alghamdi
https://isef.net/project/227349

CBIO069 **Drug Discovery of Novel Oxindole Derivatives as Multitarget Modulators in Alzheimer's Disease**
Janin Musalli AlQahtani, 17, Junior, 14th high School, Al-Hasa, Saudi Arabia, T: Dalal Al-Anzie
https://isef.net/project/227296

CBIO070 **Integrative Validation of a Conserved BPGM Allosteric Dimer Pocket for Drug Repurposing in Sickle Cell Disease**
Jana Ehab Harasani, 17, Junior, Jeddah World Academy, Jeddah, Mecca Province, Saudi Arabia, T: Aziza Bakur
https://isef.net/project/227306

CBIO071 **A Markov Chain Model for Predicting ETI Resistance Breakdown in Tomato–*Pseudomonas syringae***
Mohammed Nasser Alasmari, 17, Senior, Rowad High School, Jubail Industrial City, Eastern Province, Saudi Arabia, T: Abdullah Almasoud
https://isef.net/project/227321

FINALIST DIRECTORY

CHEM052 **Design of a Novel Dual-Functional Photocatalyst Based on Metal Oxides and Carbon Dot–Modified MOF-5 for CO_2 Capture and Conversion**
Aljohara Faisal Bin Zarah, 16, Junior, Riyadh School for Boys and Girls, Riyadh, Saudi Arabia, T: Safa Mahfouz
https://isef.net/project/227295

CHEM053 **A Novel Asymmetric Synthesis Strategy for Enantioselective Cyclopropane Used as Pharmacophore Motifs in Medications**
Maryam Nidhal Hubail, 17, Senior, Sixth Secondary School, Qatif, Eastern Provience, Saudi Arabia, T: Mofeeda Alsheikh
https://isef.net/project/227303

CHEM054 **Engineering a $BiPO_4$–$CuBi_2O_4$ Heterojunction for Highly Selective and Stable Electrochemical Conversion of CO_2 Into a Liquid Hydrogen Carrier**
Zainab Mohammed Alaithan, 18, Senior, Alanjal Private School, Al Hofuf, Eastern Province, Saudi Arabia, T: Amjad Alharbi
https://isef.net/project/227320

CHEM055 **Advancing Direct CO_2-to-Methanol Conversion Through Novel Macroporous Cobalt-Indium Catalyst Design**
Abdalrahman Basim Jamal, 18, Senior, Jeddah Knowledge International School, Jeddah, Makkah, Saudi Arabia, T: Nisma Rahhal
https://isef.net/project/227350

EAEV060 **Interfacial Crystallization for Oil Spill Remediation Using Divalent Ions Zn^{2+} and Ca^{2+} and Bio-Derived Myristic Acid**
Daleen Qudair, 17, Senior, The Thirty-Third Girls' High School, Al-Rashidiyah, Makkah, Saudi Arabia, T: Wafaa Ahmed
https://isef.net/project/227508

EBED045 **Fabricating COF-Based Memristors for Neuromorphic Computing Systems**
Lana Waseem Alaggad, 17, Senior, Dar AlFikr Schools, Jeddah, Makkah, Saudi Arabia, T: Athere Alghamdi
https://isef.net/project/227316

EGSD037 **Multilayered WO_3/GQDs/MXene Thin-Film Photoanode for Enhanced Photoelectrochemical Water Splitting for Sustainable Hydrogen Production**
Jana Aldosari, 17, Senior, Alanoud Bint Abdulaziz Secondary School, Riyadh, Saudi Arabia, T: Nawal Alrabiah
https://isef.net/project/227216

EGSD038 **Development of an Al_2O_3-Based Triboelectric–Piezoelectric Nanogenerator System for Self-Charging Wearable Devices**
Yara Abdulmajeed Ababtain, 16, Junior, Najd National Schools, Riyadh, Saudi Arabia, T: Abeer Hammoud
https://isef.net/project/227299

EGSD039 **Enhancing Green Hydrogen Production Using Magnetocaloric-Activated Electrocatalysis**
Faisal Alsaeed, 17, Senior, Riyadh School for Boys and Girls, Riyadh, Saudi Arabia, T: Abdulrahman Hussain
https://isef.net/project/227307

EGSD040 **Tailored Bimetallic NiCo Electrocatalyst for Dual Green Hydrogen and Formate Production From Seawater**
Fatimah Mohammed Alsaleem, 17, Senior, Tabuk International Schools, Tabuk, Northern Province, Saudi Arabia, T: Tareq Salama
https://isef.net/project/227310

EGSD041 **Synergistic Ce-$NiCoO_2$ Wrapped in Biomass-Derived N-CQDs for High-Performance Seawater-Activated Batteries**
Lana Abutaleb, 17, Junior, Fifth High School, Jizan, Saudi Arabia, T: Abeer Alomir
https://isef.net/project/227354

ENBM077 **Engineering Novel Cost-Effective Polymer-Coated Dry Electrodes for Extended-Period ECG Monitoring**
Faisal Saad Alabdullateef, 17, Senior, Riyadh School for Boys and Girls, Riyadh, Saudi Arabia, T: Shoaib Asif
https://isef.net/project/227219

ENBM081 **Three-Dimensional Electroplated Nickel Interdigitated Electrode Microbiosensor for Rapid, Reagent-Free Electrical Detection of Cancer-Associated Environments**
Rellam Mohammad Almutawa, 18, Senior, Almutawiroon International Schools, Riyadh, Alkharj, Al-Kharj, Saudi Arabia, T: Tahany Al-Muhssain
https://isef.net/project/227319

ENBM082 **Developing a Platinum Fractal Microneedle Biosensor for Uric Acid Monitoring**
Meshary Bader Altheibany, 17, Senior, Misk Schools, Riyadh, Saudi Arabia, T: Hilal Kara-Ali
https://isef.net/project/227352

ENEV064 **Selective Lithium Recovery From Complex Brines Using Crown-Functionalized LDH–PEI Hybrid Membranes**
Fatema Hussain Almogren, 16, Junior, Rowad Alkhaleej International School, Dammam, Eastern Province, Saudi Arabia, T: Arshi Wahab
https://isef.net/project/227215

ENEV066 **Developing a Novel Superhydrophobic GO–Ni/PAN Membrane for Interfacial Solar Steam Generation**
Imran Omar Alturkistani, 17, Senior, Misk Schools, Riyadh, Saudi Arabia, T: Hillal Ali
https://isef.net/project/227294

ENEV067 **Visible-Light-Activated SPR-Enhanced Nanocatalyst for Simultaneous Water Disinfection and Organic Pollutant Removal**
Yara Yousef AlKadi, 18, Senior, Dhahran Ahliyya Schools, Dhahran, Eastern Province, Saudi Arabia, T: Lama AlAkkas
https://isef.net/project/227297

ENEV068 **Valorization of Red Mud Waste Into a Sustainable Geopolymer for Low-Carbon Oil-Well Cementing**
Shaimaa Elkatatny, 17, Junior, University Schools, Dhahran, Eastern Province, Saudi Arabia, T: Zozo Ahmed
https://isef.net/project/227302

ENEV069 **Synergistic Effect of Laser Surface Modification and NiCoMn Electrodeposited Novel Electrode for Efficient Green Hydrogen Generation**
Leen Mahmoud Alnabulsi, 16, Junior, University Schools, Dhahran, Eastern Province, Saudi Arabia, T: Zozo Ahmed
https://isef.net/project/227308

ENEV070 **Bioremediation of Crude Oil Using Halotolerant and Thermotolerant Bacteria From Saudi Arabia**
Moneera Sulaiman Alroumi, 17, Senior, Dhahran Ahliyya Schools, Dhahran, Eastern Province, Saudi Arabia, T: Samia Aldossari
https://isef.net/project/227357

ETSD050 **Shaping the Future of Refineries Through Hydrodynamically Innovative Reactors**
Mohammed Alquraini, 17, Senior, Al-Reeyeda International School, Al Ahsa, Eastern, Saudi Arabia, T: Ishtiaq Khan
https://isef.net/project/227322

MATS064 **Enhancing Button Battery Ingestion Safety Using a Multifunctional Hydrogel Composite**
Jomanah Talal Belal, 18, Senior, Al-Hussan Modern National School for Girls - Al-Jubail, Al Jubail Industrial City, Eastern Province, Saudi Arabia, T: Seham Al-Mutairi
https://isef.net/project/227214

MATS068 **Engineering of a Novel Spark Plasma Sintered Ti–Zr–Fe Alloy as a Safer Biomedical Implant Alloy**
Faisal Yousef Alhinti, 17, Senior, Unaizah Private Schools, Unaizah, Saudi Arabia, T: Khalid Alshaalaan
https://isef.net/project/227300

MATS069 **Palm Leaf Waste-to-Hydrogen Conversion via Modified Graphene Oxide-Supported Ni–Co Electrocatalyst**
Mawaddah Tawfik Awadh, 16, Junior, University Schools, Dhahran, Eastern Province, Saudi Arabia, T: Zozo Ahmed
https://isef.net/project/227301

MATS070 **Thermochromic Smart Window Performance Enhancement Through Pulsed Laser Dual-Doping of VO_2 Thin Films**
Abdullah Ahmad Alreshaid, 17, Senior, University Schools - Boys High School, Dhahran, Saudi Arabia, T: Murad Hindi
https://isef.net/project/227309

MATS071 **Engineering Sustainable Cement-Free Construction Blocks From Desert Dune Sand and Recycled Glass**
Noor Faisal Alatawi, 19, Senior, Tabuk International Schools, Tabuk, Northern Province, Saudi Arabia, T: Tareq Salama
https://isef.net/project/227313

MCRO033 **Design of a Multi-Mechanistic Triple Therapy to Overcome Biofilm-Associated Resistance in *Pseudomonas aeruginosa***
Tameem Ibrahim Khan, 16, Junior, Rowad High School, Jubail Industrial City, Eastern Province, Saudi Arabia, T: Abdullah Almasoud
https://isef.net/project/227311

PLNT037 **Engineering of Apocarotenoid Production in *Pseudomonas putida* KT2440 for Promoting Rice Growth and Resilience**
Reda Hani Alabdi, 17, Senior, Rowad Alkhaleej International School, Dammam, Eastern Province, Saudi Arabia, T: Morro Camara
https://isef.net/project/227317

PLNT038 **Functional Role of OTU2 in Early Development and Abiotic Stress Responses in *Arabidopsis thaliana***
Lana Yahya Nouri, 18, Senior, Al Zikr Schools, Jeddah, Makkah, Saudi Arabia, T: Amani Otaini
https://isef.net/project/227356

TECA015 **Live Emotion-Adaptive Backgrounds for Improved Sign Language Translation: An AI-Driven Multimodal Communication System**
Jad Daniyal Alghazzawi, 15, Freshman, Dar AlFikr Schools, Jeddah, Makkah, Saudi Arabia, T: Aysar Alomari
https://isef.net/project/227315

TMED075 **Targeting Endocrine Therapy Resistance in ER+ Breast Cancer Through a Combination of Tamoxifen and AhR Inhibition**
Sarah Mohammed Aboulsamh, 16, Junior, Dhahran Ahliyya Schools, Dhahran, Eastern Province, Saudi Arabia, T: Lama AlAkkas
https://isef.net/project/227298

TMED076 **TGF-β 3–Driven Reversal of Mesenchymal Stem Cell Senescence for Improved Regenerative Medicine Applications**
Mazen MohamedAmir Mrad, 17, Junior, King Faisal School, Riyadh, Saudi Arabia, T: Mohamed Abdulhaq
https://isef.net/project/227312

TMED077 **A Self-Expanding 4D-Printed Biodegradable Esophageal Stent With Sequential Dual Drug Release**
Lamar Hani Alagha, 17, Senior, Alhamraa International School, Jeddah, Makkah, Saudi Arabia, T: Ghadah Fayadh
https://isef.net/project/227348

SINGAPORE

Singapore, Singapore, SGP001, Singapore Science and Engineering Fair

BMED031 **Death by Glucose: Limiting Pyruvate Kinase Activity Reduces Cytotoxic Effects of Spike Protein of SARS-CoV-2**
Ian Chong Jin Lee, 16, Sophomore, NUS High School of Mathematics & Science, Singapore, Singapore, T: Sher-Yi Chiam
https://isef.net/project/224942

CBIO028 **Beating the Odds in Drug Discovery With 3DICE: Interpretable 3D Cross-Modal Learning for Drug–Target Interaction Prediction at Scale**
Austin Zi Rui Liu, 17, Senior, Raffles Institution, Singapore, Singapore, T: Zhiying Lee
https://isef.net/project/224943

CELL028T **SNIPER: Engineered Specificity Unlocks Multi-Kilobase Isothermal Amplification for High-Throughput Sequencing**
Caelen Chang, 17, Senior
Javier Ng, 17, Senior
Hwa Chong Institution, Singapore, Singapore, T: Adeline Chia
https://isef.net/project/224947

MATH022 **Complexity Functions Are All You Need**
Liqian Ying, 16, Junior, NUS High School of Mathematics & Science, Singapore, Singapore, T: Ming Huang Chai
https://isef.net/project/224946

MATS033 **Optimizing Bacterial Outer Membrane Vesicles (OMVs) for mRNA-Based Immunogene Therapy**
Jingyi Ge, 17, Senior, Raffles Institution, Singapore, Singapore, T: Zhiying Lee
https://isef.net/project/224744

ROBO031T **Keep Your Data Close, but Your Failures Closer: Failure-Driven Adversarial Self-Evolution of Language Models**
Zachary Kit Chun Choy, 18, Senior
Min Sen Tan, 17, Senior
Raffles Institution, Singapore, Singapore, T: Zhiying Lee
https://isef.net/project/224948

SLOVAKIA

Bratislava, Slovakia, SVK002, AMAVET-Slovak Association for Youth, Science & Technology

CBIO004 **Dynamics of the Nascent Polypeptide-Associated Complex in the Ribosomal Exit Tunnel**
Tatiana Simekova, 19, Senior, Gymnazium Jozefa Lettricha v Martine, Martin, Zilinsky Kraj, Slovakia, T: Benita Tomagova
https://isef.net/project/223820

EBED006 **A Novel Stereo Vision 3D Scanning System for Microscopic Samples**
Filip Lajciak, 18, Junior, Secondary Technical High School Dubnica nad Vahom, Dubnica nad Vahom, Trenciansky kraj, Slovakia, T: Jan Tupy
https://isef.net/project/223876

SOUTH AFRICA

Johannesburg, South Africa, ZAF001, Expo for Young Scientists - South Africa

CBIO006 **Predictive AI-Based Genomic Optimisation of Donor Pig Livers for Human Xenotransplant Compatibility**
Rudra Patel, 16, Junior, UJ Academy Maths, Science & ICT School of Specialisation, Crosby, Johannesburg, South Africa, T: Margarete Moshome
https://isef.net/project/223822

EAEV006 **Predicting Urban Expansion and Green Space Loss in Gauteng Province Using Sentinel-2 MSI Satellite Imagery and Machine Learning**
Tiro Kgopolo Moyo, 19, Senior, Bryanston High School, Johannesburg, Gauteng, South Africa, T: Megan Lester
https://isef.net/project/223862

PHYS004 **A Machine-Learning Driven Approach to Detecting Gravitational Wave Signals From LIGO**
Gerhard Vosloo, 17, Junior, Parklands College Secondary, Cape Town, Western Cape, South Africa, T: Andre Rossouw
https://isef.net/project/223978

FINALIST DIRECTORY

SOUTH KOREA

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

CHEM017T **Deliberate Structural Collapse of Sn–In MOFs for Enhanced Electrochemical Carbon Dioxide Reduction**
Siwoo Jeong, 17, Senior
Ha-Yeon Kim, 17, Junior
Yeseo Ko, 17, Senior
Korea Science Academy of KAIST, Busan, South Korea, T: Ji-Youn Seo, T: Jae-Hoon Sim, T: Sunhwa Park
https://isef.net/project/224285

EBED017T **Adaptive Evolutionary Rocket Operator (AERO)**
Ethan Cho, 17, Junior
Bo-Hyun Lee, 18, Junior
Dongyun Shin, 18, Junior
Korea International School, Jeju Campus, Seogwipo-si, Jeju-do, South Korea, T: James John, T: John James
https://isef.net/project/224228

EBED018 **Fully GNSS-Independent Global Localization and Navigation System via Hierarchical Semantic Terrain Matching**
Jeongwoo Kim, 19, Senior, Korea Science Academy of KAIST, Busan, South Korea, T: Sunmie Park
https://isef.net/project/224434

ENEV023 **Development of a Microbial Desalination Fuel Cell (MDFC) Based on C Type Cyt and Extracellular Polymeric Substances (EPS) From *S. putrefaciens***
Taeho Lee, 19, Senior, Chung-Buk Science High School, Cheongju-Si, Chungcheongbukdo, South Korea, T: Yeonsoo Chae
https://isef.net/project/223929

MATH011T **The Split Elevation Theorem and the H Tower for Virtual Knots**
Seokjun Ha, 17, Senior
Seungbhin Ha, 17, Senior
Seongwon Jang, 18, Senior
Korea Science Academy of KAIST, Busan, South Korea, T: Myeongju Jung
https://isef.net/project/224088

MATS010 **Performance Control and Optimization of KO_2 -$Ca(OH)_2$ Based Oxygen Generator to Enhance Survival Rates in Emergency and Disaster Environments**
Eubyn Jin, 16, Sophomore, Chadwick International School, Incheon, South Korea, T: Bruno Chaput
https://isef.net/project/223962

MATS012 **Fabrication of Chitosan-Based Bioplastic Films and Their Potential for Eco-Friendly Food Packaging**
Seowoo Park, 17, Junior, Gyeonggi Science High School for the Gifted, Suwonsi, Gyeonggido, South Korea, T: Jisu Kim
https://isef.net/project/223965

MATS018 **Standardized Colorimetric Scale for Ammonia-Responsive Agarose–Anthocyanin Hydrogel Patches as a Universal Multi-Food Spoilage Detector**
Dohui Kim, 17, Senior, Korean Minjok Leadership Academy, Hoengseong, Gangwon, South Korea, T: Wonhyeong Jang
https://isef.net/project/224227

PHYS009 **Identifying Key Drivers of High-Redshift Brightest Cluster Galaxy Evolution Using Machine Learning Techniques**
Lim Lee, 17, Junior, Korea International School, Seongnam-Si, South Korea, T: Eric Samson
https://isef.net/project/223983

PHYS020T **Formulation of the Self-Force on a Sheet Charge and Verification by Particle-in-Cell Simulations Using Ultra-Intense Lasers**
Hangyul Choi, 18, Senior
Illoh Her, 17, Senior
Yeonhoo Koo, 18, Senior
Korea Science Academy of KAIST, Busan, South Korea, T: Teyoun Kang
https://isef.net/project/224284

ROBO010T **Using an On-Device VLM-Based Edge Computing System for Real-Time Disaster Detection**
Juwon Park, 15, Sophomore
Seungmin Song, 16, Junior
Seoul International School, Seoul, Gyunggi-Do, South Korea, T: Devona Wilson, T: Jung Minsun
https://isef.net/project/224003

ROBO018T **PANCAKE: Purpose and Context Activate Knowledge Efficiently**
Seung Yi, 17, Junior
Chaeyun Jung, 17, Junior
Asia Pacific International School, Nowon-gu, Seoul, South Korea, T: Boburjon Abdukhamidov, T: Eunsaem Lee
https://isef.net/project/224283

TMED017 **LED-Based Photobiomodulation (PBM) Platform for Standardized Neuronal Maturation With a TICT-Based Fluorescent Readout**
Juwon Ham, 18, Senior, Korea Science Academy of KAIST, Busan, South Korea, T: Injeong Ko
https://isef.net/project/224089

TMED019T **Point-of-Care Testing Device for Screening Alzheimer's Disease Using Salivary Lactoferrin as a Biomarker**
Donghyun Kim, 18, Senior
Hayoon Kim, 19, Senior
Songyeon Shin, 18, Junior
Korean Minjok Leadership Academy, Hoengseong, Gangwon, South Korea, T: Wonhyeong Jang
https://isef.net/project/224145

Daegu, South Korea, KOR001, Korea Code Fair

EBED037T **New Approach to Safer Laboratory Waste Management: AI-Assisted Sensor System for Hazardous Chemical Recognition and Risk Prevention**
\# Seungbeom Cho, 17, Senior
Brendon Jeyoon Lee, 17, Senior
Korean Minjok Leadership Academy, Hoengseong, Gangwon, South Korea, T: Chang Youn Lee
https://isef.net/project/225798

ENBM056 **Beyond Audio: A Multimodal EMG-Visual Speech System for Reconstructing Voice From Silence**
Eunseok Yang, 18, Junior, Okgwa High School, Jeollanam-do, South Korea, T: Donghyun Kim
https://isef.net/project/225375

SFTD023 **Real-Time Hand Gesture Controlled Interface Improving Hygiene Risks and Accessibility Problems**
Minsoo Kwon, 19, Junior, Taejon Christian International School, Yuseong-gu, Daejeon, South Korea, T: Cameron McKenzie
https://isef.net/project/224435

SFTD036 **Redi-up: Human Feedback-Driven Preference Inference for Personalized Interior Redesign With AR Verification**
Ian Tekhyun Kim, 15, Freshman, Chadwick International School, Incheon, South Korea, T: Bella Shin
https://isef.net/project/225376

FINALIST DIRECTORY

SFTD038T **SpeakYourMind: Empowering Social Connection for Nonverbal Autism Through Personalized AI-AAC and Community Sharing**
Chaewon Lim, 17, Junior
Aiden Junhan Koo, 16, Sophomore
Chadwick International School, Incheon, South Korea, T: Sangwon Park
https://isef.net/project/225419

SFTD039T **Facial Invisible Watermarking for Deepfake Sexual Crime Defense**
Namwoo Jang, 18, Senior
Jiwoo Han, 17, Senior
Sion Choi, 16, Junior
Cheonan Upsung High School, Cheonan-si, Chungcheongnam-do, South Korea,
T: Junsik Jeong, T: Yong Soo Yoo, T: Jookang Lee
https://isef.net/project/225638

TECA010 **Synchronome: An Intelligent Music Practice System Providing Real-Time Multimodal Feedback for Visually Impaired Musicians**
Jiho Lee, 15, Freshman, North London Collegiate School Jeju, Seogwipo-si, Jeju-do,
South Korea, T: Stephen Mckeogh
https://isef.net/project/225261

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

ANIM039T **Development of a Non-Invasive Image-Based Behavioral Quantification Platform for Neurotoxicity Assessment in Planarians: Application to Neurotoxicity of Microplastics**
Jaehyun Yang, 17, Senior
Chaewon You, 17, Senior
Gyeonggibuk Science High School, Uijeongbu-Si, Gyeonggi-do, South Korea,
T: Sooyoun Kim
https://isef.net/project/227047

CHEM062T **A Study on the Knoevenagel Condensation Reactivity Through Functional Group Modulation of Metal–Organic Frameworks (MOFs)**
Hyewon Kang, 17, Junior
Minju Kwon, 16, Junior
Nayoung Yune, 16, Junior
Daegu-il Science High School, Daegu, Gyeongsangbuk-do, South Korea,
T: Kyuhan Jeong
https://isef.net/project/227928

CHEM063T **Simple Colorimetric Detection of Aromatic Amino Acids via Charge-Transfer Complex Formation Within Cucurbit[8]uril Cavities**
Jaemin Kang, 17, Senior
Seungju Lee, 18, Senior
Seohyun Myoung, 18, Senior
Korea Science Academy of KAIST, Busan, South Korea, T: Jinho Oh
https://isef.net/project/227929

EGSD036T **Multi-Frequency Optimization of Acoustic Metasurface-Based Sound Energy Harvesting**
Mingi Kim, 18, Senior
Ariel Ari Lee, 17, Senior
Sejong Academy of Science and Arts, Sejong, Chungcheong, South Korea,
T: Juhwan Hong
https://isef.net/project/227201

ENEV074 **A Study on a Buoy-Type Kurutoga TENG Power Generation System for Eutrophication Remediation**
Geolmook Lee, 17, Senior, Busan Science High School, Busan, South Korea,
T: Moon Jaehyun
https://isef.net/project/227685

PHYS045T **Oil Film Position Control via Phase-Controlled Water Waves Induced by a Honeycomb-Structured Oscillator**
Eugene Choi, 18, Senior
Yeonho Lee, 18, Senior
Seoul Science High School, Seoul, South Korea, T: Hyeonjin Doh
https://isef.net/project/225639

ROBO046T **Development and Control of a Quadruped Robot With Capstan Drives and Reinforcement Learning**
Hanson Cho, 18, Senior
Jaewook Jung, 17, Senior
Korea Science Academy of KAIST, Busan, South Korea, T: Hyun Myung
https://isef.net/project/227202

SFTD059T **Development of an FDS-Grounded Risk-Aware Evacuation Route Design and Visualization System for Incident Support**
Donggun Ko, 17, Senior
Inchang Lee, 17, Senior
Juwon Seo, 17, Senior
Gyeonggibuk Science High School, Uijeongbu-Si, Gyeonggi-do, South Korea,
T: ByeongHyeon Oh
https://isef.net/project/227687

SFTD060T **NIS-Based Adaptive Soft Weighting and Crowd-Flow Hidden-Risk Inference for Earlier Warning of Occluded Static Hazards**
Hee Seong Kim, 18, Senior
Seunghyo Shin, 18, Senior
Juyoung Sin, 17, Senior
Cheonan Wolbong High School, Cheonan-si, Chungcheongnam-do, South Korea,
T: Byungjun Jeon
https://isef.net/project/227837

SPAIN

Barcelona, Spain, SPN001, Exporecerca Jove

CBIO085 **Toward Precision Oncology: Integrating Clinical and Mutational Data to Predict Pancreatic Cancer Survival Using Machine Learning**
Bruna Basas Jaumandreu, 17, Senior, La Salle Manresa, Manresa, Barcelona, Spain,
T: Laia Elias Rubio
https://isef.net/project/227843

ROBO060 **SmartBin: Design and Implementation of an AI-Based Automatic Waste-Sorting System**
Marc Pujadas Calcat, 17, Senior, Institut Carles Vallbona, Granollers, Barcelona, Spain,
T: Ivan Nadal Latorre
https://isef.net/project/227913

SRI LANKA

Kesbewa, Sri Lanka, LKA001, Sri Lanka Science & Engineering Fair

EBED027 **PUREair: Smart Air Quality Monitoring Predicting and Alerting System**
Thewnitha Piyadasa Pathberiya Appuhamilage, 16, Junior, Nalanda College, Colombo, Western, Sri Lanka, T: Gayathri Nammuni
https://isef.net/project/224743

ENBM084 **Intelligent Gear X Pro Max(IGXPM) Guardian Protective Network(GPN)**
Ahamed Ammar Afkar Shiham, 14, Sophomore, Royal College, Colombo 7, Colombo 07, Western Province, Sri Lanka, T: Bandula Malage
https://isef.net/project/227365

ENEV078T **Equabin - The Smart Waste Management System**
Hiroosha Amiru Uthej Edirisinghe, 16, Junior
Methul Manyuga Premadasa, 15, Junior
Rihan Rishi Ekanayake Singankutti Arachchilage, 16, Junior
Royal College, Colombo 7, Colombo 07, Western Province, Sri Lanka, T: Bandula Malage
https://isef.net/project/227788

FINALIST DIRECTORY

SWEDEN

Stockholm, Sweden, SWE001, Utstallningen Unga Forskare

BCHM036T **Rice Water as a Natural Hair Treatment**
Gabriella Jennifer Ada, 18, Senior
Angelina Fransis, 18, Senior
S:ta Ragnhildgymnasiet, Stockholm, Sodertalje, Sweden, T: Christian Jansson
https://isef.net/project/227576

MATH039 **Eigenvalue Distributions of Stochastic Matrices and the Karpelevič Region**
Ebba Emilie Vera Birgitta Rigler, 19, Senior, Nykopings Enskilda Gymnasium, Nykoping, Sodermanland, Sweden, T: Susanna Nilsson
https://isef.net/project/227578

PLNT041 **From Satellite Data to Ground Level: An Evaluation of Skogsmonitor's Reliability in Identifying High Conservation Value Bryophyte Flora**
Carl Andersson, 19, Senior, Sundsta-Alvkullegymnasiet, Karlstad, Varmland, Sweden, T: Magnus Hellberg
https://isef.net/project/227539

TMED081 **Machine Learning for Voice-Based Assessment of Parkinson's Disease**
Carl Henning Bringle, 18, Senior, P A Fogelströms High School, Stockholm, Sweden, T: Magdalena Östlund
https://isef.net/project/227577

SWITZERLAND

Bern, Switzerland, CHE001, Swiss Youth in Science

EBED002 **Simple-VIII: Designing an 8-bit Computer Architecture for End-to-End Open Source ASIC Implementation**
Rufus Spyra, 18, Senior, Gymnasium Kirchenfeld, Bern, Switzerland, T: David Perels
https://isef.net/project/223873

PLNT001 **Water Absorption Capacity of Vines: Depending on Rootstock and Geological Soil Type**
Laurin Leon Grob, 19, Senior, Evangelische Mittelschule Schiers, Schiers, Switzerland, T: Manuel Voellmy
https://isef.net/project/223986

ROBO001 **Reinforcement Learning-Based Drone Racing for Nanocopters Using a Self-Developed Motion Capture System**
Maurice Maxime Zemp, 19, Senior, Kollegium St. Fidelis Stans, Stans, Nidwalden, Switzerland, T: Urs Zellweger
https://isef.net/project/223994

THAILAND

Pathum Thani, Thailand, THA002, Young Scientists Competition

ANIM046T **Integrated Multistimuli Behavior Analysis and Visual Modeling for Improved Multimodal *D. melanogaster* Trap in Quail Farm**
Wuttipat Direkrungrueng, 16, Junior
Andaman Surabote, 16, Junior
Princess Chulabhon Science High School Pathumthani, Ladlumkaew, Pathumthani, Thailand, T: Khunthong Klaythong
https://isef.net/project/227413

ANIM047T **CrabTech: A Smart System for Pre-Molt Detection and Monitoring in Soft-Shell Rice Field Crab Production Using Behavioral and Morphological Indicators**
Phanuphong Bunsri, 17, Junior
Panyaporn Kaewkantha, 18, Junior
Yada Piyo, 17, Junior
Damrongratsongkroh School, Muangchiangrai, Chiangrai, Thailand, T: Supatra Thomya
https://isef.net/project/227415

CHEM056T **Facile Synthesis of Novel Rhodamine-Derived Dual-Mode Colorimetric and Fluorescent Sensor for Mercury(II) Detection in Water**
Panida Kijcharoenvisal, 17, Junior
Theekarn Limmahakhun, 16, Junior
Kamnoetvidya Science Academy, Rayong, Thailand, T: Suranan Anantachaisilp
https://isef.net/project/227416

EAEV058 **Comprehensive Biomimetic Aerial Seed Coating Inspired by the Fruit Structure of Burma Padauk for Enhanced Seedling Establishment and Growth in Mixed Deciduous Forest Restoration**
Phichet Nualpaksi, 18, Senior, Princess Chulabhorn Science High School Loei, Loei, Thailand, T: Namthip Srikaew
https://isef.net/project/227411

ENBM085T **RADIA: Novel Assessment Through a Unified AI-Driven Embedded Respiratory Health System Integrating 3D Airway Modeling for Rapid Screening, Monitoring and Rehabilitation**
Poowit Hiroto Siriphant, 17, Junior
Poonyapath Thongpitaktarvorn, 17, Junior
Bangkok Christian College, Bangkok, Thailand, T: Adirek Pitak
https://isef.net/project/227414

MATS072 **Advanced Multifunctional Waste-Derived Biodegradable Nanocomposite Film for Enhanced Postharvest Fruit Preservation and Volatile Aromatic Compound Retention**
Thanawit Tunjarearn, 17, Senior, The Prince Royal's College, Mueang Chiang Mai, Thailand, T: Chaloemkiat Phetpoo
https://isef.net/project/227412

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

ANIM006T **WormSorter: An Innovation for Harvesting High-Quality Black Soldier Fly Larvae for Animal Feed by Using Aggregation Behavior**
Kodchaporn Injaiya, 17, Junior
Chekchanok Somboon, 17, Junior
Kangamon Sriwichai, 18, Senior
Damrongratsongkroh School, Muangchiangrai, Chiangrai, Thailand,
T: Kiettisak Inrajsadon
https://isef.net/project/223776

ANIM007T **Building Climate-Resilient Corals: A Coral Restoration Strategy Integrating Molecular Repairs With Satellite-Monitored Artificial Reefs**
Sunyapat Akkarajeerawat, 18, Senior
Proadpran Chanthammaphitak, 16, Sophomore
Naphudon Sriratana, 17, Junior
Bangkok Christian College, Bangkok, Thailand, T: Chanan Keatsirisart
https://isef.net/project/224041

ANIM008 **An Automated Multimodal-Stimuli Integrated Trichogramma Rearing and Release Innovation With Artificial Oviposition-Targeted Eggs to Optimize Pest Parasitization**
Ratchanut Termtrirakij, 15, Freshman, Bangkok Christian College, Bangkok, Thailand,
T: Suwanna Amporndanai
https://isef.net/project/223790

CBIO012 **Deciphering and Engineering of *Delftia acidovorans* Haloacid Dehalogenase 2 for Effective Organohalogen Degradation Through Deep Learning and Molecular Dynamics Simulation**
Parichamol Tantisuphakornsakul, 18, Senior, Kamnoetvidya Science Academy, Rayong, Thailand, T: Arjaree Thirach
https://isef.net/project/223829

ENBM075T **Cost-Effective MalariaX: An AI-Optomechatronic System Decoding Expert Reasoning Into a Sub-Micron, Pan-Species Clinically Traceable Pipeline**
Poomjai Pongsriwat, 16, Junior
Natdanai Suksri, 17, Junior
Nattaphong Thaworn, 16, Sophomore
The Prince Royal's College, Mueang Chiang Mai, Thailand, T: Rungkan Wangboon
https://isef.net/project/227073

PHYS013T **Dark Matter Distribution and Its Impact on Galaxy Cluster Properties: A Weak Lensing Approach**
Suphakon Khamfuea, 18, Senior
Ekkawee Tangsailertkul, 18, Senior
Kamnoetvidya Science Academy, Rayong, Thailand, T: Parinya Sirimachan
https://isef.net/project/224070

SFTD030T **StrokeSight: An End-to-End Multimodal AI Platform for Prehospital Stroke Risk Prediction and Clinical Decision Support**
Pannawat Leartmullikaporn, 17, Senior
Chayatita Supatanapong, 16, Sophomore
Pudis Vangtiyong, 17, Junior
The Prince Royal's College, Mueang Chiang Mai, Thailand, T: Krittipong Wachirangkul
https://isef.net/project/224938

TMED069T **BiQancer: A Novel Quantitative Mathematical Biomarker and Automated End-to-End System for Decentralized Cervical Pre-Cancer Detection**
Pongkun Fucheun, 17, Junior
Daichi Tanaka, 16, Sophomore
Carl Tidtijumreonpon, 17, Junior
The Prince Royal's College, Mueang Chiang Mai, Thailand, T: Rungkan Wangboon
https://isef.net/project/227074

TUNISIA

Moknine, Tunisia, TUN002, Tunisian Science and Engineering Fair

ENBM100T **SafeBeat – Predicting Sudden Heart Attacks Using an Intelligent Health Monitoring System Featuring Personalized Diagnostics**
Amine Ouragini, 17, Junior
Youssef Brahim, 16, Junior
Lycee Les Elites, Sousse, Tunisia, T: Mokhtar Saad
https://isef.net/project/228068

ENEV088 **WAVER - An AI-Powered Autonomous System for Hypoxic Zone Remediation and Marine Ecosystem Restoration**
Adam Slimane, 15, Freshman, LPIM (International Pioneer School Monastir), Monastir, Tunisia, T: Mariem Bzeouich
https://isef.net/project/228092

TURKEY

Ankara, Turkey, TUR002, Tubitak Fair

CBIO002 **A Multi-Layer AI-Assisted *in silico* Pipeline for Generalizable Enzyme Engineering via Computational Directed Evolution**
Gokce Ceyda Bilgin, 17, Junior, Bursa Halil Inalcik Bilim ve Sanat Merkezi, Nilufer, Turkey, T: Hakan Ozkaynak
https://isef.net/project/223818

CBIO003 **Mathematical Modeling of Enteric Glia-Derived Immune-Metabolic Crosstalk Reveals Synergistic Strategies to Overcome PRDM9- Mediated Ferroptosis Resistance in Glioblastoma**
Ceren Sel, 17, Junior, Ted Ankara College Foundation Private High School, Ankara, Golbasi, Turkey, T: Gonca Esendemir Eskin
https://isef.net/project/223819

CELL001T **Functional Role of Long Non-Coding RNA LINC01896 in Glioblastoma**
Derin Avci, 16, Sophomore
Ela Koc, 17, Sophomore
Izmir Bahcesehir College 50. Year Science and Technology High School, Izmir, Turkey, T: Burcu Yeni
https://isef.net/project/223833

CHEM003 **Spectroscopic and Colorimetric Sensors for Dual Monitoring of Dopamine by Bismuth Sulfide Nanoflowers as Nanozyme Exhibiting Peroxidase-Mimic Property**
Bengisu Ece Bakirdere, 17, Sophomore, Istanbul Galatasaray University Galatasaray High School, Istanbul, Turkey, T: Vincent Maxime Fabien Girard
https://isef.net/project/223846

CHEM004T **Acorn–Derived Hydrogel for Antifungal Treatment**
Gulsen Ece Ozge, 19, Senior
Kadir Kagan Sahin, 18, Senior
Tubitak Science High School, Kocaeli, Turkey, T: Selin Sagdic
https://isef.net/project/223847

CHEM005T **Development of Innovative Magnetic Microbeads Containing Co-Immobilized Nanoparticles for Toxic Dye Removal**
Aylin Arik, 17, Junior
Muhammed Efe Aydin, 18, Junior
Zeynep Kocadag, 17, Junior
Adiyaman Bilim ve Sanat Merkezi, Adiyaman, Turkey, T: Mehmet Onyilmaz,
https://isef.net/project/223848

EBED004T **EM-A: Electromagnetic Anemometer With Dynamic Sensitivity**
Kerem Gelir, 17, Sophomore
Eren Kaygisiz, 17, Junior
Hasan Yagiz Ozer, 17, Sophomore
Ataturk High School of Science, Istanbul, Turkey, T: Mehmet Durmus
https://isef.net/project/223875

EBED005T **HIS - Haptic Interactive Education System**
Ahmet Yavuz Dugmeci, 16, Freshman
Kaan Eski, 18, Junior
Omer Yahya Yigit, 18, Junior
Istanbul Ticaret Marmara Anadolu Imam Hatip Lisesi, Istanbul, Turkey, T: Mehmet Aybek
https://isef.net/project/224078

ENBM004T **Development of Antimicrobial and Conductive Crosslink Film Scaffolds Effective in Nerve Damage Healing**
Elif Nur Demir, 18, Sophomore
Deniz Baris Colak, 17, Sophomore
Taha Emin Guler, 16, Sophomore
Adnan Menderes Anatolian High School, Bahcelievler, Istanbul, Turkey, T: Huseyin Simsek, T: Tulin Ozdemir, T: Rukiye Kalin
https://isef.net/project/223891

ENBM005T **Fabrication and Characterization of *Helix aspersa* Extract Incorporated Microneedles: A Novel Approach to Wound Healing**
Selin Ece Gazi, 17, Sophomore
Duru Oral, 17, Sophomore
Kartal Prof. Dr Saban Teoman Durali Bilim Ve Sanat Merkezi, Istanbul, Marmara, Turkey, T: Selma Tasli
https://isef.net/project/223892

MATH001 **Early Stage Analysis of Alzheimer's Disease Using Fractal Dimension Calculations**
Eylem Karaarslan, 18, Junior, Kartal Prof. Dr Saban Teoman Durali Bilim Ve Sanat Merkezi, Istanbul, Marmara, Turkey, T: Basak Kok
https://isef.net/project/223944

MCRO003T **Resensitization of Methicillin-Resistant *Staphylococcus aureus* (MRSA) via CRISPR/Cas and Plasmid-Loaded Lipoplexes**
Guney Gundogdu, 16, Freshman
Melis Onal, 16, Sophomore
Mert Senyigit, 16, Sophomore
Izmir Fen Lisesi, Izmir, Bornova, Turkey, T: Filiz Aytan
https://isef.net/project/223969

SFTD003T **Irisense: A Free, Accessible and AI-Powered AAC Application Using Real-Time Eye Tracking for Patients With Severe Speech and Motor Impairments**
Eren Aygun, 17, Junior
Eyup Bilir, 17, Junior
Sinan Gunes, 17, Junior
Batman Turk Telekom Anatolian High School, Batman, Turkey, T: Emre Arslan
https://isef.net/project/223495

TECA001T **HearMe: A Bidirectional Communication System for the Hearing Impaired**
Elif Ece Gokdag, 16, Freshman
Yagmur Ozgul, 16, Freshman
Ataturk High School of Science, Istanbul, Turkey, T: Vedat Sahin
https://isef.net/project/224016

UKRAINE

Kyiv, Ukraine, UKR003, International Science and Engineering Fair Ukraine

EAEV032 **Multitemporal Analysis of Urban Landscape Destruction and Reconstruction in Active Hostilities Zone: Case Study of Moshchun Village, Ukraine**
Sofiia Nevmerzhytska, 16, Junior, Separate Subdivision "Scientific Lyceum" of Zhytomyr Polytechnic State University, Zhytomyr Oblast, Ukraine, T: Illia Tsyhanenko-Dziubenko
https://isef.net/project/225023

EGSD025 **Indefatigable Turbine**
Kateryna Manko, 14, Freshman, Lviv Physics and Mathematics Lyceum at the Ivan Franko National University of Lviv, Lviv, Ukraine, T: Victor Koldun
https://isef.net/project/225251

PHYS043 **Application of Texture Analysis for the Study of the Relationship Between Surface Microrelief and Laser Speckles**
Artem Sachko, 17, Junior, Ukrainian Physics and Mathematics Lyceum of Taras Shevchenko National University of Kyiv, Kyiv, Ukraine, T: Andriy Yakunov
https://isef.net/project/225276

UNITED STATES OF AMERICA

ALABAMA

Auburn, USAL50, Alabama Science and Engineering Fair

BMED066 **Evaluation of Premature Platelet Aging or Platelet Desialylation in Dogs With Immune Thrombocytopenia**
\# Annie Bao, 17, Junior, Auburn High School, Auburn, Alabama, T: Sarah Sharman
https://isef.net/project/227933

EBED050 **A Novel Low-Cost LiDAR-Based Car Collision Avoidance Solution**
Corbin Elijah Hawkes, 17, Senior, Covenant Christian Academy, Huntsville, Alabama, T: Jennifer Hawkes
https://isef.net/project/228029

ETSD056T **Parametric Evaluation of a Deployable Kresling Origami Lattice for Enhanced Automotive Crashworthiness**
Mia Hall, 16, Junior
Michael Zachary Mazur, 17, Junior
Alabama School of Fine Arts, Birmingham, Alabama, T: Hungsin Chin
https://isef.net/project/227966

TMED094 **Exploring the Utilization of Tampon-Derived Vaginal Fluids for Early Detection of Endometrial Cancer**
Danielle George, 18, Senior, Alabama School of Fine Arts, Birmingham, Alabama, T: Hungsin Chin
https://isef.net/project/227962

Birmingham, USAL02, Central Alabama Regional Science and Engineering Fair

ANIM021 **The Effects of Menstrual Product Leachates on Planarian Survival**
Harsha Bheemanathini, 15, Freshman, Alabama School of Fine Arts, Birmingham, Alabama, T: Hungsin Chin
https://isef.net/project/224309

BMED022 **Improving *in vitro* and *in vivo* Radiobiology Models Through Standardized Irradiation and Cerium Oxide Nanoparticle-Mediated Radioprotection**
Will Yicheng Ren, 17, Junior, Hoover High School, Hoover, Alabama, T: Janet Ort
https://isef.net/project/224311

MATS021 **Developing Sustainable Glycerol-Based Monomers for Polymer Blends Using 3D Printing**
\# Sophia B. Guo, 18, Senior, Alabama School of Fine Arts, Birmingham, Alabama, T: Hungsin Chin
https://isef.net/project/224316

PLNT015 **Examining the Phytoremediation Potential of *Pontederia cordata* for Cobalt, Lithium and Lead**
Saisha Sahoo, 15, Sophomore, Alabama School of Fine Arts, Birmingham, Alabama, T: Hungsin Chin
https://isef.net/project/224315

Huntsville, USAL03, North Alabama Regional Science and Engineering Fair

ENBM048 **A Dual-Mode Point-of-Care Assay for Noninvasive Monitoring of Iron Levels in Menstrual Blood**
\# Nikita Prabhakar, 16, Sophomore, Bob Jones High School, Madison, Alabama, T: Jessye Gaines
https://isef.net/project/225179

Mobile, USAL04, Mobile Regional Science Fair

ANIM031 **Creation of an Eastern Oyster With an Easily Modifiable Genome**
Violet Elizabeth Borchert, 15, Sophomore, WP Davidson High School, Mobile, Alabama, T: Ryan Moody
https://isef.net/project/225396

Montgomery, USAL01, Greater East Alabama Regional Science and Engineering Fair

CBIO029 **Quantitative Localization of Seizure Onset Zones Using Time–Frequency Neural Biomarkers**
\# Mira Menon, 17, Junior, Loveless Academic Magnet Program High School, Montgomery, Alabama, T: Phalanda Johnson
https://isef.net/project/224955

CBIO038 **AI/ML-Driven Systems-Level Analysis Identifies CEACAM1 as a Neuroinflammatory-Metabolic Signaling Vulnerability in Parkinson's Disease**
Arnav Aggarwal, 16, Junior, Loveless Academic Magnet Program High School, Montgomery, Alabama, T: Phalanda Johnson
https://isef.net/project/225010

ENBM044 **Using Arduino-Based Components to Analyze Biomechanical Forces Against Qualitative Feedback**
Alexis Nicole Saffold, 18, Senior, Dothan High School, Dothan, Alabama, T: Jeanne Davis
https://isef.net/project/224961

ALASKA

Anchorage, USAK50, Alaska Science and Engineering Fair

ANIM050 **Annual Patterns, Seasonal Shifts, and Modeled Trends in Polar Bear Observations in the Prudhoe Bay Industrial Footprint**
Kevin Zhang, 15, Junior, West Anchorage High School, Anchorage, Alaska, T: Shannon Donley
https://isef.net/project/227782

ARIZONA

Phoenix, USAZ50, Arizona Science and Engineering Fair

BCHM029 **The Role of VEGF and FGF21 in Restoring the Hypotrophic Response of Endostatin in Neonatal Rat Ventricular Myocytes**
Nikhil Puttamraju, 16, Junior, Paradise Valley High School, Phoenix, Arizona, T: Pamela Fulk
https://isef.net/project/227241

FINALIST DIRECTORY

BEHA045 **REWIRE: Realtime Evaluation of Waves for Intervention-Based Reinforcement of Engagement — A Novel Approach to Enhancing Attention and Memory by Leveraging Neuroplasticity via Noninvasive Real-Time Electroencephalogram (EEG) Guided Neuroadaptive Feedback**
Amaira Srivastava, 15, Freshman, Arizona College Prep High School, Chandler, Arizona, T: Megan Larsen
https://isef.net/project/227292

CBIO068 **A Multi-Omics and Machine Learning Approach for Identifying Potential Salivary Biomarkers of and Treating Major Depressive Disorder**
\# Ananya Lakkaraju, 17, Junior, Hamilton High School, Chandler, Arizona, T: Jill Kenyon
https://isef.net/project/227282

CBIO082 **XenoFold AI: A Novel Application for Chemistry-Led, AI-Powered Candidate Enzyme Design for the Xenobiotic Degradation of Pollutants**
Kinsley Reese Torres, 16, Sophomore, Perry High School, Gilbert, Arizona, T: Karen Hutchinson
https://isef.net/project/227707

CHEM049 **A Sustainable Circular Approach to Lithium-Ion Battery Recycling: Optimizing Innocuous Acetic Acid Lixiviation for Exclusive Zinc Recovery From Simulated Black Mass**
Athulya Rajesh, 16, Junior, Arizona College Prep High School, Chandler, Arizona, T: Megan Larsen
https://isef.net/project/227285

EBED048 **An On-Device AI System for Enhancing ATC Pilot Communications**
\# Mikolas Alexander Schwickert, 17, Junior, ASU Prep Digital, Tempe, Arizona, T: Brooke Toon
https://isef.net/project/227595

ENBM073 **Synthetic Photoswitchable Expression and Temporal Response Analyzer (SPECTRA): An Integrated 3D-Printed Hardware Platform for Real-Time Optogenetic Control and Growth Modeling**
Chuck Wang, 16, Junior, ASU SCENE, Tempe, Arizona, T: Nathan Newman
https://isef.net/project/226983

ENBM079 **Nanoparticle Enabled, Rapid Detection of Infectious Diseases at Femtomolar Sensitivity**
Baoya Fan, 16, Sophomore, Hamilton High School, Chandler, Arizona, T: Jill Kenyon
https://isef.net/project/227271

MATS067 **De la Raiz al Remedio: Engineering Fiber-Gauze Infused With Traditional Mexican Plants**
\## Estefany Valenzuela Regalado, 18, Senior, Harvest Preparatory Academy, Yuma, Arizona, T: Alfred Santos
https://isef.net/project/227284

MATS074 **ESSENCE- Enzyme Split System Enabling Non-Wash Colorimetric Evaluation: A Novel Colorimetric Inducing Dual Biopolymer Nanocomposite Fixed Within an Anisotropic Vertical-Flow Nitrocellulose Matrix for the Spatial Mapping of Interleukin-1a and Cathepsin-K for Skin Cancer Differentiation and Staging**
Rahul Madhu, 15, Sophomore, Arizona College Prep High School, Chandler, Arizona, T: Megan Larsen
https://isef.net/project/227614

PHYS056 **The Yarlagadda Criterion: Quantifying Relativistic Deformation of Chaotic Phase Boundaries in the Three-Body Problem for High-Precision Orbital Stability and Deep-Space Navigation**
Chaithra Yarlagadda, 16, Junior, Hamilton High School, Chandler, Arizona, T: Jill Kenyon
https://isef.net/project/227293

PLNT036 **A Novel Modified Adsorptive Composite for the Targeted Immobilization and Long-Term Stabilization of Lead and Copper in Contaminated Soil Systems To Restore Crop Viability**
Jeel Changela, 16, Junior, Arizona College Prep High School, Chandler, Arizona, T: Megan Larsen
https://isef.net/project/227240

ROBO048T **Modular Magnetic-Tracked Robot for Ferromagnetic Surface Traversal**
Jason Phan, 18, Senior
Ryan Lloyd Phan, 14, Freshman
Gilbert Classical Academy, Gilbert, Arizona, T: Vanessa Waite-Ameziane
https://isef.net/project/227243

TECA014T **Cadenza: An Effective, Data-Driven Practice Tool for Musicians**
Aritro Chatterjee, 18, Senior
Aariya Udhayasankar, 18, Senior
Liam Whelan, 18, Senior
Paradise Valley High School, Phoenix, Arizona, T: Pamela Fulk
https://isef.net/project/227265

TMED088 **NeuroTracer: Unraveling Prediagnostic Signals for Early Onset Parkinson's Disease From Archimedean Spiral Drawings Using the 2D Wavelet Transform, Recurrence Quantification Analysis, and Convolutional Neural Networks**
Diya Chitral Shah, 17, Junior, BASIS Chandler, Chandler, Arizona, T: Daniel Hodge
https://isef.net/project/227690

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

ENBM028 **Two-Phase Electrochemical Detection of L-Tryptophan as a Kynurenic Acid Analog**
Daniel Dilone, 16, Sophomore, Buena High School, Sierra Vista, Arizona, T: Beverly Adams
https://isef.net/project/224236

ENEV051T **AT-TR (All Terrain Trash Robot): A Trash Collecting Robot That Used AI to Traverse a Diverse Array of Terrains and Collect Different Pieces of Trash, Store it Inside the Robot**
Brody Joshua Alexander, 15, Sophomore
Ethan Gilbert Juarez, 16, Junior
Jessalyn E. Lopez, 18, Senior
Buena High School, Sierra Vista, Arizona, T: Amy Martinez
https://isef.net/project/225607

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

ANIM024 **Drawn by Scent: Effects of β-Cyclodextrin and Cellulose Fiber Paper-Encapsulated Microbial Volatiles on Insect Olfactory-Mediated Attraction**
Yessica Perez, 17, Junior, Harvest Preparatory Academy, Yuma, Arizona, T: Alfred Santos
https://isef.net/project/224577

CELL021 **Investigating Chemoattractant-Specific Temporal Activation of mTORC2–PKC Signaling Pathways in Human Breast Epithelial Cells**
Finnegan McGill, 18, Senior, Tanque Verde High School, Tucson, Arizona, T: Grazyna Zreda
https://isef.net/project/224581

ENEV034 **Reusable Magnetite-Activated Carbon for PFAS Removal and Destruction via Microwave Pyrolysis**
Henry Reginald Root, 17, Senior, University High School, Tucson, Arizona, T: Elyse Wexler
https://isef.net/project/224448

MATS025T **Casting a Healthier Future: Electrochemical and Microstructural Characterization of the Cu-Zn-Al-Sn Alloy System for Antimicrobial Use**
Roberto Garcia Briones, 18, Senior
Karina Noelle Kodama, 17, Junior
Empire High School, Tucson, Arizona, T: Michael Frank
https://isef.net/project/224444

MATS032 **Hermosura Natural: Development and Analysis of an Antimicrobial Lipstick Using Epazote, Guayaba Leaf, Jamaica, and Cochineal Pigment**
Alba Emily Sampson, 18, Senior, Harvest Preparatory Academy, Yuma, Arizona, T: Alfred Santos
https://isef.net/project/224575

PHYS028 **Investigating Doping and Structural Transitions in TaCrP to Create a Novel Superconductor**
Andrew Wu, 17, Junior, BASIS Tucson North, Tucson, Arizona, T: Bin Lin
https://isef.net/project/224443

PLNT018 **KáktosPatch: Monitoring Necrosis in *Carnegiea gigantea* (Saguaro Cactus) Using an Engineered Smart Bandage and Mobile Application**
Jorge Antonio Covarrubias, 17, Senior, Harvest Preparatory Academy, Yuma, Arizona, T: Alfred Santos
https://isef.net/project/224576

ROBO023 **Engineering a Smart Mushroom Growing System for Sustainable Nutrition**
Julie Faith Rodriguez, 17, Senior, Andrada Polytechnic High School, Tucson, Arizona, T: Jeanne Wages
https://isef.net/project/224573

TMED024 **Promising Directions of Repurposing 4-AP To Promote Hair Follicle Regeneration and Collagen Remodeling Following Severe Burn**
Aleena Rafiyath, 18, Senior, BASIS Oro Valley, Oro Valley, Arizona, T: Angelique Krencius
https://isef.net/project/224473

ARKANSAS

Conway, USAR50, Arkansas State Science Fair

BMED059 **Comparing the Effects of Chronic Low-Dose Exposure of Legacy vs. New-Generation PFAS on Liver Toxicity**
Aarush Shashwat Goyal, 18, Senior, Arkansas School for Mathematics, Sciences and the Arts, Hot Springs, Arkansas, T: Patrycja Krakowiak
https://isef.net/project/227611

ENBM089T **Quantifying Enzymatic Activity and pH to Create a Wearable Smart Bandage for Partial-Thickness Burns**
Mairesse Tania Rianto, 16, Junior
Sana Afsheen Shaik, 15, Junior
Bentonville High School, Bentonville, Arkansas, T: Susan Brock
https://isef.net/project/227612

ETSD052 **Effects of Gurney Flap Height on Low Reynolds Number Airfoil Performance**
Yogi Patel, 16, Sophomore, Little Rock Central High School, Little Rock, Arkansas, T: Patrick Foley
https://isef.net/project/227609

MATH040 **Integration to Segregation: Analyzing Clustering Coefficients in the Brain Across Arithmetic Performance**
Nathan Ronald Harbut, 18, Senior, Arkansas School for Mathematics, Sciences and the Arts, Hot Springs, Arkansas, T: Josh Ulrey
https://isef.net/project/227610

MCRO037 **Resistance Under Pressure: Tracking the Emergence of Mupirocin Resistance in *S. epidermidis***
Joseph Isaac Cotton, 17, Senior, Arkansas School for Mathematics, Sciences and the Arts, Hot Springs, Arkansas, T: Whitney Holden
https://isef.net/project/227608

MCRO041T **Battling Algal Blooms: How Rotifers Keep *Microcystis* in Check**
Anderson Beau Goldthorpe, 18, Senior
Stevie Bing Watkins, 17, Senior
Arkansas School for Mathematics, Sciences and the Arts, Hot Springs, Arkansas, T: Patrycja Krakowiak
https://isef.net/project/227844

Fayetteville, USAR03, Northwest Arkansas Regional Science and Engineering Fair

EBED019 **An Autonomous Ambient Temperature Detection and Cooling System Designed for Overheating Vehicles**
Enrique Garcia, Jr., 16, Junior, Alma High School, Alma, Arkansas, T: Jeana Parker
https://isef.net/project/224441

PHYS025 **A Low-Cost Portable Digital Holographic Lens-Free Imaging System for 3D Analysis of Insect Microstructures and Ecological Applications**
Yangxiao (Olivia) Ou, 19, Senior, Fayetteville High School, Fayetteville, Arkansas, T: Matthew Holden
https://isef.net/project/224329

SFTD022T **ExpressBuddy: An AI-Powered Companion With Impediment-Aware Speech Processing for Children With Autism and Speech Disorders**
Sanjay Shreeyans Javangula, 17, Senior
Soham Shekhar, 18, Senior
Bentonville High School, Bentonville, Arkansas, T: Susan Brock
https://isef.net/project/224417

Hot Springs, USAR07, West Central Regional Science Fair

CELL014 **Genomic Instability Drives Cancer: Purification and Characterization of HLTF Helicase and Pol K Polymerase**
Tanvi Chowdary Marupally, 18, Senior, Arkansas School for Mathematics, Sciences and the Arts, Hot Springs, Arkansas, T: Patrycja Krakowiak
https://isef.net/project/224157

MATS016 **Mechanical Properties of PETG vs. PHBHHx for Clear Aligner Application**
Miranda May Lee, 18, Senior, Arkansas School for Mathematics, Sciences and the Arts, Hot Springs, Arkansas, T: Brian Monson
https://isef.net/project/224159

TMED021T **Discovering a Path From Molecular Modeling to Alzheimer's Phytotherapeutics: Characterizing Novel GSK3β Inhibitors *in silico* and *in vitro***
Nathan Grady, 18, Senior
Emily Lin, 18, Senior
Kaitleen Toh, 18, Senior
Arkansas School for Mathematics, Sciences and the Arts, Hot Springs, Arkansas, T: Patrycja Krakowiak
https://isef.net/project/224156

Jonesboro, USAR04, Northeast Arkansas Regional Science Fair

ANIM048 **Paws and Playlist**
Sarah Jane Worsley, 17, Senior, Harrisburg High School, Harrisburg, Arkansas, T: Chad Lacy
https://isef.net/project/227581

CHEM066T **The Study of Electrical Conductance in Different Commercially Available Sports Drinks**
Cash Edwards, 16, Sophomore
Jake Scheidler, 16, Sophomore
Piggot High School, Piggot, Arkansas, T: Hannah Poole
https://isef.net/project/228093

Little Rock, USAR01, Ouachita Mountains Regional Science & Engineering Fair

TECA005 **Gaming Test Typing Speed**
James Isaac Winchel, 15, Sophomore, Mountain Pine High School, Mountain Pine, Arkansas, T: Deana Hughes
https://isef.net/project/224272

Little Rock, USAR05, Central Arkansas Regional Science and Engineering Fair

ANIM017 **Non-Invasive Monitoring of Bee Health and Honey Production and Impact of Inclement Weather**
Tony Hayar, 15, Sophomore, Little Rock Central High School, Little Rock, Arkansas, T: April Owen
https://isef.net/project/224248

BCHM009 **Gamma-Tocotrienol Alleviates Chemotherapy-Induced Cardiotoxicity by Promoting Novel Multiscale Mitochondrial Bioenergetic and Structural Restoration**
Siddharth Sridharan, 18, Senior, Little Rock Central High School, Little Rock, Arkansas, T: Patrick Foley
https://isef.net/project/224252

CELL016 **Genistein Reduces PFOA-Induced Lipid Accumulation and Cell Proliferation in Human Hepatocellular Carcinoma Cells**
Ellie Kim, 17, Junior, Little Rock Central High School, Little Rock, Arkansas, T: April Owen
https://isef.net/project/224237

EAEV021 **AgriCast: A Novel Environmentally-Driven Framework for In-Season Crop Yield Forecasts via Machine Learning**
Bennet Chen, 17, Junior, Little Rock Central High School, Little Rock, Arkansas, T: Lee Conrad
https://isef.net/project/224273

ETSD018 **Design Synthesis, Dynamic Modeling, and Machine Learning–Enhanced Control of a Dual-Axis Thrust Vectoring Gimbal for Active Stabilization in Small-Scale Rocket Systems**
Vishak Meenachi, 15, Sophomore, Little Rock Central High School, Little Rock, Arkansas, T: Patrick Foley
https://isef.net/project/224169

Monticello, USAR06, Southeast Arkansas Regional Science Fair

ROBO027 **Meta-Reinforcement Learning Framework for Network-Level Bridge Management**
Zaynab Ahmad Al-Shami, 16, Junior, Arkansas Connections Academy, Bentonville, Arkansas, T: Daniel Traylor Traylor
https://isef.net/project/224670

CALIFORNIA

Bakersfield, USCA16, Kern County Regional Science Fair

ETSD020 **Computations Fluid Dynamics Based Evaluation of Cryogenic Heat Transfer in Helical Tube Heat Exchangers**
Eric Rodney Nahama, 17, Junior, Bakersfield High School, Bakersfield, California, T: Eli Hamm
https://isef.net/project/224293

TMED015 **3D Cerebranet++: State-of-the-Art 3D Structural Image Reconstruction Model for Breast Cancer Brain Metastasis: Attention-Guided 3D MRI Inpainting for Structural Reconstruction of Brain Tumor Regions via Composite Spatial-Frequency Optimization**
Simar Singh, 17, Junior, Bakersfield Christian High School, Bakersfield, California, T: Rachel Welch
https://isef.net/project/223627

Bonita, USCA05, Greater San Diego Science and Engineering Fair

BEHA029 **Neuro-Behavioral Convergence: A Multimodal Approach to Stroke Risk Assessment**
Janet Yang, 17, Junior, Canyon Crest Academy, San Diego, California, T: Ed Gerstin
https://isef.net/project/225264

CBIO044 **Omni-Prot: Unifying Protein Function Prediction With PLM-Centric Fusion**
Ryan Rezaei, 18, Senior, Canyon Crest Academy, San Diego, California, T: Albert Dul
https://isef.net/project/225262

CBIO053 **BeeCast: A Novel Predictive Model Using Neural Networks to Predict Colony Collapse**
Charles Brum, 15, Freshman, Cathedral Catholic High School, San Diego, California, T: Jeanette Lopatka
https://isef.net/project/225531

CELL024 **Inducible TLR4 Decoy for Targeting Microglial Activation to Reduce Neuronal Degeneration in Parkinson's Disease**
Claire Lim, 17, Junior, Canyon Crest Academy, San Diego, California, T: Ed Gerstin
https://isef.net/project/224745

EBED026 **Configurable Electromagnetic Refreshable Tactile Display With FDM Printable Bistable Cam**
Ethan Hu, 15, Freshman, The Bishop's School, La Jolla, California, T: Ben Heldt
https://isef.net/project/224652

ENBM065 **Visual Field Redirection for Central Vision Loss: Passive Metasurface Design and Computational PRL Prescription**
Kayley Xu, 16, Junior, The Bishop's School, La Jolla, California, T: Marcus Milling
https://isef.net/project/225532

ETSD040 **Novel Scalable Multiphase Autonomous Vehicle Systems for Emerging Markets**
Shounak Ray Chaudhuri, 17, Senior, Francis Parker School, San Diego, California, T: J.P. Pierce
https://isef.net/project/225424

ROBO038T **Design and Evaluation of a Behaviorally Grounded, Caregiver-Governed AI Companion for Individuals With Memory Impairment**
Giles Del Priore, 18, Senior
Ronald Johnathan Wyatt, 18, Senior
Eastlake Highschool, Chula Vista, California, T: Amanda Williams
https://isef.net/project/225573

Camarillo, USCA17, Ventura County Science Fair

BMED051 **Investigating the Synergistic Effect of Ivermectin and C-Phycocyanin on Cell Viability in Human Triple Negative Breast Cancer Cells**
Olivia Grace Johnson, 17, Senior, Thousand Oaks High School, Thousand Oaks, California, T: Nikki Malhotra
https://isef.net/project/227111

Danville, USCA09, HITACHI Science and Engineering Fair, Alameda County

BMED043 **Protein Assassins: Screening for Improved Degraders to Reverse Tumor Immortality**
Joshua Wu, 18, Senior, Dublin High School, Dublin, California, T: Julianne Sundstrom
https://isef.net/project/225656

CBIO049 **A Multimodal Approach to Real-Time Seizure Prediction Using Discreet Wearables**
Yookta Pandit, 14, Freshman, Quarry Lane School, Dublin, California, T: Jessica Nasseri
https://isef.net/project/225398

EBED036T **Intelligent Face-Controlled Assistive System for Precise Object Manipulation: Assisting Individuals With Upper Limb Motor Impairments**
Akshat Ranjan, 17, Junior
Akarsh Khare, 16, Junior
American High School, Fremont, California, T: Neelima Sangeneni, T: Henry Fung
https://isef.net/project/225634

ENEV053T **Ferro-Filter: A Ferrofluid-Based Microplastic Filtration Module for Urban Water Systems in Continuous-Flow Applications**
Yuhaendan Bhaskaran, 17, Senior
Shaunak Jog, 18, Senior
Abhay Polavajram, 18, Senior
American High School, Fremont, California, T: John Shockley
https://isef.net/project/225635

ROBO040T **DroneSuite: Affordance-Based Hierarchical Active Inference for Autonomous Drones**
Satyaki Maitra, 16, Sophomore
Harshil Kartik Shah, 16, Sophomore
Mission San Jose High School, Fremont, California, T: Ling Ru Kuei
https://isef.net/project/226541

TMED053 **Beyond the MRI: A Nonlinear Machine Learning Framework for Predicting Alzheimer's Progression Using Accessible Clinical Measures in Underserved Latinx Populations**
Rayan Madan Ashish, 17, Junior, The Head Royce School, Oakland, California, T: Jennifer Brakeman
https://isef.net/project/225655

TMED063T **NeuroAcoustix: Revolutionizing Brain Health Through Sound**
Aashika Kumar, 15, Sophomore
Shivika Srivastava, 17, Junior
American High School, Fremont, California, T: Caroline Jeyadoss, T: May Liu
https://isef.net/project/226743

Fresno, USCA03, Fresno County Science Fair

CHEM034 **Synthesis and Evaluation of Pyridyl Thioester-Based F-Tags for Rapid Analysis of Amino Acids by 19F NMR Spectroscopy**
Olaf Stanislaw Muchalski, 17, Senior, Clovis West, Fresno, California, T: Kassuandra Messick
https://isef.net/project/225013

ENEV050 **Functionalized Bio-Composite Sorbent: Novel Core-Shell Beads With Encapsulated Functionalized Biochar Engineered for Selective Chemical Removal of Waterborne Contaminants, Affording Magnetic Retrieval for Optional Circular Water Management**
\# Julianne Luna, 16, Junior, Sanger High School, Sanger, California, T: Davin Aalto
https://isef.net/project/225403

PLNT025T **PReEMPT—A New and Unique Method for Very Early Detection of Powdery Mildew Infection Using an AI-Based Hyperparameter-Tuned Convolutional Neural Network and Full-Spectrum Camera**
Arnav Gupta, 16, Sophomore
Achuth Vinay, 16, Junior
Clovis North High School, Fresno, California, T: Kasey Duttle
https://isef.net/project/225404

PLNT026 **An Efficient NDVI-Based NARX Machine Learning Model for Predicting Soil Moisture in Leafy Vegetable (*Basella alba*) for Precision Irrigation**
\# Kinnoree Rabeya Pasha, 16, Junior, Clovis North High School, Fresno, California, T: Kasey Duttle
https://isef.net/project/225414

Novato, USCA06, Golden Gate STEM Fair

BMED023 **Evaluating Active, Passive, and Electromuscular Recovery Methods on Pitching Performance and Fatigue in High School Athletes**
Arnav Prathipati, 17, Junior, Carlmont High School, Belmont, California, T: Gay Buckland-Murray
https://isef.net/project/224426

MATS034 **Tough Turbines: Exploring the Physical Properties of Epoxy Coatings With Graphene Nanoplatelets and Silicon Carbide for Hydropower Systems in Untapped Flows**
Violet Rae MacAvoy, 17, Junior, San Mateo High School, San Mateo, California, T: Jimmy Ikeda
https://isef.net/project/224746

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

ANIM001 **Ant Engineering Across Scales: Linking Species Diagnosis to Nest Architecture and Validating Gel Substrate for High-Throughput Excavation Experiments**
Adam Taiyu Lu, 17, Senior, Palos Verdes Peninsula High School, Rolling Hills Estates, California, T: Mark Greenberg
https://isef.net/project/222885

CELL004 **Pyrvinium: A Novel Antifungal Agent With Unique ROS-Dependent Autophagy Induction in *Candida albicans***
Tanner Sakamoto, 17, Junior, Palos Verdes Peninsula High School, Rolling Hills Estates, California, T: Mark Greenberg
https://isef.net/project/223836

EBED009 **A Novel Hybrid Equalization Technique for High-Speed Data Communications**
Anish Anand, 18, Senior, Palos Verdes Peninsula High School, Rolling Hills Estates, California, T: Mark Greenberg
https://isef.net/project/223879

ENBM010 **UV-Crosslinking Poly(vinyl alcohol)-Methacrylate for Complex Brain Aneurysms**
Rachel Haeun Lee, 17, Junior, Palos Verdes Peninsula High School, Rolling Hills Estates, California, T: Mark Greenberg
https://isef.net/project/223897

ETSD005 **A Novel Adaptive Landing Gear Design to Reduce Stress During Crosswind Landings**
Cheuk Kei Lu, 16, Junior, Palos Verdes Peninsula High School, Rolling Hills Estates, California, T: Mark Greenberg
https://isef.net/project/223934

MCRO005T **Quorum Sensing Inhibition via Traditional Chinese Medicinal Plant-Derived Phytochemicals: A Sustainable and Targeted Anti-Virulence Strategy**
\# Leila Veronica Gheysar, 17, Senior
\# Kaili Yiqian Tseng, 17, Senior
Palos Verdes Peninsula High School, Rolling Hills Estates, California, T: Mark Greenberg
https://isef.net/project/223971

PLNT002 **Effect of a Static Uniform Magnetic Field on Lettuce Seed Germination Rate Monitored by Near Real-Time Imaging**
Mark Segal, 15, Freshman, Palos Verdes Peninsula High School, Rolling Hills Estates, California, T: Mark Greenberg
https://isef.net/project/223987

SFTD007 **CLEAR: A Congestion-Limited, Event-Aware Reinforcement Learning Solution for Preventing Cooperation Collapse in Multi-Agent Systems**
Aiden Kwon, 18, Senior, Palos Verdes Peninsula High School, Rolling Hills Estates, California, T: Mark Greenberg
https://isef.net/project/224010

Riverside, USCA15, Riverside County Science and Engineering Fair

BMED030T **Integrated Deconvolution of Oxidative, Colloidal, and Rheological Failure Modes Governing Microvascular Oxygen Delivery in Hemoglobin-Based Oxygen Carriers Under Field-Mimicking Thermal Cycling**
Adithiyan Sathees, 17, Junior
Nilay Milan Vora, 17, Junior
Centennial High School, Corona, California, T: Lindsay Stotts
https://isef.net/project/224760

MATS041T **Thermal Behavior of Modified Cementitious Composites Under Simulated Wildfire Exposure**
Filza Jamal, 15, Sophomore
Deeba Siddiqui, 16, Sophomore
Santiago High School, Corona, California, T: Tracy Espinosa
https://isef.net/project/225214

PLNT021T **Phytochrome B Output Module Sets Thermosensing Photobody Number and Tunes *Arabidopsis* Adaptation**
Erik Chen, 16, Junior
Tingdan Deng, 17, Junior
Shivani Kaushal Talati, 16, Junior
Martin Luther King High School, Riverside, California, T: Andrea Oliveria Taylor,
https://isef.net/project/224759

Sacramento, USCA04, Sacramento Regional Science and Engineering Fair

EBED034 **Universal CPR AI Assistance Response Engine (U-CARE): Development and Evaluation**
Aarit Atreja, 17, Junior, Davis Senior High School, Davis, California, T: Jonathan Langberg
https://isef.net/project/225399

MCRO021 ***In situ* Cryo-Em Structures Reveal Mechanisms of Sheathed Flagellar Assembly, Rotation, and Disassembly in *Vibrio cholerae***
Avijay Sen, 18, Senior, Franklin High School, Elk Grove, California, T: Jeffrey Harvey
https://isef.net/project/225012

TMED048 **SEABED: Secure and Efficient AI-Based Breast Cancer Detection Using Low-Cost Edge Devices**
David Tran, 17, Junior, Franklin High School, Elk Grove, California, T: Tiffany Runyan
https://isef.net/project/225400

Salinas, USCA12, Monterey County Science and Engineering Fair

ENEV035 **A Multimodal Late-Fusion of Weather Data and Satellite Imagery for Wildfire Prediction**
Hajun Kim, 17, Junior, Stevenson School, Pebble Beach, California, T: Becca Upjohn
https://isef.net/project/224450

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

BMED058T **Breath-Based Volatile Organic Compound Profiling as a Noninvasive Approach to Detect Eosinophilic Esophagitis**
Dominic Bernardi, 17, Senior
Zackary Alan Lewis, 18, Senior
Redlands East Valley High School, Redlands, California, T: Andrew Hoch
https://isef.net/project/227591

FINALIST DIRECTORY

EGSD030 **The Thermoelectric Generator Using Hot Sand to Store and Generate Electricity**
##
Michael Sean Stodelle, 17, Junior, Redlands East Valley High School, Redlands, California, T: Emil Radoi
https://isef.net/project/225458

MATS075T **Purifire: A Lightweight Regenerative VOC Filter Using Zeolite–TiO_2 Photocatalytic Nanoparticles for Firefighters in Wildfire Regions**
Bettina Lee, 17, Junior
Faustin Zhang, 17, Junior
Los Osos High School, Rancho Cucamonga, California, T: Elizabeth Gonzales, T: Elizabeth Gonzalez
https://isef.net/project/227618

ROBO056 **PHOENIX: Perching Hybrid Omni-Environment Navigation Integrated eXplorer: A Modular Aerial-Ground AI-Based Biomimetic Robotic System for Two-Body Locomotion**
##
Leila Quyen Maleki, 17, Senior, Chino High School, Chino, California, T: Shaddy Viste
https://isef.net/project/227723

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

ANIM034 **ApiSense: A Weather-Aware Multimodal Framework for Environmental Pesticide Contamination Detection Using Honey Bees as Biosensors**
#
Ethan Liang, 17, Junior, The Harker School, San Jose, California, T: Anu Datar
https://isef.net/project/225815

CBIO039 **THALis: A Topology-Preserving Brain-Computer Interface for Dexterous Non-Invasive EEG-Driven Hand Control**
Krishna Pratik Bhatt, 16, Junior, BASIS Independent Silicon Valley, San Jose, California, T: Jon Noble
https://isef.net/project/225196

CBIO040 **Functional Modeling of the Gut Microbiome Reveals Systemic Disease-Associated Signatures Related to Extracellular Protease Activity**
Arhan Chakravarthy, 16, Junior, Homestead High School, Cupertino, California, T: Dara Alleyne-Levy
https://isef.net/project/225197

CELL032 **Modulation of Neural Stem Cell Fate by Reactive Astrocytes**
Ashley Hein, 17, Junior, Lynbrook High School, San Jose, California, T: Jason Lee
https://isef.net/project/225192

ENBM050 **ATLAS: A Multi-Axis Ankle-Foot Prosthetic With Adaptive Tendon Stiffness for Locomotor Assistance and Stability**
Rig Saini, 16, Junior, Santa Clara High School, Santa Clara, California, T: Arielle Martinka
https://isef.net/project/225205

ENBM059 **Self-Sensing, Shape-Morphing Respiratory Ventilator Using Hydraulically Amplified Self-Healing Electrostatic Artificial Muscles**
#
Evan Zhang, 17, Senior, The Harker School, San Jose, California, T: Mike Pistacchi
https://isef.net/project/225209

MATH023 **New Frameworks in Mathematics: Calculus Without Calculus, fCWC, and WJ-fC: CWC-Series Converge When Taylor Series Cannot, Infinite Families of Identities, Multi-Field Applications from Biotech to AI, Novel Fundamental Operators, and Open Conjectures**
Wyndia Ohm, 19, Senior, Homeschool- Sunnyvale, Sunnyvale, California, T: Rajalakshmi Kollengode
https://isef.net/project/225213

MATS040 **Cost-Effective Fabrication of Biodegradable Paper Towels from Food-Waste Derived Cellulose and Pectin Crosslinked with Ca2+: A Novel Biopolymer Composite Strategy for Enhancing Wet Strength and Absorbency**
Arnav Kodavati, 17, Junior, Lynbrook High School, San Jose, California, T: Anshul Agarwal
https://isef.net/project/225195

PHYS039 **Orbital Reconstruction and Discovery of Hidden Circumbinary Planets Through Eclipse Timing Residuals and N-Body Dynamics**
Elizabeth Zhang, 17, Junior, The Harker School, San Jose, California, T: Mike Pistacchi
https://isef.net/project/225194

TMED040 **Wired for Survival: Modeling Gene Networks To Identify Resilience and Neuron Subtypes in ALS via Graphical Optimization**
Shripriya Kalbhavi, 16, Junior, Lynbrook High School, San Jose, California, T: Isaac Pallone
https://isef.net/project/225193

TMED043 **OncoTwin: A Multi-Modal, Treatment-Based Digital Twin for Cancer Recurrence Risk Prediction and Biomarker Discovery**
Dhyana Desai, 16, Sophomore, Silver Creek High School, San Jose, California, T: Hector Alarcon
https://isef.net/project/225206

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

CBIO091 **Antibody Deimmunization via Targeted, Machine Learning Guided Sequence Design Using Fine Tuned Protein Language Models for Computationally Efficient Design**
Amelie Pan, 17, Junior, Pacific Collegiate School, Santa Cruz, California, T: Kyle Walters
https://isef.net/project/227998

ROBO050 **Design and Development of an Autonomous Wildfire Suppression Firefighting Robot**
Aditya Menon, 17, Junior, Pacific Collegiate School, Santa Cruz, California, T: Aaron Clegg
https://isef.net/project/227504

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

CBIO051 **Resting-State Electroencephalogram Biomarkers of Cognitive Impairment in Parkinson's Disease: A Theory-Driven Predictive and Interpretable Modeling Study**
Princess Ugochi Otegbulu, 15, Sophomore, California Academy of Math and Science, Carson, California, T: Denise Sarno
https://isef.net/project/225417

EBED038 **Hindsight: An End-to-End Ultra-Low-Cost Wearable Safety Radar for Pedestrians With Edge-Executed Machine Learning**
Cavon Hajimiri, 16, Junior, Polytechnic School, Pasadena, California, T: Robin Barnes
https://isef.net/project/225808

ENEV057 **Experimental Investigation of an Advanced System to Prevent Pollutant Ingress Into Vehicles**
Neil Hu, 18, Senior, Temple City High School, Temple City, California, T: Jeannie Martinez
https://isef.net/project/226747

SFTD046 **Tonguage: A Unified Computational Human-Machine Interface Framework Expanding Digital Access for Individuals With Severe Motor Disabilities**
Hollie Tang, 15, Sophomore, Glen A. Wilson High School, Hacienda Heights, California, T: Jungsoo Han
https://isef.net/project/226570

Thousand Oaks, USCA50, California Science & Engineering Fair

CBIO087 **Computational Pipeline for High-Throughput 3D Quantification of Cell States in Polymorphonuclear Neutrophils**
Emma Qi Liu, 16, Junior, The Bishop's School, La Jolla, California, T: Marcus Jaiclin
https://isef.net/project/227862

CHEM065 **Renewable Ammonia Electrochemical Synthesis by Glow Discharge With an Iron Based Catalyst**
Ihan Sung, 17, Junior, Eastlake Highschool, Chula Vista, California, T: Amanda Williams
https://isef.net/project/227960

EAEV067 **Physics-Anchored Short-Term Earthquake Hazard Characterization Using Large-Scale Seismic Data Waveform-Derived Sequence Information Improves Leakage-Safe Short-Term Regional Hazard Indicators Beyond Catalog-Only Baselines**
Hao Lin, 17, Junior, Mira Costa High School, Manhattan Beach, California, T: Ernesto Nodado
https://isef.net/project/228007

ENBM097 **Kiri-Grip: Integrated Kirigami-EMG Robotic Hand With Geometric Optimization of Cut Topologies for Assistive Grasping**
Serena Yuan, 15, Freshman, Menlo School, Atherton, California, T: James Dann
https://isef.net/project/227958

ENEV084 **Autonomous Drone-Based Early Detection and Precision Control of Wheat Diseases**
Shreyan Mitra, 16, Junior, California High School, San Ramon, California, T: Rae Crandall
https://isef.net/project/227959

MATH041 **The Repelling Propellers Problem: Optimizing Energy Configurations in Orbital Patterns**
Riya Mehrotra, 17, Junior, Los Altos High School, Los Altos, California, T: Darren Dressen
https://isef.net/project/227961

Trabuco Canyon, USCA01, Orange County Science and Engineering Fair

BCHM024 **A Novel Method to Efficiently Identify Functional Pathways by Building an Increasingly Complex Interactome of Directly Interacting Proteins**
Isabelle Tran, 16, Sophomore, Laguna Beach High School, Laguna Beach, California, T: Cassandra Brooker
https://isef.net/project/226548

EBED040 **Quantitative Characterization of LoRa Signal Propagation: Discrepancies Between Analytical Link-Budget Models and Empirical Field Measurements for a Novel Ground-Based LoRa Grid Network Tracking and Search-and-Rescue System**
William Lewis Yuan, 17, Junior, Fairmont Preparatory Academy, Anaheim, California, T: Afsaneh Miller
https://isef.net/project/226551

ENBM068 **A Multimodal Early-Warning Framework for Respiratory Exacerbation Prediction via Acoustic, Genomic and Environmental Data Fusion**
Kourosh Khorrami, 17, Senior, Servite High School, Anaheim, California, T: John Paul Jugo
https://isef.net/project/226552

MATH031 **Using Mathematical Modeling to Study Refund Policies in Airline Pricing**
Melissa Yu, 15, Freshman, Sage Hill School, Newport Beach, California, T: Rena Dear
https://isef.net/project/226550

Walnut Creek, USCA08, Contra Costa County Science and Engineering Fair

ROBO032 **Math Into Motion: Robotic Hexapod for Hazardous Environments**
Calvin Shang Hung, 15, Sophomore, El Cerrito High School, El Cerrito, California, T: Sky Nelson
https://isef.net/project/225011

COLORADO

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

ENBM029 **The Infusion Solution: Designing a Multifunction Medical Pump to Treat Hyper/Hypoglycemia**
Logan Joshua Futrell, 17, Junior, Monte Vista High School, Monte Vista, Colorado, T: Loree' Harvey
https://isef.net/project/224245

PHYS018 **Demonstrating a Potential Method for Black Hole Information Recovery via Simulated Hawking Radiation**
\# Tanner Merritt Houser, 18, Senior, Sargent High School, Monte Vista, Colorado, T: Rafe Paulson
https://isef.net/project/224244

Boulder, USCO09, Corden Pharma Colorado Regional Science Fair

BEHA014 **Mitigating and Miscommunicating: Analyzing and Visualizing Discourse Markers From Bilingual Children Across the United States**
Natalie Catherine Cappelletti, 18, Senior, Fairview High School, Boulder, Colorado, T: Paul Strode
https://isef.net/project/224229

ENBM021 **Engineering a Self-Fitting Wearable Sleep Sensor Using Shape-Memory Polymer (SMP) Networks**
Surie Anmeng Jia, 16, Junior, Fairview High School, Boulder, Colorado, T: Paul Strode
https://isef.net/project/223908

MCRO007 **Analysis of the Interaction Between Bacterium *Nissle 1917* and L-Dopa to Improve Treatment of Parkinson's Disease**
Grace Xue, 17, Junior, Fairview High School, Boulder, Colorado, T: Paul Strode
https://isef.net/project/223973

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

EAEV014T **Increasing Microplastic Removal Efficiency With Ferrofluid**
Caroline Ivette Prieto, 16, Sophomore
Layna Karys Snyder, 15, Sophomore
Brush High School, Brush, Colorado, T: Brandie Bellefeuille
https://isef.net/project/223870

ETSD012T **Study of Toroidal Propellers**
Dustin Arthur Ashlock, 15, Freshman
Todd F. Makings, 15, Freshman
Weldon Valley High School, Weldona, Colorado, T: Jonathan Thistle
https://isef.net/project/223941

Colorado Springs, USCO04, Pikes Peak Regional Science Fair

ENBM031 **Medicine Dissolution in a Microgravity Environment Emulated by Acoustic Levitation**
Helen Wan, 17, Junior, Pine Creek High School, Colorado Springs, Colorado, T: Sanjukta Lahiri
https://isef.net/project/224413

TMED028 **Clean Vaccine: Assessing Antigen Recognition Using a Minimal Excipient Vaccine Formula**
Naomi Joy Kruse, 17, Senior, Schullandheim Homeschool, Colorado Springs, Colorado, T: Tami Kruse
https://isef.net/project/224574

Denver, USCO10, Denver Regional Science and Engineering Fair

CELL033T **Modulation of Gamma-Aminobutyric Acid by *Lactobacillus rhamnosus* in *Caenorhabditis elegans* Modeling Alzheimer's Disease**
Emery Linn Doser, 17, Senior
Saige Tinker, 17, Junior
Rock Canyon High School, Littleton, Colorado, T: Susanne Petri
https://isef.net/project/225574

PLNT022 **Using the Normalized Difference Vegetation Index to Identify Stresses Caused by Hydroponic Growth Mediums**
Niels Novotny, 15, Sophomore, Cherry Creek High School, Greenwood Village, Colorado, T: Stephen Smith
https://isef.net/project/224930

SFTD028 **Just Look, Don't Type: Enabling Intent-Level Communication Through Gaze Grounding and Disambiguation**
Amy Zhang, 16, Junior, Lakewood High School, Lakewood, Colorado, T: Casey Walter
https://isef.net/project/224929

Fort Collins, USCO50, Colorado Science and Engineering Fair

ANIM053 **Monitoring *Apis mellifera* Linneaus for Winter Survival, Year 3**
Priya Marie Mayjoy, 15, Sophomore, Lamar High School, Lamar, Colorado, T: Robin Staker
https://isef.net/project/227952

ENEV085 **A Novel Field-Based Approach to Reducing Harmful Algal Blooms in Freshwater Ecosystems**
Natalie Muro, 18, Senior, William J. Palmer High School, Colorado Springs, Colorado, T: Nathaniel Lohmann
https://isef.net/project/228002

PHYS077 **Year Two: Toward Expansion of the Standard Model Using Multi-Hadron Final States and Muon Neutrino Reconstruction**
Julia Gao, 16, Junior, Fairview High School, Boulder, Colorado, T: Paul Strode
https://isef.net/project/227953

PLNT050 **Digital Defense: Using Molecular Docking To Combat the Mountain Pine Beetle Epidemic in North American Forests**
Aayush Paliwal, 15, Freshman, Pine Creek High School, Colorado Springs, Colorado, T: Candace Motte
https://isef.net/project/228006

Joes, USCO08, Northeast Colorado Regional Science Fair

SFTD012 **Entropy Engine: Utilizing Non-Deterministic Electron Cascade Dynamics for Cryptographically Secure Password Generation**
Bode Monahan, 15, Freshman, Liberty High School, Joes, Colorado, T: Linda Fogale
https://isef.net/project/223623

Pueblo, USCO11, Southern Colorado Regional STEM Fair

MCRO014 **Healing From Within: Amniotic Fluid as a New Solution for Diabetic Wounds**
Emma Katherine Perry, 18, Senior, South High School, Pueblo, Colorado, T: Lindsey Goddard
https://isef.net/project/224685

CONNECTICUT

Sandy Hook, USCT50, Connecticut Science & Engineering Fair

BMED025 **Design of a Novel, Dual-Functioning, T-Cell-Engaging and Cytarabine-Based Nanotherapeutic for Acute Myeloid Leukemia Treatment**
Lula Wang, 17, Junior, Greenwich High School, Greenwich, Connecticut, T: Andrew Bramante
https://isef.net/project/224605

ENEV037 **Process Optimization of Green Chemistry Pathway for Fabric-to-Fabric Recycling of Cotton**
Marley Freya Wies, 18, Senior, Greenwich High School, Greenwich, Connecticut, T: Andrew Bramante
https://isef.net/project/224542

ETSD026 **FAB-HEX: Fractal Based Additive and Bio-Inspired Heat Exchanger**
Aarav Chevva, 16, Sophomore, Academy of Aerospace and Engineering, Windsor, Connecticut, T: Lili Aramli
https://isef.net/project/224543

MCRO012 ***In vitro* Assessment of Lactase Production Activity, Efficiency, and Survivability of *L. acidophilus* in Non-Dairy Carriers**
Mingze Weng, 16, Senior, Amity Regional High School, Woodbridge, Connecticut, T: Lindsay McCarthy
https://isef.net/project/224541

ROBO026 **DOTBot: Diffusion-Aligned Chain-of-Thought Bipedal Humanoid Robot for Interpretable Real-Time Autonomous Navigation, Hazard Mitigation and Recovery in High-Risk Built Environments**
Karthik Srikumar, 16, Junior, South Windsor High School, South Windsor, Connecticut, T: April Davis
https://isef.net/project/224609

SFTD026 **Integrating Vision-Language Models and Retrieval-Augmented Generation for Adaptive Alzheimer's Assistance**
Ethan Joseph, 16, Junior, Engineering and Science University Magnet School, West Haven, Connecticut, T: Paula Matei-Grysiak
https://isef.net/project/224545

TMED026 **A Multi-Modal AI/ML Platform for Neurodegenerative Risk Prediction: Integrating Epigenetic Signatures Through cfDNA Methylation and Functional Mobility Data**
Rhea Doshi, 16, Sophomore, Kingswood Oxford School, West Hartford, Connecticut, T: Graham Hegeman
https://isef.net/project/224546

DISTRICT OF COLUMBIA

Washington, USDC01, District of Columbia STEM Fair

BEHA058 **Exploring the Long-Term Neurodegenerative Effects of Sleepovers on Adolescents**
Aayushi Jorgensen, 17, Junior, Sidwell Friends School, Washington, District of Columbia, T: Piriya Suphaphiphat
https://isef.net/project/228016

ENBM099 **A Novel Lightweight Convolutional Neural Network for Efficient Brain Tumor Classification, Designed to Reduce Computational Cost and Energy Use, Enabling Deployment on Embedded or Portable Diagnostic Devices in Resource-Constrained Settings**
Kathryn Wu, 16, Sophomore, National Cathedral School, Washington, District of Columbia, T: Patricia Howie
https://isef.net/project/227999

MCRO044 **After Washing Your Hands, Which Form of Drying Will Get Rid of the Most Germs?**
Nolan Meier, 15, Freshman, Benjamin Banneker Academic High School, Washington, District of Columbia, T: Mandi Nguyen
https://isef.net/project/227964

FLORIDA

Bartow, USFL12, Polk Region Science and Engineering Fair

CBIO083 **Evaluating Quantum Game Theory as a Modeling Approach for Alectinib-Fibroblast Non-Small Cell Lung Cancer Evolutionary Dynamics**
Johan Bijiyos, 15, Freshman, International Baccalaureate School at Bartow High, Bartow, Florida, T: Karen Loweke
https://isef.net/project/227791

TMED033 **Lyso-PCTP: A Reengineered Lipid Biosensor for Early PDAC Diagnosis and Monitoring**
Aksh Sachin Ladegaonkar, 17, Junior, International Baccalaureate School at Bartow High, Bartow, Florida, T: Karen Loweke
https://isef.net/project/223835

Bradenton, USFL02, Manatee Regional Science and Engineering Fair

ENEV007 **Electrochemical Testing of Sodium Dodecylbenzene Sulfonate Using Biochar and Graphene-Modified Screen-Printed Electrodes as a Model Compound for Per- and Polyfluoroalkyl Detection**
Manal Chatri, 17, Junior, Southeast High School, Bradenton, Florida, T: Steven Craig
https://isef.net/project/223915

ROBO006 **Closing the Gap Between Healthcare and Privilege: Use of Feature Extraction, Supervised Multi-Class Clarification and Statistical Pattern Recognition to Predict Gait Injury Class Labels**
Sophia Anne Mitchell, 16, Sophomore, Lakewood Ranch High School, Bradenton, Florida, T: Alexandra Wilcoxson
https://isef.net/project/223999

Bushnell, USFL18, Sumter County Regional Science Fair

BCHM004 **Development of Pancreatic Enzyme Replacement Therapy (PERT): A Natural Enteric Delivery System to Protect Digestive Enzymes in Gastric Fluid to Preserve Activity in the Duodenum**
Abigail Denise Lacayo, 17, Junior, Wildwood High School, Wildwood, Florida, T: Emily Keeler
https://isef.net/project/223494

EAEV012 **A Comparative Analysis of Coral Bleaching Predictive Models and Construction of a Multivariable Reef Bleaching Stress Score Utilizing Oceanic Conditions from Global Coral Reef Systems**
Kylie Whitney Skaggs, 17, Junior, Wildwood High School, Wildwood, Florida, T: Emily Keeler
https://isef.net/project/223868

ETSD010 **Biomimetic Rotor Optimization for Passive Autorotation: Development of an Innovative Rotor Configuration for High-Precision, Controlled Descents During Aerial Delivery and Airdrop Operations**
\# Gerardo Juan Pablo Cardoso, 16, Sophomore, Wildwood High School, Wildwood, Florida, T: Emily Keeler
https://isef.net/project/223939

ETSD014T **Applying Humpback Whale Biomimicry to Engineer an Aircraft Wing Design That Improves Stability in Turbulent Conditions**
Lily Kosa, 17, Junior
Jaycee Woody, 17, Junior
Wildwood High School, Wildwood, Florida, T: Emily Keeler
https://isef.net/project/223943

PHYS008 **Analyzing the Impact of Various 3D Printed Infill Patterns on the Tensile Strength of a 3D Print Relative to Its Weight and Orientation**
\# Brady Kline, 16, Junior, The Villages Charter High School, The Villages, Florida, T: Monica Vinas
https://isef.net/project/223982

SFTD011T **The Underlying Code: Developing an AI-Biosensor To Translate Lichen Bio-Indication of Atmospheric Pollution**
Adam Saif Abumouilish, 15, Freshman
Yousra Saif Abumouilish, 17, Senior
Wildwood High School, Wildwood, Florida, T: Emily Keeler
https://isef.net/project/224015

Deland, USFL04, Tomoka Region Science and Engineering Fair

CBIO007 **Breeding for the Future: A Software Simulation Approach to Crossbreeding Corals for Reef Resilience**
Evie Madison White, 17, Junior, Spruce Creek High School, Port Orange, Florida, T: Anne Cooney
https://isef.net/project/223823

PHYS006 **Thermal and Morphological Analysis of Lunar Lava Flows Using Machine Learning and Stefan-Boltzmann Modeling**
Reagan Addison Dispennette, 17, Junior, Spruce Creek High School, Port Orange, Florida, T: Joy Harper
https://isef.net/project/223980

Fort Lauderdale, USFL09, Broward Regional Science & Engineering Fair

ENBM088 **High Precision Markerless 3D Gait Analysis Using Customizable Volumetric and Reprojection-Based Deep Learning**
Koray Sam Abramson, 18, Junior, Pine Crest School, Fort Lauderdale, Florida, T: Jennifer Gordinier
https://isef.net/project/227592

PHYS064 **Vetting TESS Exoplanet Candidates and Refining Their Transit Predictions**
Kobi Weitzman, 17, Junior, Pine Crest School, Fort Lauderdale, Florida, T: Jennifer Gordinier
https://isef.net/project/227594

TMED082 **A Multimodal Deep Learning Framework for a Novel Clinical Decision Support System in Retinal Disease Diagnosis and Management**
Vedaant Agarwal, 17, Junior, Pine Crest School, Fort Lauderdale, Florida, T: Jennifer Gordinier
https://isef.net/project/227593

Fort Myers, USFL05, Thomas Alva Edison Kiwanis Science and Engineering Fair

BEHA004 **Strengthening Middle School Mathematics Through an AMC 8 Workshop: A Study of Student Learning Gains**
\# Mason Huffman, 17, Senior, Cape Coral High School, Cape Coral, Florida, T: Kimberly Lindmeyer
https://isef.net/project/223797

BMED017 **Investigating the Apoptotic Mechanisms Activated in Glioblastoma Cells by Pre-Screened Cytotoxic Plants: Innovations for Novel Drug Discovery**
Nishini Fernando, 18, Senior, Dunbar High School, Fort Myers, Florida, T: Justin Summy
https://isef.net/project/224112

ETSD007 **Adaptive Aerodynamics: Design and Evaluation of a Shape-Memory Alloy Actuated Variable-Camber Wing**
Dhira Sharma, 15, Freshman, Fort Myers High School, Fort Myers, Florida, T: Anthony Sangermano
https://isef.net/project/223936

Gainesville, USFL08, Alachua Region Science and Engineering Fair

ETSD017 **The Use of Dual Venturi Strips in a Positive Feedback Orientation to Improve Downforce Production in Modern Ground Effect Race Cars**
Pranav Kaushal Mannam, 16, Sophomore, Eastside High School, Gainesville, Florida, T: Jon Rehm
https://isef.net/project/224113

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

ROBO013 **Animatronic Octopus Tentacle: Designing a Control System for a Soft Robot With the Capability of Transporting a Lobster With a Success Rate of 90% To Demonstrate Its Use in Real-World Exploration**
Kai McConnell, 14, Freshman, Homeschool, Eustis, Florida, T: Iain McConnell
https://isef.net/project/223612

Jacksonville, USFL10, Northeast Florida Regional Science and Engineering Fair

BEHA006 **EEG-Based Emotion Recognition and Conversational AI VR Assistant for Personalized Assistance**
Christopher James Trinidad, 16, Sophomore, Bishop Kenny High School, Jacksonville, Florida, T: Lee Paulus
https://isef.net/project/223799

ENEV011 **Optimizing Biofoams for Multi-Phase Pollutant Capture/Remediation in Fresh and Marine Environments**
Mithra Vasanthan, 15, Freshman, Stanton College Preparatory School, Jacksonville, Florida, T: Nicolle Arteaga
https://isef.net/project/223919

ENEV012 **Developing a Colorimetric Patch and Toxicity Index for Detecting Components in Secondhand Smoke**
Penelope Daphne Chandra Phillips, 15, Sophomore, Episcopal School of Jacksonville, Jacksonville, Florida, T: Arianne Leary
https://isef.net/project/223920

ENEV079 **Physics-Based Wave Barrier Design for Storm Surge Protection**
Marco Alexander Chua, 17, Junior, Stanton College Preparatory School, Jacksonville, Florida, T: Nicolle Arteaga
https://isef.net/project/227790

Lake City, USFL11, Suwannee Valley Regional Science and Engineering Fair

BMED013 **The Effects of Peppermint Extract and Ginger Juice Amalgamated Onto Non-competent *E. coli* B Cells**
Shriya Tejash Patel, 18, Senior, Columbia High School, Lake City, Florida, T: Valerie Ledford
https://isef.net/project/223814

Land O' Lakes, USFL30, Pasco Regional Science and Engineering Showcase

ENEV022 **Addressing Deficiencies in Wastewater Treatment: Engineering an Innovative Dielectrophoretic Apparatus Capable of Real-time Emerging Pollutant Remediation**
Carson Lee West, 18, Senior, Wiregrass Ranch High School, Wesley Chapel, Florida, T: Branden Anglin
https://isef.net/project/223928

PLNT008 **Reassessing Inefficient Taxane Extraction Methods: A Novel Approach to Optimize Paclitaxel Production**
Gabriella Grace Ginesin, 17, Senior, Wiregrass Ranch High School, Wesley Chapel, Florida, T: Branden Anglin
https://isef.net/project/223993

ROBO054 **Shadow: A Cross-Domain, Mathematically Validated, Meta-Cognitive Reasoning Infrastructure for AI Models**
Kundana Chowdary Kommini, 17, Junior, Wiregrass Ranch High School, Wesley Chapel, Florida, T: Branden Anglin
https://isef.net/project/227716

Melbourne, USFL28, Brevard Mainland Regional STEM Fair

ETSD013 **Revolutionizing Marine Mammal Survival Through Multi-Spectrum Imaging, AI-Powered Detection and Innovative Disentanglement Strategies**
Sophie Schuh, 17, Junior, Viera High School, Viera, Florida, T: Elizabeth Youngs
https://isef.net/project/223942

ROBO009 **Designing a Synthetic Ultrasound-Based Machine Learning Framework To Differentiate Renal Calculi From Ultrasound Artifacts and Evaluating Domain Transfer: Year 2**
Archit Kulkarni, 17, Junior, Melbourne High School, Melbourne, Florida, T: Greg Stauffer
https://isef.net/project/224002

Miami, USFL15, South Florida Science and Engineering Fair

CBIO017 **Integrating Network and Pathway Information for Drug Repurposing in Diffuse Large B-Cell Lymphoma**
Yuchan Her, 16, Junior, Coral Reef Senior High School, Miami, Florida, T: Lauriann Carbajal
https://isef.net/project/223613

CBIO027 **ACE: Explainable Classification of Acute Myeloid Leukemia Subtypes Using Unlabeled Single-Cell Images**
Ruoshui Lu, 16, Sophomore, Miami Palmetto Senior High School, Pinecrest, Florida, T: Pamela Shlachtman
https://isef.net/project/224653

CBIO084 **Computational Analysis of Alpha-Synuclein Protein Misfolding in Parkinson's Disease and Lewy Body Dementia Using AlphaFold-Predicted Structures and RMSD-Based Metrics**
\# Ruby Amy Cohen, 15, Sophomore, iPrep Academy North, Miami, Florida, T: David Buncher
https://isef.net/project/227825

CBIO090 **Biophysical Computational Modeling of Neuronal Network Activity in Control and SHANK2-Linked Autism Brain Organoids**
\# Raiya Cohen, 17, Senior, iPrep Academy North, Miami, Florida, T: David Buncher
https://isef.net/project/227996

CELL044 **GABAergic Dysregulation as a Modulator of Amyloid-Beta Neurotoxicity in *Caenorhabditis elegans*: A Computational-Behavioral Phenotyping Framework**
Alejandra Stephanie Perry, 17, Junior, Miami Coral Park Senior High School, Miami, Florida, T: Ambar Alfaro
https://isef.net/project/228073

ENEV081T **Non Visual Snake Detection: AI Recognition of Python Thermal Profile**
Felipe Marques, 17, Junior
Lucas Adrian Muniz Suarez, 17, Junior
Jack O'Malley, 17, Junior
iPrep Academy North, Miami, Florida, T: David Bunche
https://isef.net/project/227911

Naples, USFL36, Collier Regional Science and Engineering Fair

EGSD004 **Improving Sustainability Through Biotechnologies: Electrochemical Analysis of *Rhizobium tropici* Biopolymer for Fuel Cell Applications**
Sarah Dabees, 17, Junior, Aubrey Rogers High School, Naples, Florida, T: Jennifer Adams
https://isef.net/project/223884

Ocala, USFL16, Big Springs Regional Science Fair

EAEV009 **Revolutionizing Artificial Reefs: Recycled Foamed Glass Aggregates as a Sustainable Solution for Oyster Habitats, Year 3**
\# Delaney Clair Peterson, 17, Junior, Belleview High School, Belleview, Florida, T: Christopher Pabst
https://isef.net/project/223865

SFTD008 **Hostile Radar System Detection Approximation of an Electromagnetic Field Using Gaussian Process Regression and High-Intensity Source Avoidance Using a Hough Transform**
Nicholas DePasquale, 18, Senior, Vanguard High School, Ocala, Florida, T: Christina Davis
https://isef.net/project/224012

Okeechobee, USFL01, Heartland Regional Science and Engineering Fair

CELL010 **Spatial Analysis of Epithelial-to-Mesenchymal Transition Dynamics and *Fusobacterium nucleatum* Associations in Colorectal Cancer (Year 3)**
\## Anika Bhandare, 16, Junior, Sebring High School, Sebring, Florida, T: Morgan Bullock
https://isef.net/project/223842

SFTD010 **Does Fusing Text-Grooming, Deepfake/Voice-Spoof Detection and Content-Provenance Signals Reduce Missed Impersonations Compared With Any Single Detector Alone?**
\# Jaclyn Shenise Brown, 17, Junior, Hardee Senior High School, Wauchula, Florida, T: Robert Beatty
https://isef.net/project/224014

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

BMED014 **An Evaluation of Potential Advances in Limb Immobilization for Orthopedic Healing**
\# Gracelynn Rae Beckham, 18, Senior, Clay High School, Green Cove Springs, Florida, T: William Derousie
https://isef.net/project/223815

ROBO011 **A Novel Evaluation of the Impact of Object Deformation on Real-Time Vision-Based Waste Classification Utilizing Low-Cost AI Systems**
\# Hajun Joshua Chun, 17, Junior, Ridgeview High School, Orange Park, Florida, T: Bethany Derousie
https://isef.net/project/224004

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

BEHA007 **AI Companion for Attentional Fatigue: Detection of Facial Features to Anticipate Attentional Fatigue Coupled With Sonic Stimuli to Mitigate Inattention**
\# Mahie Mangesh Patil, 16, Junior, Orlando Science High School, Orlando, Florida, T: Judith Bright
https://isef.net/project/223800

CELL008 **The Virtual Cell 2.0: Expanding Precision and Personalized Cancer Therapy Through AI-Powered Simulation**
\# Alan Matthew Alwakeel, 18, Senior, Stanton College Preparatory School, Jacksonville, Florida, T: Nicolle Arteaga
https://isef.net/project/223840

ENBM094 **Revolutionizing Tympanoplasty: A Personalized Surgical Process Using Three-Dimensional High-Resolution Scanning and Modeling, Bio Printed Tympanic Grafts, and an Automated Autonomous Robotic Surgical Procedure With Reinforcement Learning**
Briana Gabriela Stephens, 17, Junior, Belleview High School, Belleview, Florida, T: Bruce Toney
https://isef.net/project/227810

ENEV025 **Accelerating Discovery of Sustainable Crosslinked Biopolymers: A Hybrid Supervised and Unsupervised Machine Learning Pipeline for Property Prediction and Performance Mapping for Application-Specific Design**
\## Aswath Rajesh, 16, Junior, Viera High School, Viera, Florida, T: Elizabeth Youngs
https://isef.net/project/223628

MATH003 **Fractional Members of the Vigneras Multiple Gamma Hierarchy**
\# Adrian Hernandez Vega, 17, Junior, Home Education Program, Lakeland, Florida, T: Ann Everett
https://isef.net/project/223946

MATS011 **Addressing Junction Temperature Instabilities in Optoelectronic Semiconductors: A Novel Adaptive Die-Bonding Process to Optimize Thermal Diffusion**
Anvi Sandeep Nemade, 15, Junior, Wiregrass Ranch High School, Wesley Chapel, Florida, T: Branden Anglin
https://isef.net/project/223963

MCRO040 **Enhancing the Validity of Proxy-Based Non-Endemic Viral Monitoring Through GIS-AHP–Assisted Ecological Niche Modeling**
James Jedrzejczyk, 16, Sophomore, Wiregrass Ranch High School, Wesley Chapel, Florida, T: Branden Anglin
https://isef.net/project/227809

PLNT003 **Development of an Industrially Viable Oxytetracycline Nano-Carrier and Microneedle-Based Detection System (OXYCHECK2) for Citrus and Stone Fruit Disease Management: Year 4**
\## Moitri Santra, 17, Senior, Oviedo High School, Oviedo, Florida, T: William Furiosi
https://isef.net/project/223988

Oviedo, USFL17, Dr. Nelson Ying-Orange County Science Exposition

ANIM005 **Integrating Multi-Convolutional Neural Network Histological Analysis and Field Trials to Evaluate Carbon Dioxide and Pesticide Impacts on Honeybee Health and Colony Performance**
\# Aakash Manaswi, 17, Sophomore, Lake Highland Preparatory School, Orlando, Florida, T: Cindy Miller
https://isef.net/project/223775

CELL041 **Extracellular Vesicles From the Saliva of Periodontal Patients Modulates Macrophage Function**
Marie Elena Garcia, 16, Junior, Lake Highland Preparatory School, Orlando, Florida, T: Cindy Miller
https://isef.net/project/227807

EAEV015 **Developing a Novel Sustainable Bio-Adsorbent Derived From Agricultural Biomass and Iron-Functionalized Biochar for the Removal of Algal Toxin From Water**
\# Aditi Swain, 16, Junior, Orlando Science High School, Orlando, Florida, T: Judith Bright
https://isef.net/project/223871

ETSD011 **Year 2: Development of R.A.M.P.A.T. (Rapid, Affordable, Modular, Printed, Aerial Tiltrotor) for Emergency Response**
Aarit Dixit, 16, Sophomore, Orlando Science High School, Orlando, Florida, T: Judith Bright
https://isef.net/project/223940

Palm Harbor, USFL22, Pinellas Regional Science and Engineering Fair

PLNT005 **Biodegradable Hydrogels: A Measure of Effective Water Conservation in Agricultural Applications, Year 2**
Heidi Adelle Connor, 17, Senior, Countryside High School, Clearwater, Florida, T: William Shackton
https://isef.net/project/223990

Sanford, USFL23, Seminole County Regional Science, Mathematics & Engineering Fair

BCHM001 **Simultaneous Electrochemical Detection of Serotonin and MicroRNAs in Biological Samples to Enhance Mental Disorder Diagnosis: Year 2**
\# Angela Calvo-Chumbimuni, 17, Junior, Oviedo High School, Oviedo, Florida, T: William Furiosi
https://isef.net/project/223491

BCHM042T **A Novel Nanomodified Dual-Bore Carbon Fiber Microelectrode Biosensor for Simultaneous Real-Time Electrochemical Detection of Neurotransmitter and Neurotoxin Biomarkers of Alzheimer's and Parkinson's Disease**
Nishchay Gupta, 15, Freshman
Kathir Vasanth, 15, Freshman
Seminole High School, Sanford, Florida, T: Katherine Zicher
https://isef.net/project/227808

ETSD008 **A Fully Autonomous Tensegrity-Based Compliant Mobile Robot Using Shape Memory Alloy Actuators for Rapid Assembly and Deployment in Planetary Explorations, Search-and-Rescue and Surveillance Missions – Year II**
Ankan Das, 15, Sophomore, Oviedo High School, Oviedo, Florida, T: William Furiosi II
https://isef.net/project/223937

Sarasota, USFL32, Sarasota County STEM Fair

BMED065 **Identification of a Novel TBX2-Dependent Mechanism Linking Pericyte Dynamics to Abnormal Vasculature in Lung Adenocarcinoma**
Yatharth Kakkad, 16, Sophomore, Pine View School, Osprey, Florida, T: Hali Flahavan
https://isef.net/project/227849

ENBM098 **NovaCardia: A Novel, Optimized Total Artificial Heart for Destination Therapy**
Aadi Bhensdadia, 17, Junior, Pine View School, Osprey, Florida, T: Hali Flahavan
https://isef.net/project/227965

TMED093 **EvoDetect: A Dual-Encoder NAS Model and Custom Microscopy Platform for H&E-Based, Cross-Malignancy TP53 Mutation Detection**
Brenin Linander, 18, Senior, Sarasota High School, Sarasota, Florida, T: Andy Harshman
https://isef.net/project/227950

Satellite Beach, USFL14, Brevard Intracoastal Regional STEM Fair

BCHM038 **Engineering *Bifidobacterium infantis*–Melittin–Nanoparticle Biohybrids for Targeted Deep Tumor Penetration, Enhanced Payload Localization, and Potent Spheroid Disruption in a 3D Cancer Model**
Julia Cohen-Pinsky, 18, Senior, Satellite High School, Satellite Beach, Florida, T: Loren Kingsley
https://isef.net/project/227792

CBIO016 **Designing a High-Affinity Peptide Binder to the BRD4 ET Domain to Outcompete MLV TP Utilizing ProteinMPNN and AF-CBA With Additional Molecular Dynamics Verification**
Twisha Bhattacharyya, 18, Senior, Edgewood Junior Senior High School, Merritt Island, Florida, T: Ryan Cilsick
https://isef.net/project/223611

PLNT006 **Utilizing PCR and Induced Transformation To Reinsert Amplified Genes of Plant-Symbiotic *Bacillus subtilis* for Improved Growth, Antimicrobial Activity and Abiotic Stress Resistance in *Arabidopsis thaliana***
Christopher Shepherd, 14, Freshman, Satellite High School, Satellite Beach, Florida, T: Shandra Stewart
https://isef.net/project/223991

St. Augustine, USFL21, St. Johns County STEM Fair

CELL006 **Uncovering Novel VEGF-B Regulated Molecular Mechanisms in Myocardial Infarction**
Anya Dorairaj, 17, Senior, Ponte Vedra High School, Ponte Vedra, Florida, T: Marna Fox
https://isef.net/project/223838

PHYS007 **Discovery of Transiting Exoplanet Candidates Orbiting White Dwarfs Using Automated Transient Analysis of ZTF Light Curves**
Sophie Duan, 17, Senior, Allen D. Nease High School, Ponte Vedra, Florida, T: Andrew Smith
https://isef.net/project/223981

Stuart, USFL25, Martin County Regional Science and Engineering Fair

ENBM011 **Quadraplexing Experimentation in Microplate Assays to Support High-Throughput Screening**
Varun Singh, 18, Senior, South Fork High School, Stuart, Florida, T: Marc Turull
https://isef.net/project/223898

PLNT047 **Year 5: Developing a Novel RNAi Based Biopesticide Optimized via Bioenhancers To Target the miRNA Bantam in Spodoptera frugiperda for Environmentally-Friendly, Cost-Effective Improved Pest Management**
Nina Goyal, 17, Junior, Martin County High School, Stuart, Florida, T: Paige McMahon
https://isef.net/project/227811

Tallahassee, USFL26, Capital Regional Science and Engineering Fair

BMED012 **Human Stem Cell Derived Extracellular Vesicles for the Treatment of Neurodegenerative Disease**
Shaoxuan Ma, 16, Junior, Lawton Chiles High School, Tallahassee, Florida, T: Jason Clark
https://isef.net/project/223813

ROBO008T **The Rubble RoboT: AI- Augmented Robot Snake for Terrain Classification, Hotspot Detection and Autonomous Navigation**
Rakesh Raj, 17, Junior
Nayana Sree Vemireddy, 17, Junior
James Rickards High School, Tallahassee, Florida, T: Paula Hall
https://isef.net/project/224001

Tampa, USFL27, Hillsborough Regional Science Fair

BCHM011 **Psalmacross: A Novel Tarantula Venom-Derived Peptide Drug Candidate for ASIC Inhibition via *in silico* Design**
Daniel Park, 18, Senior, C. Leon King High School, Tampa, Florida, T: Chelsey Swats
https://isef.net/project/224304

ENEV030 **Computationally Engineering a Single-Stranded Protein That Binds to Arsenic 3^+ to Decontaminate Drinking Water**
Kohana Pal Basu, 17, Sophomore, Middleton High School, Tampa, Florida, T: Bhagyashree Kulkarni
https://isef.net/project/224305

PLNT014 **A Next-Generation Weed Management Platform: Engineering of a Modular Weed Management System Integrating a Multi-Mode Bioherbicide Formulation and Precision Spraying Tool To Reduce Agricultural Chemical Inputs**
Tanishka Balaji Aglave, 17, Junior, Strawberry Crest High School, Dover, Florida, T: Dianne Schroeder
https://isef.net/project/224306

Valparaiso, USFL07, East Panhandle Science and Engineering Fair

CHEM013 **Hybrid vs. Alkali: Finding a More Sustainable Method to Produce Chitosan-Based Superabsorbent Polymers From *Agaricus bisporus* Fungi**
Elisabeth Wallace, 16, Junior, Magnet Innovation Center, Inlet Beach, Florida, T: Margaret Aresco
https://isef.net/project/223856

EGSD005 **Optimizing Building Geometry to Enhance Wind Turbine Energy Capture in Urban Environments**
Anthony Doyle, 15, Freshman, Fort Walton Beach High School, Fort Walton Beach, Florida, T: Shelly Langshaw
https://isef.net/project/223885

Vero Beach, USFL31, Indian River Regional Science and Engineering Fair

MCRO006 **Antibacterial Potential of Lactic Acid Bacteria Isolated From Vegetables: Bacteriocin Gene Screening and Inhibitory Activity Analysis**
Gianna Lauren D'Elia, 16, Sophomore, Vero Beach High School, Vero Beach, Florida, T: Nicole Mosblech
https://isef.net/project/223972

Viera, USFL13, Brevard South Regional STEM Fair

CBIO018 **A Multi-Modal Deep Learning Pipeline Integrating Physics-Informed Neural Networks and 3D Image Processing for Accurate Rupture Prediction and Data-Driven Surgical Planning of Cerebral Aneurysms: Year 3**
Eshan Vipuil, 17, Junior, West Shore Junior/Senior High School, Melbourne, Florida, T: Sally Winter
https://isef.net/project/224090

MATS026 **Machine Learning–Driven Design and Experimental Validation of Peptide-Based Mixed- Metal Organic Frameworks (MOFs) for Predictive Membrane Disruption in Targeted Immunotherapeutic Applications**
Shriya Rajesh Varada, 16, Junior, West Shore Junior/Senior High School, Melbourne, Florida, T: Jessica Wagner
https://isef.net/project/224468

West Palm Beach, USFL29, Palm Beach Regional Science and Engineering Fair

ANIM049 **Morphological Analysis of Gastric Nematodes in Pygmy and Dwarf Sperm Whales (*Kogia breviceps* and *Kogia sima*) Using Stereoscopy, Scanning Electron Microscopy, and Histology**
Lenny Jean Hanisko, 16, Sophomore, Florida Atlantic University High School, Boca Raton, Florida, T: Jasmine Coyle
https://isef.net/project/227715

EAEV064 **Metal-Oxide-Infused Biochar for the Adsorptive Removal of Heavy Metals From Simulated Runoff: A Preventative System to Combat Soil Contamination**
Taroon Muthuswamy, 16, Junior, American Heritage School of Boca Delray, Delray Beach, Florida, T: Brittnee McDole
https://isef.net/project/227709

EAEV065 **Dual-Function Biochar-Alginate Beads for Heavy Metal Removal and as a Slow Release Fertilizer**
Francesca Ramona Rodriguez, 17, Senior, Palm Beach Central High School, Wellington, Florida, T: William Bartenslager
https://isef.net/project/227719

EGSD048 **Year 3: Identifying Cost-Effective Advanced Catalysts Using an AI-Enabled Digital Twin of a PEM Hydrogen Electrolyzer**
Adia Agarwal, 15, Freshman, Alexander W. Dreyfoos School of the Arts, West Palm Beach, Florida, T: Stephen Anand
https://isef.net/project/227720

PHYS067 **Design and Fabrication of a Liquid Crystal Diffractive Solar Sail Prototype for 2D Beam Steering and Enhanced Diffraction Efficiency (Year 3)**
Tanzeela Tasneem, 17, Junior, Florida Atlantic University High School, Boca Raton, Florida, T: Jasmine Coyle
https://isef.net/project/227722

TMED089 **The Design and Evaluation of a Tumor Microenvironment-Responsive Mesoporous Silica Nanoparticle for Enhanced Drug Delivery in Colon Cancer**
Devesh Kumaresh, 17, Junior, American Heritage School of Boca Delray, Delray Beach, Florida, T: Brittnee McDole
https://isef.net/project/227717

TMED090 **Enhancing the Oncotoxic Effects of Mitochondrial-Targeting D-$(KLAKLAK)_2$ Peptide by Improving Cell Membrane Permeability via Chemical Conjugation With Imidazopyridinium (IP^+)**
Nicholas Raphael Stan, 18, Senior, Alexander W. Dreyfoos School of the Arts, West Palm Beach, Florida, T: Stephen Anand
https://isef.net/project/227721

GEORGIA

Athens, USGA50, Georgia State Science and Engineering Fair

CBIO065 **Machine Learning Approaches to Brain Connectivity in Autism**
Brady Zhou, 16, Junior, George Walton Comprehensive High School, Marietta, Georgia, T: Tobie Hendricks
https://isef.net/project/227044

CHEM050 **Synthesis of pH-Responsive Nanoscale Coacervates (pH Beads)**
Rishi Varun Pai, 16, Junior, Northview High School, Johns Creek, Georgia,
T: Pallavi Rallapalli
https://isef.net/project/227287

CHEM051 **Optimization of pH-Responsive Cationic AMP-Inspired Polymers**
Michelle Diep, 18, Senior, Gwinnett School of Mathematics, Science, and Technology, Lawrenceville, Georgia, T: Courtney Cox
https://isef.net/project/227290

MATS061 **Analysis of Nanomaterial-Antibiotic Complexes to Limit Antibiotic Resistance**
Abhijeet Ghosh, 17, Senior, George Walton Comprehensive High School, Marietta, Georgia, T: Tobie Hendricks
https://isef.net/project/227040

Atlanta, USGA03, Atlanta City Science & Engineering Fair

BMED010 **Optimizing an Orbital Shaker Method for Physiological Simulation of Endothelial Cells *in vitro***
Awa Bousso, 18, Senior, Charles R. Drew Charter School, Atlanta, Georgia,
T: Miriam Denard
https://isef.net/project/223811

CELL009 **Engineering CAR T-Cells to Degrade Immunosuppressive Metabolites in the Tumor Microenvironment**
Nicolas Chairos Botchwey, 17, Junior, Charles R. Drew Charter School, Atlanta, Georgia,
T: Mae Pagett
https://isef.net/project/223841

ETSD019T **Development and Testing of a Morphing Airfoil for Increased Wing Efficiency Under High-Deflection Flight Conditions**
Samuel Alexander Cravens Sugden, 17, Junior
Tommy Weng, 17, Junior
The Westminster Schools, Atlanta, Georgia, T: Alison Aitken
https://isef.net/project/224220

Conyers, USGA12, Rockdale Regional Science & Engineering Fair

ENBM008 **Introduction to a Nanofiber Hydrogel Composite**
Chloe Parkman, 15, Sophomore, Rockdale Magnet School for Science and Technology, Conyers, Georgia, T: Marissa Christie
https://isef.net/project/223895

MATH005 **Modeling Selfish Routing: Experimental Analysis of Wardrop's First Principle of Equilibrium, Social Optimum, the Price of Anarchy, and Congestion Pricing in Conyers, Georgia**
Gabrielle Jacqueline Christie, 17, Senior, Rockdale Magnet School for Science and Technology, Conyers, Georgia, T: Shelley Seagraves
https://isef.net/project/224083

TMED010T **Invertebrate Gastrointestinal Modeling of CNT-Protein Nano-Carriers for Oral Prostate Cancer Therapeutics**
Savanna Marie Giddens, 18, Senior
Joanna Rhee, 18, Senior
Rockdale Magnet School for Science and Technology, Conyers, Georgia,
T: Shelley Seagraves
https://isef.net/project/224028

Griffin, USGA09, Griffin RESA Regional Science Fair

ENBM016T **Infection Detective Bandage: Smart Bandage Prototype**
Zynila Crawford, 14, Sophomore
Russell LaGrande, 16, Sophomore
Sandy Creek High School, Tyrone, Georgia, T: Jill Lloyd, T: Christina Bryant
https://isef.net/project/223903

MATS008 **Development and Optimization of a Novel Rapid-Acting PVA-Glycerol Hydrogel Optical Clearing Patch for Enhanced Light Transmission Through Tissue-Mimicking Phantoms**
Parishey Khan, 16, Sophomore, McIntosh High School, Peachtree City, Georgia,
T: Seth Bishop
https://isef.net/project/223960

TMED006T **Modulation of the GABAergic System To Alleviate Generalized Anxiety Disorder Utilizing a *Passiflora incarnata*-Derived Flavonoid-Based Medicated Chewing Gum**
Sara Hoti, 16, Junior
Zackary Mel Nizker, 16, Junior
McIntosh High School, Peachtree City, Georgia, T: Seth Bishop
https://isef.net/project/224024

Jonesboro, USGA15, Clayton County Regional Science & Engineering Fair

ANIM002 **High-Resolution Analysis of Neuroregeneration and Memory Retention in *Planaria* Under Pharmacological Treatment**
Darion Ereifeoluwa Ayoola, 16, Sophomore, Elite Scholars Academy, Jonesboro, Georgia,
T: Reshawndra Hutchins
https://isef.net/project/223772

ENBM014 **NeuroResponse: A Low-Cost Wearable Glove for Quantitative Assessment of Peripheral Nerve Response Latency and Strength**
Vy Le, 17, Senior, Morrow High School, Ellenwood, Georgia, T: Mindy Hudson
https://isef.net/project/223901

Marietta, USGA14, Cobb/Paulding Regional Science Fair

BMED006 **Glucotoxicity in Regeneration: Modeling Hyperglycemia-Induced Repair Failure in *Planaria***
Jaehyeon Lee, 18, Junior, George Walton Comprehensive High School, Marietta,
Georgia, T: Tobie Hendricks
https://isef.net/project/223807

McDonough, USGA06, Henry County Science and Engineering Fair

BMED005T **Rabies Neuroinvasion and Incubation Period in Humans**
Jai Venkatramana Jerripothula, 15, Freshman
Anthony Ricardo Ramirez, 15, Freshman
Austin Alejandro Ramirez, 16, Sophomore
Dutchtown High School, Hampton, Georgia, T: Debbie Sechrist, T: Kirit Patel
https://isef.net/project/223806

ENEV009 **Waste to Worth: Developing Mycelium-Based Biodegradable Packaging From Agricultural Waste for Local Use**
Monica Ngo, 17, Junior, Woodland High School, Stockbridge, Georgia, T: Jormell Cofield
https://isef.net/project/223917

Milledgeville, USGA07, Georgia College & State University Regional Science and Engineering Fair

CBIO025 **Computational Identification of Novel Endocan Inhibitors for Targeted Glioblastoma Therapy Through Molecular Docking and ADMET Analysis**
Saisurya Srithrinadh Lakkimsetti, 17, Junior, Lakeside High School, Evans, Georgia,
T: Anita Gangwani
https://isef.net/project/224547

Perry, USGA10, Houston Regional Science and Engineering Fair

ENEV014 **Peanut Shells Reimagined: Creating Value Added Cellulosic Material**
Joy Sanders, 18, Senior, Warner Robins High School, Warner Robins, Georgia,
T: Veronica Sanders
https://isef.net/project/224079

Stone Mtn, USGA04, Dekalb Science & Engineering Fair

CELL005 **Not Just for Cooking: Effects of Turmeric and Neem on *Chlamydia* in a Cell Culture Model**
Peggy Osae-Owusu, 17, Junior, Lakeside High School, Atlanta, Georgia, T: Monica Baker-Eady
https://isef.net/project/223837

Suwanee, USGA11, Gwinnett Regional Fair

ANIM041 **Role of NSY-1 and SKN-1 in Microplastic-Induced Reproductive Toxicity and Luteolin Protection in *C. elegans***
Nova Nguyen, 18, Senior, Peachtree Ridge High School, Suwanee, Georgia, T: Corey Wellmaker
https://isef.net/project/227162

BCHM013 **CNOT9/DBN1 Actin Dysregulation in QNBC Metastasis & Heterogeneity**
Ariane Alana McDermott, 18, Senior, Gwinnett School of Mathematics, Science, and Technology, Lawrenceville, Georgia, T: Courtney Cox
https://isef.net/project/224761

BMED032 **Investigating the Long-Term Pulmonary Function of *Cornu aspersum* Through Household VOC Exposure**
Abigail Abraham, 18, Senior, Paul Duke STEM High School, Norcross, Georgia, T: Tiffany Bookal
https://isef.net/project/224962

CELL030 **Investigating the Effects of Straws on Inherited Epigenetics in *C. elegans***
Maya Botelho, 17, Senior, Paul Duke STEM High School, Norcross, Georgia, T: Tiffany Bookal
https://isef.net/project/224985

ENBM043 **MicroMCED: A Novel PoC SERS PNA-Probe Multicancer Early Detector**
Sirish Subash, 15, Sophomore, Gwinnett School of Mathematics, Science, and Technology, Lawrenceville, Georgia, T: Courtney Cox
https://isef.net/project/224762

MATS035 **Prevent Cough Syrup Poisonings With Color-Changing Polymer Films**
Lamis Diab, 17, Junior, Gwinnett School of Mathematics, Science, and Technology, Lawrenceville, Georgia, T: Courtney Cox
https://isef.net/project/224763

MCRO019 **Muting Messages: Boronic Acids Reduce Quorum Sensing and Associated Fitness in *E. coli***
\# Eun Jae Lee, 18, Senior, Peachtree Ridge High School, Suwanee, Georgia, T: Corey Wellmaker
https://isef.net/project/224994

TMED035 **Astaxanthin Treatment on Iron-Sensitized Oxidative Stress**
Bori Kim, 17, Junior, Gwinnett School of Mathematics, Science, and Technology, Lawrenceville, Georgia, T: Courtney Cox
https://isef.net/project/224958

TMED073 **OncoLink: Novel Cancer Detection via Irreducible Regulatory-Metabolic Coupling Using a Topology-Aware Dual-Modality Nanobiosensor**
Keshvee Sekhda, 17, Junior, North Gwinnett High School, Suwanee, Georgia, T: Charles Daab
https://isef.net/project/227217

HAWAII

Aiea, USHI07, Central Oahu District Science and Engineering Fair

ENEV005 **Characterizing *Sargassum polyphyllum* for Use in Biodegradable 3D-Printing Supports**
Hayden Riley Ramiscal, 18, Senior, Mililani High School, Mililani, Hawaii, T: John Sandvig
https://isef.net/project/223913

MATH002 **An Entropy-Driven Framework for Early Prediction of Phase Transitions in Strategic and Combinatorial Systems**
\# Tiffany Cruz, 17, Senior, Mililani High School, Mililani, Hawaii, T: John Sandvig
https://isef.net/project/223945

Hilo, USHI05, Hawaii District Science and Engineering Fair

ENEV021 **The Duality of Deployment: Testing and Applying a Sun-Tracking Parabolic Dish System to Solar-Purify Contaminated Water in Different Community Structures**
Sky Tagamolila Bardwell-Jones, 16, Junior, Hilo High School, Hilo, Hawaii, T: Pascale Pinner
https://isef.net/project/223927

TMED008 **Investigation of the Molecular Mechanism Underlying the Anticancer Activity of the Native Hawaiian Herb *Morinda citrifolia*: A Safer Alternative for Treating Lung Cancer**
\# Lillian Tao, 16, Sophomore, Waiakea High School, Hilo, Hawaii, T: Chad Higa
https://isef.net/project/224026

Honolulu, USHI01, Hawaii Association of Independent Schools Science and Engineering Fair

CELL017 **Modeling LEPID Pathogenesis *in vitro*: siRNA Knockdown of Kars1 in PC12 Cells Reveals Downstream Gene Dysregulation**
Kai Kuboi, 17, Senior, Iolani School, Honolulu, Hawaii, T: Joanna Kobayashi
https://isef.net/project/224251

PHYS012 **Constraining the Timing and Sharpness of the Cosmic Acceleration Transition**
Louisa Cole, 17, Junior, Punahou School, Honolulu, Hawaii, T: Johannes Adams
https://isef.net/project/223693

Honolulu, USHI08, Honolulu District Science & Engineering Fair

ENBM017 **3D Printed Biodegradable Skin Scaffolds Using Cross-Linked Polymers to Predict Cell Regeneration**
Summer J. Hall, 17, Junior, Kalani High School, Honolulu, Hawaii, T: Bryan Silver
https://isef.net/project/223904

MCRO008 **Bioprospecting of Novel Sunscreen- and Plastic-Degrading Fungi in Tannin-Rich Coconut Fiber**
Vera Wang, 18, Senior, Henry J. Kaiser High School, Honolulu, Hawaii, T: Darin Kohara
https://isef.net/project/223974

SFTD009 **Exploring the Use of Hybrid Post-Quantum Key Exchange in TLS 1.3**
Alexander Wang, 14, Freshman, Kalani High School, Honolulu, Hawaii, T: Kenneth Okawa
https://isef.net/project/224013

Honolulu, USHI50, Hawaii State Science and Engineering Fair

CHEM060 **Computational Investigation of Electronic and Geometric Effects of Ligand Architecture on Homolytic Bi–S Bond Cleavage in Diaryl Bismuth Thiophenolate Complexes**
Mingeon Shin, 18, Senior, Iolani School, Honolulu, Hawaii, T: Yvonne Chan
https://isef.net/project/227802

PHYS073 **Disentangling the Cosmic Web: Characterizing Relationships Between Cosmic Structures**
Emma Lilly Fuleky, 17, Junior, Punahou School, Honolulu, Hawaii, T: Johannes Adams
https://isef.net/project/227847

PLNT045 **Genomic and Transcriptomic Analysis of a *Nannochloropsis oceanica* Strain Displaying a Greater Thermal Tolerance Towards the Engineering of a Heat-Tolerant Marine Microalgal Strain**
\# Deborah Sungjoo Park, 19, Senior, Iolani School, Honolulu, Hawaii, T: Joanna Kobayashi
https://isef.net/project/227800

PLNT046 **Comparing Sampling Techniques and Loci for Determining *Limu* (Algal) Diversity of the Intertidal Using eDNA**
Natalie Sze-wing Choi, 18, Senior, University Laboratory School, Honolulu, Hawaii, T: Jennifer Seki-Wong
https://isef.net/project/227803

ROBO058 **An Inexpensive, Open-Source Alternative to Commercial Cell Counters: Leveraging Found Instruments, 3D Prints & Computer Vision**
\# Ailani Joelle Cruz, 17, Senior, Kealakehe High School, Kailua-Kona, Hawaii, T: Justin Brown
https://isef.net/project/227801

Kailua-Kona, USHI09, West Hawaii District Fair

CBIO048 **Advancing Acoustic Classification of False Killer Whales Using Spectrogram-Based Machine Learning**
Zachariah Edward James Palika Smith, 17, Senior, Kealakehe High School, Kailua-Kona, Hawaii, T: Justin Brown
https://isef.net/project/225377

Kaneohe, USHI06, Windward District Science and Engineering Fair

CELL025 **Linking Heat Stress Cellular Response to Immortality in Hawaiian Corals**
\# Darwynn Leilani Ayling, 17, Senior, Kalaheo High School, Kailua, Hawaii, T: Diana Chun
https://isef.net/project/224758

PHYS011 **Analysis of Candidate Dormant Binary Black Hole Systems Using Asteroseismology of Red Giants**
Emi Nishimura, 17, Junior, Kalaheo High School, Kailua, Hawaii, T: Diana Chun
https://isef.net/project/223985

Lihue, USHI04, Kauai Regional Science & Engineering Fair

PLNT013 **Analyzing the Mycorrhizae of Non-Native and Native Hawaiian Trees**
Drezdin Taylor, 15, Sophomore, Kauai High School, Lihue, Hawaii, T: Cathlea Tongco
https://isef.net/project/224170

Puunene, USHI03, Maui County Regional Science and Engineering Fair

ENEV020 **Engineering Native Hawaiian Plant–Derived Biosurfactant Formulations for Wildfire Suppression**
Dominick Philippe Guiwa, 18, Senior, Maui High School, Kahului, Hawaii, T: Keith Imada
https://isef.net/project/223926

Waipahu, USHI02, Leeward District Science and Engineering Fair

BMED018 **Multi-Phase Analysis of Microplastic Contamination on Biological Interactions, Digestive Impact, Adsorption Design, and Concentration in Hawai'i's Foods**
\## Travis Osaki, 17, Junior, Pearl City High School, Pearl City, Hawaii, T: Brandon Cha
https://isef.net/project/224150

IDAHO

Boise, USID02, Western Idaho Science & Engineering Fair

MATS048 **Effect of Anodization Voltage and Solution Temperature on the Crystallization of Tantalum Pentoxide Thin Films**
Scarlet Yi-an Fields, 16, Junior, Boise High School, Boise, Idaho, T: Sarah Campbell
https://isef.net/project/225528

Boise, USID03, Eastern Idaho Science & Engineering Fair

MATS039T **EMF Wave Blockers: Shield or Scheme? Testing the Effectiveness of EMF Shielding Technology**
Hailey Lima, 17, Junior
Makiya Nicole Paulsen, 17, Junior
American Heritage Charter School, Idaho Falls, Idaho, T: Alaysha Berger
https://isef.net/project/225183

ILLINOIS

CHICAGO, USIL01, Chicago Public Schools Student Science Fair

BMED008 **Multimodal Analysis of Adipose-Gut Crosstalk Identifies Adipocyte FFAR2 Signaling as a Distal Guardian of Intestinal Homeostasis and Epithelial Integrity**
Saatvik Viniak, 16, Sophomore, Walter Payton College Preparatory High School, Chicago, Illinois, T: Walter Kinderman
https://isef.net/project/223809

CHEM010 **High-Capacity Al^{3+}/Fe^{3+}-Crosslinked Nanocellulose Hydrogels for Arsenite Removal: A Zero-Waste Approach to Water Remediation**
Keith Xin, 18, Senior, Whitney M. Young Magnet High School, Chicago, Illinois, T: Anna Gallardo
https://isef.net/project/223853

ENBM018 **REVOICE: A Real-Time Speech-to-Text Text-to-Speech Destuttering Pipeline**
Cynthia Ruby Chen, 17, Junior, Walter Payton College Preparatory High School, Chicago, Illinois, T: Walter Kinderman
https://isef.net/project/223905

PLNT007 **Impact of Endophytic Inoculation on Buckwheat Root and Stem Traits: A Viable Alternative to Harmful Agrochemicals**
Maizie Rose Koentopp, 15, Freshman, Northside College Preparatory High School, Chicago, Illinois, T: Caroline Foster
https://isef.net/project/223992

Peoria, USIL50, Illinois Junior Academy of Science State Exposition

BMED040 **Hydrogel Based Dendritic Cell Recruitment for Induced Protein Production**
Max Zhi-Jie Wang, 16, Junior, University Laboratory High School, Champaign, Illinois, T: Melinda Tidrick
https://isef.net/project/225632

BMED042 **Therapeutic Potential of Gedunin on the Effects of Parkinson's Disease in a *Drosophila melanogaster* Model**
Jaelyn Olivia Hammersley, 16, Junior, Oak Park and River Forest High School, Oak Park, Illinois, T: Allison Hennings
https://isef.net/project/225650

BMED044 **The Effect of Inducing Hypothyroidism in Gestating Pigs on Fetal Bone Development and Skeletal Mineralization of the Offspring**
Ishani Gupta, 16, Junior, Adlai E. Stevenson High School, Lincolnshire, Illinois, T: Christina Palffy
https://isef.net/project/225715

CBIO055 **GeneSTRATA: An Outcome-Aware Multimodal Hierarchical Bayesian Framework for Biologically Structured Autism Subtype Discovery and Prognostic Stratification**
Amritha Priya Praveen, 17, Junior, Adlai E. Stevenson High School, Lincolnshire, Illinois, T: Susan Brontman
https://isef.net/project/225633

CBIO058 **Spatial Transcriptomics-Conditioned Latent Diffusion Models for Synthetic Histopathology Tissue Patch Generation**
Arnav Nitin Chaphalkar, 16, Sophomore, Adlai E. Stevenson High School, Lincolnshire, Illinois, T: Christina Palffy
https://isef.net/project/225728

ENBM072 **Optimizing Bacteriophage-Infused Hybrid-Hydrogel Matrices to Combat Antibiotic-Resistant Infections**
Issa Kaji Geisendorfer, 18, Senior, Quincy Senior High School, Quincy, Illinois, T: Jessica Loos
https://isef.net/project/226965

MATS050 **Emulsion-Templated Composite Biogels for Scalable Solar-Driven Atmospheric Water Generation**
Zainab Zulfiqar Nathani, 17, Junior, Niles Township West High School, Skokie, Illinois, T: Thomas Jodelka
https://isef.net/project/225630

TMED050 **Novel Machine Learning Model Developed To Optimize Embryo Selection for Frozen Embryo Transfer (FET) and To Calculate Appropriate Number of Embryos Recommended for Embryo Banking**
Theodore Vsevolod Tikhomirov, 18, Senior, Latin School of Chicago, Chicago, Illinois, T: Joshua Phipps
https://isef.net/project/225648

TMED051 **Neuroblastoma and Glioblastoma Differentiation by Retinoic Acid: Epigenetic and Transcriptional Changes**
Meher Garg, 17, Junior, Springfield High School, Springfield, Illinois, T: Ruchi Gupta
https://isef.net/project/225649

INDIANA

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

BEHA037 **The Impact of Auditory Smartphone Notifications on Cognitive Load and Typing Performance in Adolescents**
Beren Uluc, 15, Freshman, Signature School, Evansville, Indiana, T: Tracey Hayden
https://isef.net/project/226979

ENBM091 **ThermaAid: A Closed-Loop Isothermal Bandage for Chronic Wounds- Accelerating Simulated Wound Closure via Active Thermal Regulation and Flexible Additive Manufacturing**
Ayan Arora, 14, Freshman, Signature School, Evansville, Indiana, T: Tracey Hayden
https://isef.net/project/227617

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

TMED066T **Synthesis and Characterization of Novel pH-Responsive Dual-Layer Chitosan-Alginate Smart Nanogels for Curcumin Delivery With Relevance to Colorectal Cancer and Biological Validation in *Drosophila melanogaster***
Achyut Ethiraj, 16, Sophomore
Aditi Ethiraj, 16, Sophomore
Carroll High School, Fort Wayne, Indiana, T: Michelle Brenner
https://isef.net/project/226993

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

CHEM046 **Photo-Redox Functionalization of Aryl Bromide Derivatives by N-Heterocyclic Carbene (NHC) Catalysis**
Atharva Sahu, 16, Junior, Carmel High School, Carmel, Indiana, T: David James
https://isef.net/project/227045

TMED067T **Morphology-Dependent Disparities in Deep Learning-Based Lung Nodule Detection**
Venkata Gummidi, 18, Senior
Abhinav Karthik Mortha, 16, Junior
Carmel High School, Carmel, Indiana, T: David James
https://isef.net/project/226996

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

CBIO076T **DermEquity: A Universal Safety Framework for Medical AI Using Worst-Case Bias Certification and Influence-Based Attribution Validated in Skin Cancer Screening**
Alex Mi, 17, Junior
Angie Xiu, 17, Junior
Kris Nok Hang Lau, 18, Senior
Carmel High School, Carmel, Indiana, T: David James, T: Tracey Hayden
https://isef.net/project/227619

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

EAEV047 **An Ensemble Precipitation Prediction Model for Sub-Saharan Africa Using a Dendrochronological Reconstruction and Satellite Data**
Leif Speer, 15, Freshman, Terre Haute South Vigo High School, Terre Haute, Indiana, T: Aaron Warner
https://isef.net/project/226992

ETSD047 **Application of Ferrofluid in Radial Bearings for Low-Friction Systems**
Christopher Seung-Hyun Park, 18, Senior, Terre Haute North Vigo High School, Terre
Haute, Indiana, T: Glen Cook
https://isef.net/project/226975

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

MATS065 **AI-Driven Exploration of Cost-Effective Fe-Based Shape Memory Alloys: Bridging the Gap Between Prediction and Processability**
Frank Yang Cai, 17, Junior, Homestead Senior High School, Fort Wayne, Indiana, T: Matt Elder
https://isef.net/project/227218

TMED068 **Spatial-Textural Machine Learning for Noninvasive Detection of Malarial Anemia Using Conjunctival Images (Year 2)**
Tara Kim, 17, Junior, West Lafayette Junior/Senior High School, West Lafayette, Indiana, T: Jonathan Eifler
https://isef.net/project/227041

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

PHYS058T **DeepFlare: Solar Flare Forecasting and Active Region Monitoring Using Multi-Modal Machine Learning**
Zaid Luay Abuhassan, 15, Sophomore
Jonathan Ma Davis, 15, Sophomore
Fishers High School, Fishers, Indiana, T: Tyler Mills, T: Tracey Hayden
https://isef.net/project/227505

Terre Haute, USIN50, Hoosier Science and Engineering Fair

CBIO078T **H.E.P.A.R (Hepatic Ensemble Predictive Analysis Resource): A Convergent Machine Learning Architecture for Drug-Induced Liver Injury Prediction**
Laksh Agarwal, 18, Senior
Neo Dong, 16, Junior
Carmel High School, Carmel, Indiana, T: David James
https://isef.net/project/227627

EAEV061 **A Burning Reason: Developing and Testing Bio-Based Flame Retardants Derived From Agricultural Waste and Confirming Ecotoxicological Safety Through a Multigenerational Epigenetic Study on *Daphnia magna***
Arha Kureti, 16, Sophomore, Carroll High School, Fort Wayne, Indiana, T: Michelle Brenner
https://isef.net/project/227518

ENBM090 **A Dual-Field Inertial–Acoustic Microfluidic Chip for Label-Free Circulating Tumor Cell (CTC) Isolation**
Feiqi (Carl) Chen, 17, Junior, Culver Academies, Culver, Indiana, T: David Lawrence
https://isef.net/project/227613

IOWA

Ames, USIA50, State Science and Technology Fair of Iowa

BCHM026 **DPPH: Antioxidant Properties of Tea**
Aurora Rose Edens, 18, Senior, Central Lee High School, Donnellson, Iowa, T: Alicia Schiller-Hayes
https://isef.net/project/226976

CBIO063 **EZ-CDD: Computational Drug Discovery and Design of EZH2 Inhibitors for Glioblastoma Multiforme Large-Scale Virtual Screening, Rational Optimization, Fragment-Based Design**
Nirmal Melam, 17, Junior, Roosevelt High School, Des Moines, Iowa, T: Michaella Kanney
https://isef.net/project/226980

CHEM045 **Ionic Liquid Assisted DNA Preservation**
Caieko Lulani Cavan, 18, Senior, North High School, Des Moines, Iowa, T: Jessica Schewe
https://isef.net/project/227038

EAEV049 **Effects of Avian Influenza (H5N1) on Wild Bird Behavioral Patterns in Iowa**
Morgan Christensen, 17, Junior, Madrid Junior & Senior High School, Madrid, Iowa, T: Kelley Grothus
https://isef.net/project/227079

ETSD044 **Is Commuting a Drag? Effect of E-Bike Shell Design on Aerodynamic Drag**
Asher David Reuel, 16, Sophomore, Ames High School, Ames, Iowa, T: Carisa Danielson
https://isef.net/project/225810

MATS051 **Incorporation of Coconut Derivatives in Bio-Plastic Sheet Formation**
Owen Louis Boge, 17, Junior, Beckman Catholic High School, Dyersville, Iowa, T: Cheryl Kluesner
https://isef.net/project/225780

MCRO031T **Toward a Circular Life Cycle for PLA: Engineering Microbial Production and Biological Degradation**
Chloe Lu, 15, Sophomore
Claire Lu, 16, Junior
Ames High School, Ames, Iowa, T: Carisa Danielson
https://isef.net/project/226981

MCRO032 **Determining the *in vitro* Post-Antimicrobial Effect in *Staphylococcus epidermidis* With Piperine Incorporation**
\# Abby Lampe, 17, Junior, Algona High School, Algona, Iowa, T: Megan Rasmussen
https://isef.net/project/227105

PLNT031 **Computational Quantitative Optimization of Biodiverse Biological Control Systems for Sustainable Suppression of Sciaridae Using *Steinernema feltiae***
Isabelle Zhang Turner, 17, Junior, Valley High School, West Des Moines, Iowa, T: Shannon Johnson
https://isef.net/project/226982

Cedar Rapids, USIA01, Eastern Iowa Science and Engineering Fair

ENBM080 **Design and Development of a Robotic Adaptable Belt-Driven Upper Limb Prosthesis Using Stereolithography**
\## Benjamin William Lothamer, 17, Junior, Mid-Prairie Home School Education Center, Kalona, Iowa, T: Kathryn Lothamer
https://isef.net/project/227277

SFTD034 **Multimodal Fusion of Leaf Images and Geospatial Data for Early Soybean Disease Prediction**
Abhay Suri, 15, Sophomore, Linn Mar High School, Marion, Iowa, T: Jacob Mayes
https://isef.net/project/225015

TMED061 **A Colorimetric Lateral Flow Assay To Detect Neurodegeneration From Tears, Phase II**
\## Antariksha Sharma, 18, Senior, Maharishi School of the Age of Enlightenment, Fairfield, Iowa, T: Asha Sharma
https://isef.net/project/226561

Mapleton, USIA02, Western Iowa Science and Engineering Fair

BCHM017 **Ion-Induced Changes in Regenerated B. Mori Silk Fibroin Self-Assembly**
David Shi, 16, Junior, Johnston High School, Johnston, Iowa, T: Cheryl Smith
https://isef.net/project/225008

MATS053 **Optimization of Rhodamine-B Nanoparticle Synthesis for Drug Delivery**
Ethan Wang, 16, Sophomore, Ames High School, Ames, Iowa, T: Carisa Danielson
https://isef.net/project/225799

KENTUCKY

Lexington, USKY05, Central Kentucky Regional Science and Engineering Fair

ENBM036 **Developing a Human-Computer Interface to Assist Patients With Parkinson's Disease to Improve Motor Function**
Karthika Hariprasad, 17, Senior, Paul Laurence Dunbar High School, Lexington, Kentucky, T: Elizabeth Pelphrey
https://isef.net/project/224516

PHYS030T **A Novel Hybrid Computational Framework for Solar Alfvén Wave Analysis and Tokamak Heating Optimization Using Parker Solar Probe Data**
\# Aryav Das, 17, Junior
\# Saikrish Kolli, 17, Junior
Park Tudor School, Indianapolis, Indiana, T: Autumn Brown
Paul Laurence Dunbar High School, Lexington, Kentucky, T: Elizabeth Pelphrey
https://isef.net/project/224510

ROBO025 **Model-Agnostic and Generalizable Learning: Beyond Flatness for Domain Generalization**
Jayden Jeong, 17, Senior, Paul Laurence Dunbar High School, Lexington, Kentucky, T: Elizabeth Pelphrey
https://isef.net/project/224600

Louisville, USKY02, Louisville Regional Science and Engineering Fair

CELL018 **The Mechanistic Effect of Isoflurane on Crayfish Synaptic Transmission**
Jiwoo Kim, 17, Junior, The Carol Martin Gatton Academy of Mathematics and Science in Kentucky, Bowling Green, Kentucky, T: Sam Earls
https://isef.net/project/224317

CHEM028 **Bioinspired CO_2 Capture: Mimicking Carbonic Anhydrase With a Zn(II) Histidine Metal Organic Framework**
Leah Chen, 17, Junior, The Carol Martin Gatton Academy of Mathematics and Science in Kentucky, Bowling Green, Kentucky, T: Samuel Earls
https://isef.net/project/224548

ENBM035 **AIRA: A Patient-Specific, Risk-Weighted Surgical Path Planning and Preclinical Robotic Execution Framework for Maximal Safe Glioma Resection**
Gopalaniket Tadinada, 17, Junior, North Oldham High School, Goshen, Kentucky, T: Cristine Mcmahan
https://isef.net/project/224506

ENEV031 **The Effect of Aggregate Size and Type on the Structural Integrity of Concrete**
Bailey Kaiser, 17, Senior, Ballard High School, Louisville, Kentucky, T: Glenda Jones
https://isef.net/project/224307

SFTD029 **Vision-Based Neural Network Algorithm for Accessible 8-Stage Biomechanical Tennis Serve Evaluation and Adaptive Feedback**
Shreethan Palla, 16, Sophomore, North Oldham High School, Goshen, Kentucky, T: Cristy McMahan
https://isef.net/project/224932

Louisville, USKY03, Dupont Manual High School Regional Fair

BCHM033 **A Proposed Mechanistic Link Between PFAS Contamination and Cancer: An Integrated Molecular Dynamics and NMR Study**
Vishwaa Kannan, 17, Junior, duPont Manual High School, Louisville, Kentucky, T: Keri Polevchak
https://isef.net/project/225774

ENEV054 **Combating PFAS Contamination: Developing a Sensor for Detection in Drinking Water**
Wanda Wu, 17, Junior, duPont Manual High School, Louisville, Kentucky, T: Keri Polevchak
https://isef.net/project/225730

ETSD042T **Project HERMES: Design and Development of a Proof-of-Concept Sounding Rocket With an Adaptive ML Simulation for Propulsive Landings**
Agastya Mishra, 15, Sophomore
Kabir Singh, 16, Sophomore
duPont Manual High School, Louisville, Kentucky, T: Keri Polevchak
https://isef.net/project/225657

MATH025 **A Novel Spectral-Stochastic Mathematical Framework for Water Scarcity Mitigation via Physics-Informed Neural Operators**
Advika Rastogi, 16, Junior, duPont Manual High School, Louisville, Kentucky, T: Keri Polevchak
https://isef.net/project/225647

MATS055 **Magnetorheological Elastomers (MREs) for Adaptive Friction Control in Mobility Aids: Fabrication, Tribological Testing, and Optimization**
Annika Chadha, 16, Junior, duPont Manual High School, Louisville, Kentucky, T: Keri Polevchak
https://isef.net/project/226497

Prestonsburg, USKY06, East Kentucky Regional Science and Engineering Fair

TMED042 **Co-Expression of CD34, ERβ, and GPER in Breast Cancer: An Immunofluorescence Analysis of Tumor–Vascular Interactions**
Anikaa Sharma, 15, Sophomore, Pikeville High School, Pikeville, Kentucky, T: Jordan Johnson
https://isef.net/project/225204

Richmond, USKY50, Kentucky Science and Engineering Fair

CBIO074 **Mechanistic Elucidation of CHSY1 Inhibition via a Multi-Scale Quantum-Informed Computational Drug Discovery Framework**
Ekantika Sanyami, 17, Junior, duPont Manual High School, Louisville, Kentucky, T: Keri Polevchak
https://isef.net/project/227536

CHEM042 **Screening Singlet Fission (SF) via Accessible Spectroscopic Methods in Acene-Derived Semiconductors**
Avneesh Mahesh Kudrimoti, 18, Senior, Paul Laurence Dunbar High School, Lexington, Kentucky, T: Elizabeth Pelphrey
https://isef.net/project/226758

ETSD055 **Development of a Procedural CAD Pipeline for Biometric-Based Impact Mitigation and Rotational Force Support**
Sophia Lee, 16, Sophomore, Louisville Collegiate School, Louisville, Kentucky, T: Sarah Weyrens
https://isef.net/project/227784

MATS057 **Hydrochromic Coating for Wet-Floor Hazard Detection: Visual Detectability, Slip Resistance and Drying Behavior**
Jack Ryan Gill, 16, Junior, Paul Laurence Dunbar High School, Lexington, Kentucky, T: Elizabeth Pelphrey
https://isef.net/project/226757

PHYS065 **Flow Rate Dependence on Stenosis Order in a Serial Stenosis Model: Effects of Viscosity and Turbulence**
Ethan Luke Tang, 16, Junior, duPont Manual High School, Louisville, Kentucky, T: Keri Polevchak
https://isef.net/project/227625

ROBO044T **A Scalable and Manufacturable Limb Actuation Architecture for Back-Drivable Humanoid Robotics Using Regenerative Air-Recycling Pneumatics, 3D-Printed QDD Motors and Reinforcement Learning**
Jacob Anil, 17, Junior
Jason Chen, 16, Junior
duPont Manual High School, Louisville, Kentucky, T: Keri Polevchak
https://isef.net/project/226994

LOUISIANA

Baton Rouge, USLA01, Louisiana Region VII-Science and Engineering Fair

SFTD020 **A Probabilistic Computational Framework for Learning Persistence in Heatwave Prediction**
Sofia Chenglan Zhu, 17, Senior, Baton Rouge Magnet High School, Baton Rouge, Louisiana, T: Tiffany Moore
https://isef.net/project/224322

TECA007 **We the People: An Empirical Analysis of the U.S. Political Climate**
Brinkley Briahna Bennett, 18, Senior, St. Joseph's Academy, Baton Rouge, Louisiana, T: Jacqueline Savoia
https://isef.net/project/224321

TECA009 **Shazam for Singing: Building a Music Recognition App That Can Process Humming**
Berklee Ruth Zanders, 15, Sophomore, Baton Rouge Magnet High School, Baton Rouge, Louisiana, T: Sangita Mathur
https://isef.net/project/224451

Baton Rouge, USLA50, Louisiana Science and Engineering Fair

BEHA055 **What Characterizes and Drives Cognitive Changes in Parkinson's Disease? The Roles of Brain Structure and Connectivity Enabled by a Novel Data Integration Tool**
Vennela Malireddy, 18, Senior, Caddo Parish Magnet High School, Shreveport, Louisiana, T: Cameron Hall
https://isef.net/project/227855

BMED057 **Clemastine Enhances Synaptic Plasticity and Neurovascular Function After Chronic Cerebral Hypoperfusion**
Fanfei Kong, 18, Senior, Caddo Parish Magnet High School, Shreveport, Louisiana, T: Cameron Hall
https://isef.net/project/227533

ENEV087T **ShoreSafe: An AI-Based Coastal Erosion Prediction Application**
Dylan Xavier Carey, 17, Junior
Veer Singh Walia, 16, Junior
Isidore Newman School, New Orleans, Louisiana, T: Matt Jones
https://isef.net/project/228014

MCRO045 **Warming-Driven Selection for Thermotolerant Human-Pathogenic *Vibrio* in Gulf Oysters: Strain Level Growth Responses and Novel Predator-Based Treatment**
\# Abigail Qi, 17, Junior, Baton Rouge Magnet High School, Baton Rouge, Louisiana, T: Tiffany Moore
https://isef.net/project/228000

PHYS075 **Measurement-Induced Phase Transition in Random Haar Monitored Quantum Circuits**
Adhrit Maiti, 16, Sophomore, Baton Rouge Magnet High School, Baton Rouge, Louisiana, T: Tiffany Moore
https://isef.net/project/227918

PHYS078T **Gaps in Second-Order Coincidence of Thermal Light From Artificial Photonic Nanostructures**
Aadi Singh, 16, Junior
Ziang Zhuang, 16, Sophomore
Baton Rouge Magnet High School, Baton Rouge, Louisiana, T: Tiffany Moore
https://isef.net/project/228001

PLNT040 **Battle of the Molecular Methods: RFLP and Multiplex PCR in Genetic Detection Accuracy**
Jaanvi Singh, 16, Sophomore, Baton Rouge Magnet High School, Baton Rouge, Louisiana, T: Tiffany Moore
https://isef.net/project/227506

Bossier City, USLA02, Bossier Parish Community College Louisiana Region I Science and Engineering Fair

ANIM016 **BeeSMART: Bee Sustainability Monitoring and Automated Response Technology**
Aiden Lee Zhao, 14, Freshman, Caddo Parish Magnet High School, Shreveport, Louisiana, T: Cameron Hall
https://isef.net/project/224201

EBED013 **An Intelligent System for Endotracheal Tube Monitoring**
Anya Marie Trutschl, 15, Freshman, Caddo Parish Magnet High School, Shreveport, Louisiana, T: Cameron Hall
https://isef.net/project/224099

ENBM027 **A Novel, Miniaturized, Non-Invasive Device for Pressure Injury Prevention**
\## Maya Julia Trutschl, 18, Senior, Caddo Parish Magnet High School, Shreveport, Louisiana, T: Cameron Hall
https://isef.net/project/224185

Houma, USLA03, Terrebonne Parish Science Fair

ANIM003 **Pollen Picky Bees: Analyzing the Differences in Bee Harvesting Behavior**
Aynsley Louise Canyon, 16, Junior, Terrebonne High School, Houma, Louisiana, T: Rayemona Boyd
https://isef.net/project/223773

ANIM004 **Do Bird Species Richness, Abundance, and Diversity Change in Relation to the Degree of Urbanization?**
Forrest Ellsworth, 15, Freshman, Terrebonne High School, Houma, Louisiana, T: Mary Williams
https://isef.net/project/223774

Lafayette, USLA04, Louisiana Region VI Science and Engineering Fair

ETSD037 **Smart Dog House: A Self-Sustaining, Automated Habitat for a Dog's Well-Being**
Betzabe Salomon Gonzalez, 14, Freshman, Acadiana Renaissance Charter Academy, Youngsville, Louisiana, T: Kellie Boquet
https://isef.net/project/225319

Lake Charles, USLA05, Louisiana Region V Science and Engineering Fair

ENEV017 **Storm Surge Flood Modeling for Lake Charles and Surrounding Areas**
Kaylee Zhang, 15, Sophomore, Alfred M. Barbe High School, Lake Charles, Louisiana, T: Yevette Richey
https://isef.net/project/223924

MATH004 **An Investigation of Fractal Dimension Growth and Convergence in Mathematical Fractals Using Box-Counting and Perimeter Scaling Methods**
Douglass Wayne Mayberry, 16, Junior, Louisiana School for Math, Science, and the Arts, Natchitoches, Louisiana, T: Chris Hynes
https://isef.net/project/223947

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

CHEM029 **An *in silico* Scaffold-Based Machine Learning Approach to Analyze the Influence of Molecular Descriptors and Substructures on the Blood-Brain Barrier Permeability of Neurological Drugs**
Ujesh Kumar Chakravarty, 16, Junior, Haynes Academy for Advanced Studies, Metairie, Louisiana, T: Brittany Dement
https://isef.net/project/224566

EBED022 **Step to Signal: A Pressure-Activated Crosswalk System for Accessible Pedestrian Navigation**
Lucas Philip Jeansonne, 17, Junior, The Willow School, New Orleans, Louisiana, T: Matthew Owen
https://isef.net/project/224565

MATS031 **Chitosan-Coated Biodegradable Containers for Extending Food Shelf Life**
Alvin Su, 16, Sophomore, Benjamin Franklin High School, New Orleans, Louisiana, T: Cecelia Gillam
https://isef.net/project/224571

SFTD027 **Impact of Level of Algorithmic Transparency on User Trust and Engagement of Simulated Social Media Feeds**
Smaran Reddy Tamidela, 17, Junior, Patrick F. Taylor Science & Technology Academy, Westwego, Louisiana, T: Cheryl Delatte
https://isef.net/project/224567

MARYLAND

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

ANIM022 **Investigating Muscle-Specific Rho1 Knockdown on Climbing Speed and Endurance in Aging *Drosophila melanogaster***
Kenny Tuan Nguyen, 18, Senior, Broadneck High School, Annapolis, Maryland, T: Rebecca Wallace
https://isef.net/project/224420

ENBM033T **A Low Cost, Tunable Model for Studying Hypoxia-Driven Growth in A375 Melanoma Cancer Cells Using Jacketed Breathable Silicone-Walled Shake Flasks**
Abdullah Iqbal Ashraf, 17, Junior
Henry Tochukwu Nwobodo, 17, Junior
Glen Burnie High School, Glen Burnie, Maryland, T: Carol Young
https://isef.net/project/224425

ENBM055T **Ambient Intelligence for Patient Care Environments**
Chelsea Sun, 18, Senior
Aarushi Bhattarai, 17, Junior
Atholton High School, Columbia, Maryland, T: Mabrooka Chaudhry, T: John Mahimal
https://isef.net/project/225284

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

BMED048 **Formulation-Dependent Preservation of Lactase Activity Under Simulated Gastrointestinal Conditions**
Jolee Luolin Xian, 16, Sophomore, Bryn Mawr School, Baltimore, Maryland, T: Emily Fetting
https://isef.net/project/226560

MATS058 **Printable Biodegradable Conductive Nanocomposites for Sustainable Electronic Applications**
Caleb Son, 17, Junior, Mount Hebron High School, Ellicott City, Maryland, T: Mary Sankey
https://isef.net/project/226971

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

CBIO060 **GCORE: Glioblastoma-Related Chimeric Antigen Receptor T-Cell Therapy Outcome Re-Engineering**
Rishi Sheth, 17, Senior, Great Mills High School, Great Mills, Maryland, T: Charles Skinner
https://isef.net/project/226557

CHEM039 **Multi-Spectroscopic Optimization of Cobalt(II) *meso*-Tetra(4-sulfonatophenyl) Porphine Under Variable pH, Concentration, and Temperature**
Sarah Naomi Wright, 17, Senior, Oxon Hill High School, Oxon Hill, Maryland,
T: Jordana Azore
https://isef.net/project/226556

ENBM069 **ripTQ: Democratizing Extremity Bleeding Control With an Inexpensive Automatic Tourniquet**
Sam Gardener Kweskin, 17, Junior, Eleanor Roosevelt High School, Greenbelt, Maryland,
T: Lauren Rigal
https://isef.net/project/226559

Frederick, USMD02, Frederick County Science and Engineering Fair

ENBM095T **NEXUS: Neurophysiological Emergency eXternal Understanding System- An AI-Integrated Wearable Device Using Multi-Mode Communication and Emotional State Detection in Autism Spectrum Disorder Populations for Elopement Prevention**
Anvi Chaturvedi, 17, Junior
Tanvi Chaturvedi, 17, Junior
Urbana High School, Ijamsville, Maryland, T: Elizabeth McCook
https://isef.net/project/227839

PHYS051 **Quantum Canary: Neural Network-Based Autonomous Noise Drift Detection in NISQ Era Quantum Processors**
Kanishka Singh, 15, Freshman, Urbana High School, Ijamsville, Maryland,
T: Elizabeth McCook
https://isef.net/project/226989

Germantown, USMD03, ScienceMontgomery

BCHM025 **PRPS1 Lactylation by p300 Drives Nucleotide *de novo* Synthesis and Chemotherapy Resistance in Glioblastoma**
Ethan Pei, 17, Junior, Richard Montgomery High School, Rockville, Maryland,
T: Bessy Albaugh
https://isef.net/project/226967

MATH032 **When Epidemics Meet: Understanding Spatiotemporal Interactions of Two Pathogens on Metapopulation Networks via Reaction-Diffusion Dynamics**
Alyssa Yu, 17, Senior, Poolesville High School, Poolesville, Maryland, T: Zachary Kingman
https://isef.net/project/226968

ROBO042 **ScoutCane: A Novel Cooperative Drone-Cane System Enabling Infrastructure-Free Navigation for the Visually Impaired via Viewpoint-Invariant Semantic Graph Encoding**
Kevin Wentao Xia, 17, Junior, Walt Whitman High School, Bethesda, Maryland,
T: Hong Wang
https://isef.net/project/226855

MASSACHUSETTS

Cambridge, USMA50, Massachusetts State Science & Engineering Fair

ANIM037 **Dye-sophila: The Effect of a Natural and Artificial Yellow Dye on *Drosophila* Populations and Preference**
Kelly Regina Mills, 17, Junior, Wachusett Regional High School, Holden, Massachusetts,
T: Cindy Sparks
https://isef.net/project/226972

FINALIST DIRECTORY

BEHA054 **SmartBlink: Real-Time AI-Driven Adaptive Pedestrian Traffic System for Enhancing Perceived Pedestrian Safety and Traffic Efficiency**
Yaejoon Jung, 18, Junior, Phillips Academy, Andover, Massachusetts, T: Brian Faulk
https://isef.net/project/227806

CBIO077 **A Unified Protein Embedding Model With Local and Global Structural Sensitivity**
Jerry Xu, 17, Senior, Lexington High School, Lexington, Massachusetts, T: Andre Verner
https://isef.net/project/227626

EAEV045 **From Hair to Habitat**
Emily Elizabeth Carter, 18, Senior, Bristol-Plymouth Regional Technical School, Taunton, Massachusetts, T: Kristen Mancini
https://isef.net/project/226555

EBED039 **How Does Changing the PWM Duty Cycle Affect the Magnetic Field Strength and Core Saturation Behavior of an Electromagnet With and Without a Soft Iron Core?**
ZiHua Mai, 17, Junior, John D. O'Bryant School of Mathematics and Science, Roxbury, Massachusetts, T: Nicola Sumner
https://isef.net/project/226495

ENBM092 **VoxNeuro: A Low-Cost, Accessible Multimodal System Integrating Wearable Gait Monitoring and Grassmannian Subspace Analysis of Speech for Parkinson's Screening**
Laiba Khan, 16, Junior, Lexington High School, Lexington, Massachusetts, T: Parul Kumar
https://isef.net/project/227804

MATS054 **Printing 2D MXene-Based Chipless Radio Frequency Identification Tags to Enable Plastic Waste Sorting for Recycling**
Kevin William Sun, 17, Senior, Andover High School, Andover, Massachusetts, T: Tammy Fay
https://isef.net/project/226496

MCRO042 **Phospholipid Deletion Alters Membrane Composition, Growth and Stress Response in *Mycobacterium smegmatis***
Kornkanya Charoensiddhi, 17, Junior, Wellesley High School, Wellesley, Massachusetts, T: Nora Wilkins
https://isef.net/project/227853

PHYS071 **Novel Nudged Elastic Band (NEB) Approach for Minimum Energy Pathway Modeling in Protein Binding for Efficient Drug Discovery**
Jessica Wu, 18, Junior, Deerfield Academy, Deerfield, Massachusetts, T: Julia McClellan
https://isef.net/project/227805

PLNT024 **Say Goodbye to Pests and Pesticides: Exploring the Effects of Potassium Soil Levels on Druse Crystal Idioblasts Containing Calcium Oxalate Crystals in *Spinacia oleracea***
Khadeja Abdelmeneim Mukassabi, 16, Junior, Southeastern Regional Vocational Technical High School, South Easton, Massachusetts, T: Angela Basse
https://isef.net/project/225268

SFTD061 **Hearing Is Discovering: Audio Augmented Reality for Celestial Objects Through Music-Theoretic and Spatial Sonification**
Hanna Suzuki, 16, Sophomore, Bedford High School, Bedford, Massachusetts, T: Nicole Prince
https://isef.net/project/227850

SFTD062 **Uncertainty-Aware Adaptive Huber-Loss Federated Distillation for Thermal Anomaly Detection in UAV Networks**
Jinwoo Park, 17, Junior, Concord Academy, Concord, Massachusetts, T: Eric Henry
https://isef.net/project/227851

SFTD064T **TheraBee: Accessible Mental Health Screening and Support Through the Use of Generative AI and Autoregressive Agentic Assessment**
Olutayo Michael Oyewusi, 17, Senior
Finnegan Patrick Sommer, 17, Senior
Southeastern Regional Vocational Technical High School, South Easton, Massachusetts, T: Peter Valente
https://isef.net/project/227951

TECA012 **POEM-KD: Persona-Oriented Efficient Model for Poetry Rewriting With Knowledge Distillation**
Katie Kim, 17, Junior, Deerfield Academy, Deerfield, Massachusetts, T: Melanie Onufrieff
https://isef.net/project/226498

TMED092 **ANV-Probe: Deteriorative Airborne Neurotropic Virus and Immune Modulation Using a Novel DNA Aptamer-Eggshell Vitelline Membrane Metal-Organic Framework in *Caenorhabditis elegans***
Jayaratna Deshamouni, 16, Sophomore, Shrewsbury High School, Shrewsbury, Massachusetts, T: Ryan Stoens
https://isef.net/project/227852

MICHIGAN

Bloomfield Hills, USMI03, Flint Regional Science & Engineering Fair

EAEV033 **Assessing the Environmental Impacts of Acid Rain, Microplastics, Road Salt and Volatile Organic Compounds on Aquatic and Terrestrial Ecosystems**
Michael Daoud, 14, Freshman, Saginaw Arts and Sciences Academy, Saginaw, Michigan, T: Clara Wagner
https://isef.net/project/225200

EAEV040 **Evaluating the Effects of Ash Contamination on Diatom Photosynthesis**
Matlyn Haze Miller, 18, Senior, Saginaw Arts and Sciences Academy, Saginaw, Michigan, T: Clara Wagner
https://isef.net/project/225608

ENBM046 **Low Cost Breath-Based System to Detect Cancers**
Diya R. Ramakrishnan, 16, Junior, Saginaw Arts and Sciences Academy, Saginaw, Michigan, T: Clara Wagner
https://isef.net/project/225017

ROBO033 **Clutch: A Hybrid Electrostatic Dry Adhesive Climbing Robot**
Zeyland Holden, 17, Senior, Grand Blanc High School, Grand Blanc, Michigan, T: Matthew Hugo
https://isef.net/project/225018

Farmington, USMI02, Science and Engineering Fair of Metropolitan Detroit

BMED062 **Leveraging scRNA-Seq Profiles of Psychiatric Disorders to Identify Disorder-Associated Gene Co-Expression Modules**
Judy Eliana Bai, 18, Senior, Greenhills School, Ann Arbor, Michigan, T: Cathy Renaud
https://isef.net/project/227713

CBIO042 **ReinforCell - Reinforcement Learning Solution to Engineer Robust CAR-T-Cells for Cancer Patients**
Yashvini Goddla, 17, Junior, Detroit Country Day School, Beverly Hills, Michigan, T: Patricia Hanlan
https://isef.net/project/225244

CBIO046T **Designing and Delivering Molecular Glue Degraders for the Total Elimination of Previously Undruggable Pathogenic Proteins**
Arnav Sharma, 16, Junior
Ahyoung Song, 17, Junior
International Academy, Troy, Michigan, T: David Lyons
https://isef.net/project/225279

EGSD026 **Structural Optimization of Wireless Power Transfer Using 3D-Printed Metamaterials**
Ali Alnaib, 16, Junior, Salem High School, Canton, Michigan, T: Kevin Kollar
https://isef.net/project/225258

ENBM052 **Towards Completing and Annotating the Human Connectome With CGNN: Connectome Generation Neural Network**
Dean Ahmed Jordan, 17, Junior, International Academy, Bloomfield Hills, Michigan, T: Ian Jones
https://isef.net/project/225238

ENBM053 **A Novel Idea: AI Guided Autonomous Nanobot for Non-Invasive Artery Blockage Detection & Plaque Removal**
Shruthika Pallapothu, 18, Senior, Troy High School, Troy, Michigan, T: Rebecca Brewer
https://isef.net/project/225256

ETSD036 **Investigating the Effects of Heating on DSLIM Efficiency: A Novel Approach to Undersea Magnetohydrodynamic Propulsion**
Saikrish Balaji, 16, Junior, Troy Athens High School, Troy, Michigan, T: Sathyaja Krishnan Nair
https://isef.net/project/225263

Farmington, USMI50, Michigan Science and Engineering Fair

ROBO035 **Decoding Light: Physics-Aware Self-Supervised AI for Low-Cost High-Fidelity Hyperspectral Imaging**
Michael Junzhe Hua, 16, Junior, Cranbrook Kingswood School, Bloomfield Hills, Michigan, T: Stephanie Kokoszka
https://isef.net/project/225260

TMED041 **Novel Endoscopic Ultrasound-Enabled Detection of Early-Stage Pancreatic Cancer via a Hybrid CNN-ViT System**
Nina Linyan Shaye, 17, Sophomore, Kalamazoo Area Mathematics and Science Center, Kalamazoo, Michigan, T: Rebecca Joyce
https://isef.net/project/225198

Kalamazoo, USMI07, Southwest Michigan Science & Engineering Fair

ETSD046 **Zephyr: A Military-Inspired, Hand-Built Fixed-Wing UAV on a $400 Budget**
Yuvan Muppireddy, 17, Senior, Kalamazoo Area Mathematics and Science Center, Kalamazoo, Michigan, T: Rebecca Joyce
https://isef.net/project/226969

PLNT048T **A Systematic Study of the Caffeine Biosynthetic Enzymes in the *Ilex* Genus**
\# Aanya Goel, 18, Senior
\# Claire Tong, 18, Senior
\# Janelle Yao, 18, Senior
Kalamazoo Area Mathematics and Science Center, Kalamazoo, Michigan, T: Rebecca Joyce
https://isef.net/project/227954

MINNESOTA

Crookston, USMN05, Western Minnesota Regional Science Fair

MATH015 **Goat a Feeling I Should Switch: A Study of Whether Switching Doors in the Monty Hall Problem Increases Your Chances of Winning**
George David Spaeth Jr., 16, Sophomore, Park Christian School, Moorhead, Minnesota, T: Kyle Kemp
https://isef.net/project/224188

Duluth, USMN02, Northeast Minnesota Regional Science Fair

EAEV011 **The Effect of Winter Weather Events on Wolf (*Canis lupus*) Movement on the Fond du Lac Reservation**
Finley Holz, 16, Sophomore, Cloquet Senior High School, Cloquet, Minnesota, T: Cynthia Welsh
https://isef.net/project/223867

ENEV019 **Investigating the Rate of Hydrogen Sulfide Removal by Manganese GreensandPlus® for Use in Large Scale Wastewater Treatment**
\# Ethan James Lavan, 17, Senior, Cloquet Senior High School, Cloquet, Minnesota, T: Cynthia Welsh
https://isef.net/project/223925

Frazee, USND50, North Dakota State Science and Engineering Fair

CHEM043 **Hydrotectives 2.0: Testing Sodium Alginate and Carboxymethyl Cellulose Hydrogel Beads for Targeted Delivery of Acetaminophen**
\# Amaa Samanmali Wijetunga, 14, Sophomore, Red River High School, Grand Forks, North Dakota, T: Mevan Wijetunga
https://isef.net/project/226973

EBED042 **Embedded Vision Hardware for Medical Screening in Low-Resource Settings**
\# Ava Sophia Hauck, 17, Junior, Dickinson High School, Dickinson, North Dakota, T: Bridget Jacob
https://isef.net/project/226987

MATS060 **Turning Waste Styrofoam Into Water-Repellent Coatings**
Sev Johann Caldona, 14, Freshman, Davies High School, Fargo, North Dakota,
T: Eugene Caldona
https://isef.net/project/226990

Mankato, USMN03, Southern Minnesota Regional Science and Engineering Fair

MATS019 **Peeling Away Pollutants in Water With Banana Char**
Jasmine Fleming, 17, Junior, Lake Crystal Wellcome Memorial, Lake Crystal, Minnesota,
T: Kelly Moeller
https://isef.net/project/224230

Plymouth, USMN04, Twin Cities Regional Science Fair

ANIM015 **When Climate Changes, Bees Do Too: Characterization of Pollinator Foraging Behavior Under Heat Stress Using Remote Motion-Activated Imaging**
Isabella M. Wang, 16, Junior, East Ridge High School, Woodbury, Minnesota,
T: Princesa Hansen
https://isef.net/project/224198

MATS017 **Green Biosynthesis of Gold Nanoparticles Using Pomegranate Peel and Their Potential Application in Photothermal Therapy for Cancer Treatment**
Alyssa Wang, 17, Junior, East Ridge High School, Woodbury, Minnesota,
T: Stephanie Harberts
https://isef.net/project/224192

ROBO016 **Detecting Outliers in 3D Point Clouds Using Higher-Order Geometric Cycles for Accurate 3D Reconstruction**
Rohan Kuruvila, 17, Junior, East Ridge High School, Woodbury, Minnesota,
T: Megan Petzold
https://isef.net/project/224194

TECA004 **ArticuRace: Closing the Global Speech Therapy Gap Through a Low-Resource and Interpretable AI Framework**
Ethan John Nguyen Finch, 17, Junior, Stillwater Area High School, Stillwater, Minnesota,
T: Lynn Swanson
https://isef.net/project/224189

Plymouth, USMN09, St. Paul Science Fair

ENEV027 **Putting the Brakes on Pollution: Temporal Efficacy of *P. ostreatus* in the Mycofiltration of Copper, Lead, and Zinc**
Agustin Tobias Orezzoli Robinson, 16, Sophomore, St. Paul Central High School, St. Paul, Minnesota, T: Princesa Hansen
https://isef.net/project/224197

SFTD014 **INTRINSIC: Parameter-Free Private Keystroke Classification With Normalized Relative Compression**
Huxley Westemeier, 18, Senior, Saint Paul Academy and Summit School, Saint Paul, Minnesota, T: Kate Lockwood
https://isef.net/project/224191

Plymouth, USMN10, Western Suburbs Science Fair

BCHM008 **Escaping the Matrix: Identifying ADAMTSL2 as the Trigger for Irreversible Liver Fibrosis Through Protein Modeling**
Milan Darji, 17, Senior, Minnetonka High School, Minnetonka, Minnesota, T: Patricia Price
https://isef.net/project/224193

BMED019 **The Uneven Distribution of Socioeconomic Stress as a Possible Driver of Racial Smoking Disparities: An NHANES Analysis**
Joy Zhou, 16, Junior, Wayzata High School, Plymouth, Minnesota, T: Amanda Laden
https://isef.net/project/224190

EBED016 **A.W.A.R.E.:Development of a Real-Time Wearable Auditory Emergency Detection System for Deaf and Hard of Hearing Individuals Using AI-Based Acoustic Analysis**
Shagun Shrivastava, 16, Sophomore, Eden Prairie High School, Eden Prairie, Minnesota,
T: Princesa Hansen
https://isef.net/project/224195

MATH014 **Revealing The Fragility Beneath: Engineering Dynamic Multi-Layer Financial Networks for Modeling Systemic Risk and Shock Propagation**
Nyel Ahmed Uffa, 17, Junior, Eden Prairie High School, Eden Prairie, Minnesota, T: Princesa Hansen
https://isef.net/project/224186

SFTD015 **DeepScope: A Cascading Biological Plausibility Architecture for Real-Time Deepfake Detection**
Parth Rana, 16, Sophomore, Wayzata High School, Plymouth, Minnesota, T: Joel Ellingson
https://isef.net/project/224196

Rochester, USMN07, Rochester Regional STEM Fair

ENBM032 **SonoVascAR: A Vascular Access Aid: Automated Real Time Ultrasound Vessel Detection With Augmented Reality 3D Projection**
Aditi Sriram, 14, Freshman, Mayo High School, Rochester, Minnesota, T: Donavan Boguslawski
https://isef.net/project/224414

MATS023 **Toward Safer Nail Cosmetics: A Randomized *in vitro* Performance Study of a Novel Natural Biologic Nail Paint**
Rathan Duggirala, 17, Junior, Mayo High School, Rochester, Minnesota, T: Art Trimble
https://isef.net/project/224411

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

CELL038 **SILENCE: On-Demand Seizure Suppression via Closed-Loop Sonogenetics**
Evan Joseph Morris, 18, Senior, Saint Paul Academy and Summit School, Saint Paul, Minnesota, T: Karissa Baker
https://isef.net/project/227113

EBED049 **Dream Mornings - Raspberry Pi, Blue Fruit, and Sensor Based Sleep Cycle Adaptive Alarm Clock**
Maraike Renae Fortin, 16, Sophomore, Prior Lake High School, Savage, Minnesota, T: Margaret Ekrem
https://isef.net/project/227912

ENEV056 **Transforming Agricultural Waste Into Green Technology for Lithium Enrichment From Dilute Brines**
John Zhongtai Liu, 17, Senior, Mounds View High School, Arden Hills, Minnesota, T: Jing Tang
https://isef.net/project/226576

ENEV082 **Scalable Environmental Proxy Sensing Framework for Real-Time Detection and Risk Characterization of Chloramine Accumulation in Indoor Aquatic Systems**
Aditi Siddharth Gandhi, 17, Junior, The Blake School, Minneapolis, Minnesota, T: Kirstin Holm
https://isef.net/project/227917

MATS052 **Colorimetric Arsenic Detection at Micromolar Concentrations and Machine Learning Assisted Development of a Composite Teabag for Arsenic Bioremediation in Drinking Water**
Vick Tan, 17, Junior, EP Academy, Eden Praire, Minnesota, T: Lawrence Tan
https://isef.net/project/225782

MISSISSIPPI

Booneville, USMS02, Mississippi Region IV Science Fair

PLNT044 ***In vitro* Bioaugmentation of *Zea mays* L. via a *Bacillus subtilis* Seed Coating to Stimulate Allelopathic Defense Mechanisms Against Co-Germinating *Ambrosia artemisiifolia***
Carter Bond Gowen, 16, Junior, EAGLE Homeschool Association, Rienzi, Mississippi, T: Courtney Gowen
https://isef.net/project/227781

Cleveland, USMS03, Mississippi Region III Science and Engineering Fair

BCHM014 **Activity Comparison of Free and Alginate-Immobilized Papain Using an Azocasein Assay**
\# Baruni Jakkula, 16, Junior, The Mississippi School for Mathematics and Science, Columbus, Mississippi, T: Paige Aiken
https://isef.net/project/224933

BEHA023 **Friend or Foe: Do Phones Make a Difference?**
Mia Josephine Powell, 15, Freshman, Cleveland Central High School, Cleveland, Mississippi, T: Jody McIntosh
https://isef.net/project/224941

Jackson, USMS05, Mississippi Region II Science and Engineering Fair

BMED064 **Timing-Dependent Phage-Antibiotic Effects on the Survival of the Non-Target *Bacillus subtilis* in an *Escherichia coli* Co-Culture**
Kavya Maheshwari, 16, Junior, St. Andrew's Episcopal School, Ridgeland, Mississippi, T: Marks McWhorter
https://isef.net/project/227846

ROBO055 **Effectiveness of AI-Adaptive Robotic Hand in Common Medical and Industrial Tasks**
Patrick Yan Liu, 17, Junior, St. Andrew's Episcopal School, Ridgeland, Mississippi, T: Marks McWhorter
https://isef.net/project/227718

Long Beach, USMS08, Mississippi Regions I and VI Science and Engineering Fair

MATS029 **An AI-Guided Approach to Tuning Block Copolymer Nanostructures Through Homopolymer Incorporation for Advancing Filtration and Energy Storage Applications**
Jiarui Michelle Xie, 16, Junior, Oak Grove High School, Hattiesburg, Mississippi, T: Brandi Twillie
https://isef.net/project/224515

MATS030 **Investigation of Soybean Oil-Hexagonal Boron Nitride Composites for Sustainable Packaging**
JeMele Moore, 18, Senior, Hattiesburg High School, Hattiesburg, Mississippi, T: Keara Johnson
https://isef.net/project/224531

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

EGSD003 **Making Sustainable Fabrics From Seaweed**
Barbara Adrienne Mattingly, 15, Freshman, West Lauderdale High School, Collinsville, Mississippi, T: Shea Leake
https://isef.net/project/223883

MATS007 **Semiconducting Fibers Through Electrospinning for Flexible Electronics Using Organic Polymers**
Anya Rai, 17, Junior, The Mississippi School for Mathematics and Science, Columbus, Mississippi, T: Thomas Easterling
https://isef.net/project/223959

Oxford, USMS07, Mississippi Region VII Science and Engineering Fair

EBED043 **ORBIT – Optimized Roundabout Behavior via Intelligent Trajectory-Mapping**
\# Yoon Jang, 16, Sophomore, Oxford High School, Oxford, Mississippi, T: Deborah Jones
https://isef.net/project/227239

MISSOURI

Cape Girardeau, USMO01, Southeast Missouri Regional Science Fair

CHEM016 **Detecting Perfluoroalkyl Chemicals in Heuchera Utilizing Infrared Spectroscopy**
\# Emma Mae Fetterhoff Hoffman, 18, Senior, Perryville Senior High School, Perryville, Missouri, T: Leanne Thele
https://isef.net/project/224243

EAEV020 **The Effects of an MOF on Wastewater Treatment When Combined With a Bioreactor**
\# Eli Pavy, 17, Senior, Clarkton Junior Senior High School, Clarkton, Missouri, T: Noah Pavy
https://isef.net/project/224247

Fayette, USMO10, Central Methodist Eagles Science and Engineering Fair

PLNT051 **Priming for Success: Investigating the Effects of Hormonal Priming on Seed Germination Under Saline Conditions**
Baylee Martin Harris, 16, Sophomore, Tuscumbia High School, Tuscumbia, Missouri, T: Constance Wyrick
https://isef.net/project/228154

Greenfield, USMO08, Ozarks Science and Engineering Fair

EAEV029 **Microorganism Activity Enhanced Biochar as Biological Improvement to Martian Regolith**
Nora Leeann Mitschele, 18, Senior, Lebanon High School, Lebanon, Missouri, T: Ryne Emerick
https://isef.net/project/224991

MCRO046 **Toxic Mechanisms of Per- and Polyfluoroalkyl Substances Within Yeast Cells: Environmental and Human Health Impact**
Gyan Singh Grewal, 18, Senior, Greenwood Laboratory School, Springfield, Missouri, T: Christian Madsen
https://isef.net/project/228262

Joplin, USMO03, Missouri Southern Regional Science Fair

EAEV043 **Mediating the Degradation of Nitrobenzene Into Nematicidal Chemicals Using *Streptomyces antibioticus***
Gillian Grace Petty, 17, Junior, Joplin High School, Joplin, Missouri, T: Karisa Boyer
https://isef.net/project/225802

ENEV055 **Evaluation of Heavy Metal Bioaccumulation by Native Southwest Missouri Wildflower (*Echinacea purpurea*)**
Brenden Lee Fain, 18, Senior, Joplin High School, Joplin, Missouri, T: Karisa Boyer
https://isef.net/project/225804

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

ANIM054 **Sublethal Glyphosate Reduces Thigmotaxis in Crayfish: A Two-Year Study**
Emma Renee Rogers, 17, Junior, Basehor-Linwood High School, Basehor, Kansas, T: Sean Nash
https://isef.net/project/228053

CBIO093 **A Neurological Subtype Classification of ASD and an fMRI-Powered Therapy Prediction Model**
Stavan Majumdar, 15, Sophomore, Blue Valley Northwest High School, Overland Park, Kansas, T: Monica Johnson
https://isef.net/project/228102

CBIO094 ***In silico* Modeling of Bispecific Dual-Affinity Re-Targeting (DART) Molecules Targeting PD-1 and LAG-3 for Solid Tumor Immunotherapy**
Gopikaashri Chidambaranathan, 16, Junior, Washburn Rural High School, Topeka, Kansas, T: Michael Steinert
https://isef.net/project/228151

PHYS080 **SpectroAge: A Model-Driven Ensemble of Multi-Layer Perceptron Neural Networks for High-Precision Estimation of Stellar Ages**
Sumayya Abdulfatah Mohamed, 15, Sophomore, Islamic School of Greater KC, Kansas City, Missouri, T: Farzana Jabeen
https://isef.net/project/228076

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

CHEM012 **A Cost-Effective Hierarchical Bimodal Nanoporous Gold Sensor for the Electrochemical Detection of Bisphenol F**
Ayush Vasireddy, 18, Junior, Marquette High School, Chesterfield, Missouri, T: Cathy Farrar
https://isef.net/project/223855

TMED009 **Rapid Norovirus Detection Using Magnetic Beads-Based RNA Extraction and Colorimetric RT-LAMP**
Sky Jacobson, 16, Sophomore, John Burroughs School, St. Louis, Missouri, T: Scott Heinzel
https://isef.net/project/224027

St. Louis, USMO50, Show-Me SCIENCE Competition

BCHM015 **Aptamer-Mediated Colorimetric Sensing of Caffeine via Gold Nanoparticles—A Prototype for Rapid Detection of Opioid-like Small Molecules**
Vivaan Ganesh Pawar, 14, Freshman, Greenwood Laboratory School, Springfield, Missouri, T: Christian Madsen
https://isef.net/project/224951

BMED068T **Deep Learning-Based Oral Lesion Classification Leveraging Real-Time 3D Gradient-Weighted Class Activation Mapping (Grad-CAM) Imaging**
Yohann Oghlakian, 16, Sophomore
Sumedh Allam Reddy, 16, Sophomore
Central High School, Springfield, Missouri, T: Elicia Ligon
https://isef.net/project/228078

PHYS081 **Automated Photometric Detection of Uncatalogued Eclipsing Binary Star Systems via Ellipsoidal Variation Amplitude Flagging**
Rahul Awasthi, 16, Sophomore, Home School, Lake Saint Louis, Missouri, T: Daniel Evans
https://isef.net/project/228077

ROBO039 **Cross-Layered Multi-Drone Coordination for Medical Supply Delivery During Disaster Response**
Aneesh Anjaneya Calyam, 16, Junior, Columbia-Rock Bridge Senior High School, Columbia, Missouri, T: Sharan Srinivas
https://isef.net/project/226492

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

ANIM026T **Investigating the Developmental Effects of Anxiolytic Peptide Selank in Embryonic *Danio rerio***
Christopher Thomas, 17, Senior
Finn Young, 18, Senior
Wentzville Holt High School, Wentzville, Missouri, T: Lydia Spoor
https://isef.net/project/224931

EGSD019T **Development of a Triboelectric Nanogenerator to Test the Effect of Frequency on Energy Output**
Wangchongyuan Dong, 16, Junior
Wyatt Andrew Gray, 17, Junior
Maverick Ishmael Hutchins, 17, Junior
Francis Howell High School, Saint Charles, Missouri, T: Nicholas Schubert
https://isef.net/project/224953

MONTANA

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

ENBM039 **Engineering mNeon Mutations for the Development of a pH-Sensitive Biosensor With the Assistance of AI Tools**
Anthony Adam Tank, 17, Senior, North Toole County High School, Sunburst, Montana, T: Amanda Nix
https://isef.net/project/224654

ETSD027 **Biological Networking and Optimization of the US Interstate System**
Vince Taylor, 17, Junior, North Toole County High School, Sunburst, Montana, T: Amanda Nix
https://isef.net/project/224655

Missoula, USMT50, Montana Science Fair

EAEV056 **Observations of the Effects of Forest Structure on Avian Assemblage Using Passive Acoustic Monitoring**
Camille Cellier, 16, Junior, Hellgate High School, Missoula, Montana, T: Willow Affleck
https://isef.net/project/227359

PLNT039 **Examining Soil Compositions as an Indicator of *Ventenata* Susceptibility**
\# Tanner Heaton, 18, Senior, North Toole County High School, Sunburst, Montana, T: Amanda Nix
https://isef.net/project/227358

TMED059 **Evaluating the Effects of Multiple Intensive Comprehensive Aphasia Programs (ICAPs) on Communication Outcomes for Patients With Aphasia**
Ella Leni Stone, 18, Senior, Hellgate High School, Missoula, Montana, T: Willow Affleck
https://isef.net/project/225812

NEBRASKA

Dixon, USNE02, Greater Nebraska Science and Engineering Fair

BMED046 **From Fire to Silence: AI-Assisted Discovery of C381 to Cure NeuroHIV**
Athreya Reddy, 17, Junior, Elkhorn South High School, Omaha, Nebraska, T: Michael Hale
https://isef.net/project/226245

MCRO030 **When Probiotics Turn Dangerous: Testing How *Escherichia coli* Nissle 1917 Produces Genotoxic Colibactin**
Lochlyn Steven Austin, 18, Senior, Central City High School, Central City, Nebraska, T: Chelle Gillan
https://isef.net/project/226966

Hastings, USNE01, Central Nebraska Science and Engineering Fair

ANIM028 **Assessing the Effect of Atg1 Overexpression on Autophagy and Neurodegeneration in a *Drosophila* Parkinson's Disease Model Using qPCR**
Augusta Jane Wiens, 17, Junior, Adams Central Jr.-Sr. High School, Hastings, Nebraska, T: Jay Cecrle
https://isef.net/project/225199

BMED039T **The Effect of Timing and Dose of N-Acetylcysteine on *Caenorhabditis elegans* Lifespan and Healthspan**
Macy Nicole Dane, 16, Sophomore
Kyndra Ann Wiens, 15, Sophomore
Adams Central Jr.-Sr. High School, Hastings, Nebraska, T: Jay Cecrle
https://isef.net/project/225609

BMED050 **The Effect of Red Light Therapy on Tissue Repair in Planarian Flatworms**
Keaton Redline, 16, Sophomore, Adams Central Jr.-Sr. High School, Hastings, Nebraska, T: Jay Cecrle
https://isef.net/project/227085

NEVADA

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

ENBM040T **Hydrogel-Assisted Neural Stem Cell Transplantation for Brain Repair After Stroke**
Caelyn Jiang, 15, Sophomore
Victoria Rose Sarah Baruk, 15, Freshman
The Meadows School, Las Vegas, Nevada, T: Brianna Cotter
https://isef.net/project/224656

MCRO011 **The Silent Sabotage: Cosmetics vs. the Skin Microbiome**
Jessica Alisa Hsu, 16, Junior, The Meadows School, Las Vegas, Nevada, T: Brianna Cotter
https://isef.net/project/224530

NEW HAMPSHIRE

Nashua, USNH50, New Hampshire Science & Engineering Expo

EAEV052 **Sustainable Animal Bone Filtration for the Design of Water Treatment Devices for Resource-Limited Regions**
Tina Jin, 15, Freshman, Phillips Academy, Andover, Massachusetts, T: Clyfe Beckwith
https://isef.net/project/227197

ENBM074 **Breaking the Brain-Computer Interface Ceiling: Inventing a New Class of Human–Machine Interfaces That Enable Noninvasive Systems to Achieve Invasive-Class Clinical Communication**
Ameya Kharade, 17, Junior, Nashua High School South, Nashua, New Hampshire, T: Leslie Lukow
https://isef.net/project/227046

ETSD043 **Nature-Inspired Designs to Improve Vehicle Fuel Efficiency**
Elise Lynn Buehler, 15, Freshman, Homeschool, Madison, New Hampshire,
T: YuChing Buehler
https://isef.net/project/225801

NEW JERSEY

Hackensack, USNJ04, BCA Research Expo

BMED024 **A Multi-Modal Framework for Exercise-Induced Anti-Tumor Immunotherapy**
Leo Toake, 16, Junior, Bergen County Academies, Hackensack, New Jersey,
T: Donna Leonardi
https://isef.net/project/224586

EBED025 **Novel Auto-Leveling Footwear System for Postural Stability Support**
Samuel Y. Kim, 17, Junior, Bergen County Academies, Hackensack, New Jersey,
T: Donna Leonardi
https://isef.net/project/224588

ENEV041 **Surface-Modified Alginate Bioplastics: Biodegradable Sorbents for Selective Oil Spill Remediation**
Claire Shi, 16, Junior, Bergen County Academies, Hackensack, New Jersey, T: Donna Leonardi
https://isef.net/project/224954

Jersey City, USNJ02, Hudson County STEM Showcase

BMED049 **The Effects of Daily Kaempferol Administration in Reduction of Microglia Following Traumatic Brain Injury in Mice**
Shiloh Jireh Gonzalez, 18, Senior, Jose Marti STEM Academy, Union City, New Jersey,
T: Rina Rosales
https://isef.net/project/226986

ENBM066 **A Comparative Study of Textual vs. Tactile Identification: Implementing Universal Health Icons on Prescription Medication Bottles for the Visually Impaired**
Ana Ordonez, 18, Senior, North Bergen High School, North Bergen, New Jersey,
T: Krista Welz
https://isef.net/project/225575

SFTD047 **CoolSmart AI: Predictive Cooling Control for Energy-Efficient Data Center Systems**
Aashirya Varma, 16, Junior, Dr. Ronald E. McNair Academic High School, Jersey City,
New Jersey, T: Maria Osoria
https://isef.net/project/226746

TMED065 **NeuroNet: Enabling the Early Detection and Severity Ranking of Time-Sensitive 911 Stroke Cases via a Novel Audio and Text-Based Analysis of 911 Calls**
Lehansa Chanthuli Marambage, 17, Junior, Jose Marti STEM Academy, Union City,
New Jersey, T: Mina Armani
https://isef.net/project/226974

Lebanon, USNJ01, Terra North Jersey STEM Fair

CBIO050 **XNeoCrypt: An Interpretable Ranking Framework for Prioritizing Noncanonical Tumor Antigen Candidates**
Aaron Yu, 16, Junior, Millburn High School, Millburn, New Jersey, T: Christopher Cook
https://isef.net/project/225405

MATH027 **A New Upper Estimate for the Fermat-Torricelli Ratio**
Ganghun Kim, 17, Junior, Fort Lee High School, Fort Lee, New Jersey, T: Gary Glebas
https://isef.net/project/225735

PHYS048 **A Quantum Memory Witness Protocol for Benchmarking Nonclassical Behavior in Quantum Processors**
Sahil Ghosh, 16, Sophomore, Edison Academy Magnet School, Edison, New Jersey,
T: James Colaizzi
https://isef.net/project/226554

SFTD041 **TerraFormer: A Multimodal Latent World Model for Soil Dynamics**
Qianheng Xu, 17, Senior, Millburn High School, Millburn, New Jersey,
T: Christopher Cook
https://isef.net/project/225722

TMED055 **XAI-Driven Biomarker Discovery for Early Alzheimer's Detection**
Agrima Verma, 17, Junior, Pascack Hills High School, Montvale, New Jersey,
T: Aarti Mallya
https://isef.net/project/225720

TMED056 **Engineering an Optimal Dressing to Prevent Pressure Ulcers**
Isha Ghiya, 17, Junior, Millburn High School, Millburn, New Jersey, T: Christopher Cook
https://isef.net/project/225723

TMED057 **From Computational Screening to Biological Validation: Targeting TNIK in Triple-Negative Breast Cancer**
Shiven Das, 16, Junior, Bridgewater-Raritan High School, Bridgewater, New Jersey,
T: Abira Das
https://isef.net/project/225800

Princeton, USNJ03, Mercer Science and Engineering Fair

MATH028 **Energy-Stable Numerical Method for Blood Flow in 3D Brain Aneurysms**
Helen Zhu, 17, Sophomore, Princeton International School of Math and Science,
Princeton, New Jersey, T: Steven Chen
https://isef.net/project/225813

TMED058 **Before the Fall: An AI-Driven Multimodal Wearable System for Early Detection and Fall Protection in Ménière's Disease**
Heyi Fan, 18, Junior, The Pennington School, Pennington, New Jersey, T: Adam Materasso
https://isef.net/project/225809

NEW MEXICO

Albuquerque, USAI50, National Advancing Indigenous Science & Engineering Fair

BMED067 **Investigating the Role of Cancer Treatment in Tumor Progression Using a 3D Type I Collagen Hydrogel Co-Culture Model**
Emmeline Whatoff, 16, Sophomore, Kamehameha Schools Kapalama Campus, Honolulu,
Hawaii, T: Hieu James
https://isef.net/project/228003

MCRO043 **Insect Alliance: A Study of Dermestid Beetles (*Dermestes maculatus*) and the Effect They Have on Soil Micro-Biomass**
Caytie Couch, 16, Sophomore, Quapaw High School, Quapaw, Oklahoma,
T: Jason Couch
https://isef.net/project/227857

Albuquerque, USNM01, Central New Mexico Regional Science and Engineering Challenge

CHEM040 **Development of a Rapid, Portable Lateral Flow Assay for the Detection of Microplastic-Drug Interactions**
Ahana K. Koushik, 15, Sophomore, Albuquerque Academy, Albuquerque, New Mexico,
T: Elliot Wilkinson
https://isef.net/project/226564

MCRO022 **A Fun Time With A Fungi: Simulating Neuronal Galvanotropism on *Ustilago maydis* Mycelium to Manipulate Growth Rate, Direction, and Cell Development and Its Applications to Nerve Regeneration**
Rachel Rose Taylor, 16, Junior, Rio Rancho High School, Rio Rancho, New Mexico,
T: Lynn Perry
https://isef.net/project/225016

ROBO036 ***In silico* Analysis for Screening Autism and Assessing Symptom Severity Using Retinal Photographs**
Euiryeon Kim, 16, Junior, La Cueva High School, Albuquerque, New Mexico, T: Austin Grant
https://isef.net/project/225410

TMED060 **RetinaVision: Clinically Validated Deep Learning Models for Detection of Retinitis Pigmentosa and Overlapping Retinal Pathologies Using Fundus Images**
Aanya Asoori, 15, Sophomore, La Cueva High School, Albuquerque, New Mexico,
T: Austin Grant
https://isef.net/project/226247

Farmington, USNM02, San Juan New Mexico Regional Science and Engineering Fair

BMED061 **Mechanobiological Reprogramming of Cancer Cells in RPM-Simulated Microgravity: A High-Fidelity Transcriptomic Model for Overcoming Chemoresistance and Therapeutic Regression**
\# June Loukinas, 18, Senior, San Juan College High School, Farmington, New Mexico, T: Geizi Dejka
https://isef.net/project/227708

ETSD038 **Hydrophobic and Hydrophilic Surface Design in NASA Spacecraft Engineering: The Effect of Geometry and Microgravity on Landing Dynamics and Crew Safety**
Amber Nicole Bizardie, 18, Senior, San Juan College High School, Farmington, New Mexico, T: Geizi Dejka
https://isef.net/project/225391

Grants, USNM03, Four Corners Regional Science and Engineering Fair

BMED034 **How Do Artificial Sweeteners Affect *C. elegans*?**
Lucas Charles Rychener, 15, Freshman, Grants High School, Grants, New Mexico, T: Cody Hayes
https://isef.net/project/225257

ENBM047 **A Novel Fluorescent Reporter Side-by-Side Assay for Detecting Plasmid-Mediated Gene Transfer in Bacteria**
Isabella Louise Halley, 16, Sophomore, Grants High School, Grants, New Mexico, T: Cody Hayes
https://isef.net/project/225022

Las Vegas, USNM05, Northeastern New Mexico Regional Science and Engineering Fair

BEHA057 **Collective Intelligence: Driving Lessons From Ants**
Linus Plohr, 15, Freshman, Los Alamos High School, Los Alamos, New Mexico, T: Michela Ombelli
https://isef.net/project/227957

EGSD012 **Algaethane 2.0: Enzymatic Extraction of Varying Algae Fuels**
Cash Dayton Wodrich, 17, Junior, Taos Academy Charter School, Taos, New Mexico, T: Laura Tenorio
https://isef.net/project/224239

Socorro, USNM50, New Mexico Science and Engineering Fair

BEHA053 **Characterizing Cognitive Dynamics in AI: Designing Virtual Worlds for a Comparative Analysis of Persona-Driven Behavior in Individual and Collaborative Agentic Systems**
\## Sowmya Sankaran, 16, Junior, Albuquerque Academy, Albuquerque, New Mexico, T: Elliot Wilkinson
https://isef.net/project/227799

CBIO089 **Beyond the Mutation: Evolution-Aware Antibiotic Discovery Through a Novel Resistance-Robust Computational Framework**
\# Aditi Ganti, 16, Junior, La Cueva High School, Albuquerque, New Mexico, T: Colleen Fordyce
https://isef.net/project/227956

ETSD023 **Woodpecker: A UAV-Based Sensor Deployment Monitoring System**
Yunran He, 17, Junior, Armand Hammer United World College, Montezuma, New Mexico, T: Michelle Plunkett
https://isef.net/project/224452

MATS083 **Structural Optimization of Lipid-Based Nanocarriers to Improve Targeted Codelivery of Curcumin and siRNA-Based Cancer Treatments**
Laasya Ratna Tutiki, 14, Freshman, Albuquerque Academy, Albuquerque, New Mexico, T: Elliot Wilkinson
https://isef.net/project/227859

PHYS076 **Dust Busters: The Effects of Dust Scattering on Observations of X-Ray Binaries**
\## Tate Plohr, 17, Junior, Los Alamos High School, Los Alamos, New Mexico, T: Ali Renner
https://isef.net/project/227934

NEW YORK

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

ANIM043 **A Comparative Analysis of Tactile Communication Between Asian Elephant Dyads**
Eliana Eisenberg, 17, Senior, Half Hollow Hills High School West, Dix Hills, New York, T: Michael Lake
https://isef.net/project/227246

BEHA043 **Early Diagnosis of Schizophrenia Through an Interpretable CNN–Transformer Model of fMRI Connectivity**
Michael Lyakhov, 18, Senior, John L. Miller Great Neck North High School, Great Neck, New York, T: Jessica York
https://isef.net/project/227281

BEHA044 **The Neurocognitive and Social Impact of Accent Familiarity: An Investigation Into Memory Recall and Perceptual Bias**
Amanat Deviki Jain, 17, Junior, Garden City High School, Garden City, New York, T: Steven Gordon
https://isef.net/project/227286

BMED054 **Modulating a Novel Neuroepithelial Circuit in Food Allergy to Repair Barrier Dysfunction With Larazotide Acetate and Neuregulin-1**
Aryana Adur, 17, Senior, Jericho High School, Jericho, New York, T: Alexis Vandergoot
https://isef.net/project/227274

BMED063 **Shaped by Signals: Leveraging Breast Cancer Nuclear Morphology to Elucidate Regulatory Pathways as Therapeutic Targets**
Chrysta Carmen Elizabeth Thomas, 16, Junior, Oyster Bay High School, Oyster Bay, New York, T: Daniel Moy
https://isef.net/project/227783

CBIO067 **BrainAGE-CLIP: A Novel Computational Biomarker for Brain Aging in Mice**
Taisheng Wu, 16, Junior, William A. Shine Great Neck South High School, Great Neck, New York, T: Nicole Spinelli
https://isef.net/project/227272

CELL039 **Hyperactive (Autoimmunity) vs. Dysfunctional (Cancer) T-Cells: Two Sides of the Same Coin**
Nicholas Samuel Khoury Levy, 18, Senior, The Masters School, Dobbs Ferry, New York, T: Kristina Ardito
https://isef.net/project/227263

EAEV054 **CorAI: Global Coral Bleaching Prediction Using Region-Specific Artificial Intelligence and Machine Learning Models**
Srihaan Reddy Seelam, 16, Junior, Horace Greeley High School, Chappaqua, New York, T: Jerry Zupan
https://isef.net/project/227264

EAEV055 **Foraminiferal Records: Orbital Forcing Drives Western Pacific Warm Pool Surface and Thermocline Dynamics in the Bismarck Sea Over the Last 280 Kyr**
Christina Jeannette Bayne, 17, Senior, Elmont Memorial Junior-Senior High School, Elmont, New York, T: Michelle Flannory
https://isef.net/project/227283

ENBM078 **GI Tracked: A Wearable Abdominal Sensing System for Monitoring Gut Motility and Circadian Rhythms**
Annabelle (Annie) Orah Katz, 17, Junior, The Leffell School, Hartsdale, New York, T: Arianna Gagnon
https://isef.net/project/227270

ENEV065 **A Machine Learning-Powered Water Quality Prediction Model and Cost-Effective IOT Water Quality Monitoring System**
Humzah Mohsin, 17, Senior, Valley Stream South High School, Valley Stream, New York, T: Jeanette Azzaretto
https://isef.net/project/227269

ETSD051 **The Electromagnetic Transmission**
Saarth Nirmit Desai, 17, Junior, Yorktown High School, Yorktown Heights, New York, T: Edwin Seweryn
https://isef.net/project/227362

MATH035 **A Comparison of Precinct and District Voting Data Using Persistent Homology To Quantify Gerrymandering in Texas and California**
Ananya Shah, 17, Senior, Edgemont High School, Scarsdale, New York, T: Talia Dardis
https://isef.net/project/227260

MATS066 **Printing the Future of Flight: Additive Manufacturing of Carbon Fiber/Carbon Nanotube Hybrid Reinforced Polyetheretherketone (PEEK) Composites Using Selective Laser Sintering**
Xiaowu Lai, 17, Junior, Jericho High School, Jericho, New York, T: Loriann Ciasulli
https://isef.net/project/227248

ROBO049 **Development and Implementation of an Improved A*/FTG Hybrid Algorithm on a Differential Drive Mobile Robot Chassis**
Ethan Lin, 15, Sophomore, New Hyde Park Memorial High School, New Hyde Park, New York, T: Sean Denara
https://isef.net/project/227262

TMED074 **M-CATCH: A Multiplex Microparticle CRISPR Assay for *Mycobacterium tuberculosis* Drug Resistance Characterization**
Austin Hanchi Jin, 16, Junior, William A. Shine Great Neck South High School, Great Neck, New York, T: James Truglio
https://isef.net/project/227247

Huntington, USNY02, Long Island Science and Engineering Fair

ANIM025 **A Comparison of Ceramic and Wooden Mediums for Artificial Pollinator Habitats To Mitigate Thermal Shock and Fungal Spread**
Alexandra Claire D'Alessio, 18, Senior, Half Hollow Hills High School West, Dix Hills, New York, T: Michael Lake
https://isef.net/project/224596

BEHA019 **Examining the Impact of the Federal Sentencing Guidelines on Racial Disparities in Federal Sentencing**
Nikhil Shah, 18, Senior, Syosset High School, Syosset, New York, T: Heather Miller
https://isef.net/project/224589

BEHA020 **Evaluating Behavioral Outcomes and Gut Microbiome Diversity in *Drosophila melanogaster* Following Exposure to Natural Versus Prescription ADHD Interventions**
Karina Sofia Rios, 15, Sophomore, Long Beach Senior High School, Lido Beach, New York, T: Kristen Conklin
https://isef.net/project/224591

BEHA021 **Digital Expressions of Discontent: A Computational Analysis of Anti-Work Reddit Communities and Evolving Work Narratives**
Daniel Ming, 17, Senior, Syosset High School, Syosset, New York, T: Heather Miller
https://isef.net/project/224593

BMED027T **The Effect of Dietary *Phoenix dactylifera* on Gut Microbial Composition and Memory in *Drosophila melanogaster* Expressing the Amyloid Precursor Protein (APP)**
Brady Charles Schultz, 18, Senior
Noor Waqas Sohail, 17, Senior
Westhampton Beach High School, Westhampton Beach, New York, T: Dianna Gobler
https://isef.net/project/224672

CBIO026 **BRAINMAP-NET: A Multilayer Convolutional Neural Network-Based Tool for Clustering Glioma Mechanical Subregions Using Topological Modeling of MRE-Derived Stiffness Gradients and Curvature**
Nikita Priya Kumar, 17, Senior, Herricks High School, New Hyde Park, New York, T: Stephanie DiPreta
https://isef.net/project/224585

FINALIST DIRECTORY

CELL022 **Characterizing Convergent Transcriptomic Impacts of Norepinephrine Across Breast Cancer Grades via Element AVITI-24**
Anchita Agrawal, 18, Senior, Jericho High School, Jericho, New York, T: Alexis Vandergoot
https://isef.net/project/224597

CELL023 **Investigating Mechanistic Insights Into PELO Dependency Across Molecular Subtypes of Gastrointestinal Cancers**
Tessla Chan, 18, Senior, Roslyn High School, Roslyn Heights, New York, T: Allyson Weseley
https://isef.net/project/224603

CHEM030 **Unlocking a Tenfold Increase in Battery Performance: Poly(citric Acid) as a Novel Binder for Silicon Anode Batteries**
Ryan Tae, 18, Senior, Jericho High School, Jericho, New York, T: Alexis Vandergoot
https://isef.net/project/224671

EAEV023 **Detection of Trifluoroacetic Acid in Commercial Water Filters and Its Toxicological Impacts on Keystone Aquatic Species**
Sydney Grace Olivo, 15, Sophomore, Long Beach Senior High School, Lido Beach, New York, T: Kristen Conklin
https://isef.net/project/224592

EAEV025 **Hurricane Forecasting Using Comprehensive Multivariable Machine Learning Modeling With Atmospheric Temperatures, Polar Motion and Sunspot Numbers**
Vedant Balani, 18, Senior, Jericho High School, Jericho, New York, T: Alexis Vandergoot
https://isef.net/project/224608

EBED024 **Developing a Novel Adaptive Tuning Module for Real-Time Frequency Correction in Radiofrequency Coils During Concurrent TMS-fMRI**
Emma Elise Su, 18, Senior, Herricks High School, New Hyde Park, New York, T: Stephanie DiPreta
https://isef.net/project/224584

ENBM038 **BLADE: Bioimpedance-Enabled Laparoscopic Articulated Dual-Purpose Endowrist System for Force Sensing, Anomaly Detection and Natural Control in Robotic Surgery**
Benson Lu Huang, 17, Senior, Half Hollow Hills High School West, Dix Hills, New York, T: Michael Lake
https://isef.net/project/224599

ENEV038 **Design and Evaluation of an Energy-Efficient CO_2 Capture System Utilizing Sodium Hydroxide for Ammonium Bicarbonate Fertilizer Synthesis**
Rachel Olivia Master Huth, 17, Senior, Huntington High School, Huntington, New York, T: Lori Kenny
https://isef.net/project/224764

MATH017 **Universal Matrices for Counting Fibo-Multinomial and C-Multinomial Coefficients With a Cryptographic Application**
Arav Chand, 18, Senior, Half Hollow Hills High School West, Dix Hills, New York, T: Michael Lake
https://isef.net/project/224595

PHYS032 **Discovery of Previously Undetected Exocomet Candidates in Kepler Using ExoSeek: A Novel End-to-End Deep Learning Exocomet Detection Algorithm**
Gary Han, 18, Senior, Syosset High School, Syosset, New York, T: Heather Miller
https://isef.net/project/224594

PLNT019 **Demethylation Promotes Rhizoid and Root Hair Development in *Ceratopteris richardii***
Julia Igaunis, 17, Senior, George W. Hewlett High School, Hewlett, New York, T: Terrence Bissoondial
https://isef.net/project/224590

ROBO024 **NeuroGait: A Low-Cost, Mind-Controlled Pneumatic Exoskeleton With CNN-Based Control for Individuals With Lower-Limb Mobility Impairments Using Brain-Computer Interface**
Partap Sidhu, 17, Junior, Bethpage High School, Bethpage, New York, T: Nicole Dulaney
https://isef.net/project/224582

TMED029 **Cephalexin as a Potential Novel Treatment for Parkinson's Disease Through Modulation of Gut Inflammasome Activity and Neuroprotective Pathways**
Divya Jayam, 17, Junior, The Wheatley School, Old Westbury, New York, T: Veronica Ade
https://isef.net/project/224604

TMED030 **The Impacts of Resveratrol and *Escherichia coli* Dietary Restriction on the Behavioral and Pathological Aspects of Alzheimer's Disease Using *Caenorhabditis elegans* as a Model**
Jonathan Philip, 18, Senior, Plainview-Old Bethpage John F. Kennedy High School, Plainview, New York, T: Raymond Tesar
https://isef.net/project/224607

Lake Placid, USNY07, Greater Capital Region Science and Engineering Fair, Inc.

CHEM044 **The Orbit of Coordination: Synthesis and Geometries of Crown Jewel Complexes as a Foray to Medical Imaging Development Work**
Isabella Alessandra Bonitatibus, 17, Junior, Saratoga Springs High School, Saratoga Springs, New York, T: Rebecca Goldfischer
https://isef.net/project/226991

EGSD046 **Hybrid Thermoelectric–Thermophotovoltaic Architecture for Improved High-Temperature Energy Conversion**
Wyatt Pagan, 16, Sophomore, Pine Bush High School, Pine Bush, New York, T: Michael Ciarelli
https://isef.net/project/227596

ENEV059 **The Construction of an Advanced Crossflow Filtration System Integrating Electric Field Technology**
Ava Cathleen Otte, 18, Senior, Saratoga Springs High School, Saratoga Springs, New York, T: Rebecca Goldfischer
https://isef.net/project/227086

MAHOPAC, USNY05, Regeneron-Westchester Science and Engineering Fair

ANIM035 **Determining If Phenethyl Isothiocyanate (PEITC) Is an Effective Tumor Suppressant in Yki-S168A *Drosophila melanogaster* Mutants**
Stella Noelle Artuso, 17, Junior, Harrison High School, Harrison, New York, T: Allison Blunt
https://isef.net/project/226500

ANIM036 **Sound Check: A Multi-Year Acoustic Recording Assessment of Avian Biodiversity in a Northeast Hemlock Forest vs. Wildfire Impacts, Meteorological Conditions and Geospatial Patterns**
Tycho Alexander Force, 18, Senior, Westlake High School, Thornwood, New York, T: Lawrence McIntyre
https://isef.net/project/226862

BCHM022 **Generation of Antibody Oligonucleotide Conjugates Using a Conjugation Chemistry With Multiple Linkers**
Brady Wang, 18, Senior, Horace Greeley High School, Chappaqua, New York, T: Jerry Zupan
https://isef.net/project/226503

BCHM023 **The Design and Synthesis of an I-131 Labeled Rhodium Metalloinsertor Targeting MMR-Deficient Colorectal Cancer**
Gabriel Hwang, 16, Junior, Edgemont High School, Scarsdale, New York, T: Talia Dardis
https://isef.net/project/226546

BEHA027 **Improving Adolescents' Mental Health Through Contemporary Worship Music: An Interventional Approach**
Robert Thomas Kang, 17, Senior, Ossining High School, Ossining, New York, T: Valerie Holmes
https://isef.net/project/225243

BEHA030 **Drawing the Color Line: A Geospatial Analysis of Redlining, Government Assistance Programs, and Their Future**
Carlos Del Aguila, 17, Senior, New Rochelle High School, New Rochelle, New York, T: Jeff Wuebber
https://isef.net/project/225270

FINALIST DIRECTORY

BEHA031 **The Effect of Extreme Temperatures on Patient Financial Distress and Hospital Fiscal Performance**
Sophie Dezhen Zhong, 16, Sophomore, Yorktown High School, Yorktown Heights, New York, T: Paul Rubeo
https://isef.net/project/225277

BEHA034 **Fragmented Faces, Whole Emotions: Advancing AI Emotion Detection With Partial Facial Input**
Siena Ann Versaci, 17, Junior, The Masters School, Dobbs Ferry, New York, T: Kristina Gremski
https://isef.net/project/225716

BMED035 **Remote, Tunable Modulation of Astrocytic Calcium Signaling via an Engineered Paramagnetic Matrix: A Non-Invasive Platform for Neuroprotection in CNS Disease**
Illaria Liedtke, 17, Junior, Rye Country Day School, Rye, New York, T: Jennifer Doran
https://isef.net/project/225272

BMED036 **The Effect of α-tocopherol on Locomotor Ability of the *Drosophila melanogaster* Mutant for Glutathione S-transferase Theta 3**
Emily Ann Salemo, 18, Senior, Harrison High School, Harrison, New York, T: Allison Blunt
https://isef.net/project/225275

BMED047 **A Phase One Insulin-Independent Glucose Regulation Cascade Study in *Papio anubis* Baboons**
Kaushambi Roy, 16, Junior, Edgemont High School, Scarsdale, New York, T: Talia Dardis
https://isef.net/project/226547

CBIO045 **Biophysical and Genomic Drivers of Targeted Therapy Resistance: Analysis of Growth Dynamics in Non-Small Cell Lung Cancer**
Warren Fu, 17, Senior, Horace Greeley High School, Chappaqua, New York, T: Jerry Zupan
https://isef.net/project/225271

EAEV044 **Investigating the Stability of Prebiotic Uracil Under the Conditions of Impact-Generated Terrestrial Hydrothermal Systems**
Makaila Eagleton, 17, Senior, Somers High School, Lincolndale, New York, T: William Maelia
https://isef.net/project/226501

ENBM054 **Expansion of the Hybrid Topological Neural Network for Advanced Brain-Computer Interface Applications: Towards Bi-Directional Communication and the Early Diagnosis of Neurodegenerative Diseases**
Aryan Rakesh Shenoy, 17, Senior, Yorktown High School, Yorktown Heights, New York, T: Paul Rubeo
https://isef.net/project/225274

ENEV046 **Utilizing a Rounded Hexagonal Prism Shade Cover To Decrease Evaporation Rates**
Harper Bailey Morgan, 17, Junior, Mamaroneck High School, Mamaroneck, New York, T: Alejandro Victoria
https://isef.net/project/225254

MCRO023 **Investigating Circadian Rhythmicity and Growth Phenotype in *Neurospora intermedia* To Utilize Industrial Food Waste**
Chase Matthew Talpins, 16, Junior, Rye Country Day School, Rye, New York, T: Jennifer Doran
https://isef.net/project/225266

PHYS047 **Survey of the Noctis Volcano on Mars in Search of Stratigraphic Exposures and Caves Accessible for Exploration**
Scarlett Ava Hartzman, 18, Senior, New Rochelle High School, New Rochelle, New York, T: Erica Curran
https://isef.net/project/226499

PLNT030 **The Effects of Copper Deficiency on Phytohormonal Biosynthesis and Signaling Pathways**
Glen Wang Feng, 16, Junior, Irvington High School, Irvington, New York, T: Nadia Parikka
https://isef.net/project/226863

TMED046 **Real-Time Detection of Particles in Peritoneal Dialysate Using Digital Inline Holography and Machine Learning**
Eric William Huang, 17, Junior, Ossining High School, Ossining, New York,
T: Valerie Holmes
https://isef.net/project/225252

TMED054 **Corneal Microscopic Changes After Oxervate vs. PRP Treatment in Dry Eye Disease Patients**
Evan Mae Aronoff, 17, Senior, Somers High School, Lincolndale, New York,
T: William Maelia
https://isef.net/project/225719

Plattsburgh, USNY13, Terra Northeast Regional STEM Fair

ETSD053 **Optimization of Wing Structural and Aerodynamic Performance Through Non-Uniform Rib Spacing Based on Stress Distribution**
Ziya Lu, 16, Junior, Potsdam High School, Potsdam, New York, T: Sidney Outman
https://isef.net/project/227620

Poughkeepsie, USNY01, Dutchess County Regional Science Fair

CHEM067 **Evaluating MnO_2 as a Transparent Photocatalytic Alternative to TiO_2: A Comparative Study of PET Particulate Degradation and Real-Time Spectral Monitoring of Aromatic Byproducts via UV-Vis Spectroscopy**
Ainsley Maribel Bosman, 17, Senior, Roy C Ketcham Senior High School, Wappingers Falls, New York, T: Patricia Glancey
https://isef.net/project/228261

ROBO062 **Using Different Convergence Behaviors Across Samples To Detect Minority Subgroups in Data**
Adam Mah, 18, Senior, Spackenkill High School, Poughkeepsie, New York,
T: Jennifer Maloney
https://isef.net/project/228030

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

BCHM020 **Electrochemical Analysis of Neurometallome on Dopamine Oxidation Utilizing the Gaussian Computational Framework**
Kyounghun Kim, 18, Junior, Corning-Painted Post High School, Corning, New York,
T: Shannon Marlow-McCowin
https://isef.net/project/225727

MCRO024 **Loss-of-Function Mutations in Csx27 Reveal Pore Activity Is Required for CRISPR–Cas13b Antiviral Defense**
Elise Xue Spurling, 16, Junior, Pittsford Mendon High School, Pittsford, New York,
T: Steven Smith
https://isef.net/project/225406

Syracuse, USNY03, Terra New York City STEM Fair

ANIM040 **Evidence for Biphasic Habituation and Darkness-Shock Associative Learning in *Hydra vulgaris***
Madison Cho, 17, Senior, Columbia Grammar and Preparatory School, New York City, New York, T: Ilya Yashin
https://isef.net/project/227114

BCHM027 **The Medicinal Molecules of Aquilegia: A Hybrid Experimental and Computational Approach to Discover Painkillers and Neurodegenerative Therapeutics**
Simone Chan Maimon, 16, Senior, Hunter College High School, New York, New York,
T: Christina Gonzalez
https://isef.net/project/227109

BCHM031 **Semaglutide and "Fake" Semaglutide in *Drosophila* Model With Type 2 Diabetes and Obesity**
Kaya Parikh, 17, Senior, Hunter College High School, New York, New York,
T: Christina Gonzalez
https://isef.net/project/227519

FINALIST DIRECTORY

BCHM032 **A New Method To Measure Serum Drug Levels To Improve the Safety of Cancer Therapies**
Ethan Greenblatt, 15, Sophomore, Hunter College High School, New York, New York, T: Christina Gonzalez
https://isef.net/project/227525

BEHA038 **Algorithms and Ideology: Measuring Political Bias in ChatGPT, Claude, Gemini and DeepSeek**
Ellis Martin Thompson, 17, Senior, Stuyvesant High School, New York, New York, T: Meng-Ping Tu
https://isef.net/project/226985

CBIO073T **Wavelet-Based Gene and Cell Causal Networks Revealed by Spatial Transcriptomics**
Nick Tong, 16, Sophomore
Olivia Xu, 17, Junior
Horace Mann School, Bronx, New York, T: Alyssa Shearer
https://isef.net/project/227520

CELL037 **Identifying Novel Cell Signaling Components Required for KIF5B-RET-Driven Lung Cancer: A Genetic Approach**
Danny Cong Shing, 18, Senior, Hunter College High School, New York, New York, T: Christina Gonzalez
https://isef.net/project/227108

EAEV050 **A Novel Machine Learning Framework for Predicting Scientific Names To Quantitatively Document and Analyze Bioindicators, Invasive and Keystone Species for Assessing the Impacts of Urbanization and Climate Change on Indigenous Ecosystems**
Lin Wang Li, 18, Junior, The Bronx High School of Science, Bronx, New York, T: Vladimir Shapovalov
https://isef.net/project/227084

MATH036 **Early Warning for Critical Transitions in Epidemics: A Generative Dynamical Systems Approach**
Maya Rangarajan, 16, Junior, Horace Mann School, Bronx, New York, T: Alyssa Shearer
https://isef.net/project/227523

MATH037 **Optimizing Urban Accessibility: Quantum Acceleration of the Steiner Tree for the 15-Minute City**
Prishaa Shrimali, 17, Senior, Marymount School of New York, New York, New York, T: Carter Delloro
https://isef.net/project/227524

MATS073 **Breaking Symmetry: Synthesizing Asymmetrical DNA Motifs Revealing New Structural and Functional Properties**
Omer Karelic, 16, Junior, Stuyvesant High School, New York, New York, T: Meng-Ping Tu
https://isef.net/project/227527

MCRO036T **The Effects of Microplastics From Menstrual Products and Their Effects on the Vaginal Microbiome**
Lily Korniewicz, 16, Junior
Shivaii Nikam, 17, Junior
Brooklyn Technical High School, Brooklyn, New York, T: Michael Estrella
https://isef.net/project/227540

PHYS059 **Perceived Negative Energy Density Hawking Radiation Near Black Holes: A Tensorial Derivation**
Brij Kapadia, 18, Senior, Columbia Grammar and Preparatory School, New York City, New York, T: Ilya Yashin
https://isef.net/project/227521

Syracuse, USNY06, Central New York Science and Engineering Fair

EAEV051 **Beyond Net Zero: A Data-Driven Mathematical and Experimental Investigation of Atmospheric Carbon Overshoot and Magnesium Hydroxide-Mediated Ocean Alkalinity Enhancement**
Simran Sanders, 15, Freshman, Jamesville-Dewitt High School, Dewitt, New York, T: John Lembeck
https://isef.net/project/227112

EAEV062T **An Investigation Into Anthropogenic Drivers Exacerbating Harmful Algal Blooms in Coastal and Freshwater Ecosystems**
Joanna Chizorom Eze, 16, Sophomore
Ruqayyah Karimah Monique McCarthy, 15, Sophomore
Syracuse Academy of Science, Syracuse, New York, T: Amy Ay
https://isef.net/project/227543

Syracuse, USNY11, Terra WNY STEM Fair

BMED021 **Music and Alpha-Synuclein: Protecting the Brain From Stroke and Glioblastoma**
Gryson Bae, 15, Sophomore, Williamsville East High School, East Amherst, New York, T: Kathleen Kramer
https://isef.net/project/224308

SFTD024T **From Breach to Barrier: Addressing Watermark Vulnerabilities Through Multi-Domain Synergy**
Jesse Yu, 16, Junior
Nicholas Wei, 15, Freshman
Millburn High School, Millburn, New Jersey, T: Christopher Cook, T: Kathleen Kramer
https://isef.net/project/224511

TMED034 **The Future of Osteosarcoma Treatment: FL118**
Emma Zhang, 18, Senior, Williamsville North High School, Williamsville, New York, T: Angela Szwed
https://isef.net/project/224937

Utica, USNY08, Utica University Regional Science Fair

BMED045 **Predicting Cancer Pathway Shifts via Dietary Carotenoid–Mediated Retinoid Signaling: A Systems Biology Model Integrating Breast, Lung, and Leukemia With Patient-Derived Genomic Data**
Alizay Meerub Bilal, 16, Senior, Whitesboro High School, Marcy, New York, T: Karla Williams
https://isef.net/project/225721

NORTH CAROLINA

Charlotte, USNC01, Charlotte-Mecklenburg Regional Science Fair

EAEV007 **A Novel Method for Pollutant Removal Using Thermo-Responsive Hydrogels in Dynamic Water Systems**
Aadarsh Lakshmanan, 16, Junior, Harper Middle College High School, Charlotte, North Carolina, T: Terra Kennedy
https://isef.net/project/223863

EAEV008 **The Effects of Zequanox on the Eastern Elliptio (*Elliptio complanata*)**
Jillian Jean Lakin Schultheis, 15, Sophomore, East Gaston High School, Mt. Holly, North Carolina, T: Brian Johnson
https://isef.net/project/223864

Durham, USNC03, North Carolina Science Fair Region 3B

BMED009 **TMEInsight: Elucidating Patient-Specific Immune-Pathway Crosstalk via Deep Learning To Foreshadow Tumor Progression**
Sreeja Appala, 17, Junior, North Carolina School of Science and Mathematics, Durham, North Carolina, T: Jonathan Bennett
https://isef.net/project/223810

EBED015 **AI Cane: A Cost-Effective Edge AI Assistive Device for Real-Time Object Detection and Spatial Awareness for the Visually Impaired**
Muhammad Fawwaz, 16, Junior, North Carolina School of Science and Mathematics, Durham, North Carolina, T: Jonathan Bennett
https://isef.net/project/224184

ENBM019 **Engineering a Low-Cost Environment for Magnetic Hyperthermia: From Nanoparticle Synthesis to Alternating Magnetic Field Testing**
Akhilesh Karthik, 17, Senior, North Carolina School of Science and Mathematics, Morganton, North Carolina, T: James Happer
https://isef.net/project/223906

FINALIST DIRECTORY

Raleigh, USNC50, North Carolina State Science Fair

BEHA033 **Teaching Two Americas: A Machine Learning-Based Comparative Analysis of Political Framing in California and Florida Textbooks**
Sneha Khetan, 18, Senior, North Carolina School of Science and Mathematics, Durham, North Carolina, T: Daniel Egger
https://isef.net/project/225534

EAEV037 **A Machine Learning Model for Predicting Fire Probability in Global Peatlands**
Keerthibhooshan Veerichetty, 15, Freshman, Green Hope High School, Cary, North Carolina, T: Tina Robinette
https://isef.net/project/225413

EAEV038 **Drivers and Prediction of Compound Flooding Using a Physics-Informed Risk Index**
Victor He, 16, Junior, Cary Academy, Cary, North Carolina, T: John Noland
https://isef.net/project/225418

ENBM062 **BREATHE: Bioactive Respiratory Extracellular Vesicles for Vaping Addiction Therapy and Healing of Epithelium**
Jamie Cheng, 16, Junior, Green Level High School, Cary, North Carolina, T: Sanjana Sharma
https://isef.net/project/225408

ENBM064 **PULSE: Uncertainty-Aware AI Learning for Drug Diffusion Across Hydrogel Blood-Brain Barrier Systems (Predictive Uncertainty-Aware Learning for Synthetic Endothelial Barriers)**
Nehala Chandolu, 15, Freshman, Green Level High School, Cary, North Carolina, T: Aticila Mormando
https://isef.net/project/225423

MATH024 **Finding a Bijection Between the Kekulé Structures of Benzenoids and Weakly Increasing Matrices**
Leo Yicheng Yang, 18, Senior, North Carolina School of Science and Mathematics, Durham, North Carolina, T: Ashley Tharp
https://isef.net/project/225416

MATS046 **Synthesis and Characterization of Carbomer-Agarose Hydrogel for Sustained Melatonin Release To Promote Traumatic Brain Injury Recovery**
Alvin Liuqi Qu, 17, Senior, North Carolina School of Science and Mathematics, Morganton, North Carolina, T: William Grubbs
https://isef.net/project/225459

MCRO025 **Novel Identification of Probiotic-Bacteriophage Combination Therapy for *Vibrio coralliilyticus* in Aquaculture**
Isabel Marie Garcia, 18, Senior, Isaac Bear Early College High School, Wilmington, North Carolina, T: Bryan Bishop
https://isef.net/project/225533

PHYS040 **Discovering Hidden Galaxy Populations in TNG100-1 With Unsupervised Autoencoder Learning**
Isabella April Bai, 17, Junior, North Carolina School of Science and Mathematics, Durham, North Carolina, T: Jonathan Bennett
https://isef.net/project/225203

ROBO037 **MERIT: Mechanistic Explainability of Reasoning Integrity and Transparency**
Richard Shan, 18, Senior, North Carolina School of Science and Mathematics, Durham, North Carolina, T: Jonathan Bennett
https://isef.net/project/225412

SFTD037 **Optimized Design of Wearable EMG Armband-Based Neural-Machine Interfaces**
Isabel Ruohan Yun, 16, Sophomore, Cary Academy, Cary, North Carolina, T: Donna Eason
https://isef.net/project/225401

TMED047 **Design, Synthesis and Testing of a Novel 3,5-Dimethoxycinnamic Acid-Based Cathepsin C Inhibitor for the Treatment of Inflammatory Bowel Disease**
Fillip Funak, 18, Senior, North Carolina School of Science and Mathematics, Durham, North Carolina, T: Timothy Anglin
https://isef.net/project/225255

NORTH DAKOTA

Dickinson, USND01, Southwest Central North Dakota Regional Science and Engineering Fair

EGSD035 **Novel Multi-Scale Systems Integration of a Hydrogenase-Centered Universal Energy Chassis (HCUEC) for Multi-Environment Biogenic Hydrogen Production and Renewable Energy Deployment**
\# Radheeka Weeraratne, 17, Senior, Dickinson High School, Dickinson, North Dakota, T: Bridget Jacob
https://isef.net/project/227089

ENEV062T **Evaluation of Organic Acids for Reducing Soil Alkalinity**
\# Madalyn June Bohl, 16, Sophomore
Cassy Lynn Hartman, 15, Sophomore
Flasher High School, Flasher, North Dakota, T: Kathryn Kraft
https://isef.net/project/227101

East Grand Forks, USND05, Northeast North Dakota Regional Science and Engineering Fair

CBIO064 **AD-Stage-Net: AI for Alzheimer's MRI Classification**
Katelyn Hur, 17, Junior, Red River High School, Grand Forks, North Dakota, T: Junguk Hur
https://isef.net/project/226988

Lidgerwood, USND03, Southeast North Dakota Regional Science and Engineering Fair

ANIM042 **Madigan Squeeze**
Karly Nina Rivinius, 16, Sophomore, Gackle-Streeter Public School, Gackle, North Dakota, T: Benjamin Juelfs
https://isef.net/project/227208

CHEM036 **Sustainable Agriculture Enabled by Biodegradable Hydrogels for Improved Water and Nutrient Management**
\# Aubrey Rose Isakson, 18, Senior, Kidder County School District #1, Tappen, North Dakota, T: Michael Wachter
https://isef.net/project/225659

Williston, USND06, Northwest North Dakota Regional Science Fair

ANIM045 **FerAppease Effects on Cattle During Stressful Times**
Abagail Ferguson, 17, Junior, Tioga High School, Tioga, North Dakota, T: Sarah Skarphol
https://isef.net/project/227289

PHYS060 **Quantum Batteries**
Jaxson Cowan, 15, Sophomore, Williston High School, Williston, North Dakota, T: Danika Owen
https://isef.net/project/227534

OHIO

Archbold, USOH06, Northwest Ohio Science and Engineering Fair

EAEV026 **Impact of Wastewater Treatment Plants on Microplastic Abundance in Local Waterways**
Naomi Elizabeth Richer, 18, Senior, Pettisville High School, Pettisville, Ohio, T: Donna Meller
https://isef.net/project/224679

ENEV032 **Sustainable Water Extraction via Corona Discharge-Induced Fog Condensation**
\# Gunner G. McClure, 18, Senior, Patrick Henry High School, Hamler, Ohio, T: Justin Sonnenberg
https://isef.net/project/224310

Athens, USOH01, Southeastern Ohio Regional Science and Engineering Fair

BCHM021 **Computational Inhibition of Lachrymatory Factor Synthase Utilizing Molecular Docking Simulations**
\# Prem Koshal, 17, Senior, Athens High School, The Plains, Ohio, T: Laura Tulijak
https://isef.net/project/225805

FINALIST DIRECTORY

Dublin, USOH50, Buckeye Science and Engineering Fair

BCHM012 **Epigallocatechin 3-Gallate: A Natural Therapeutic Agent in Alzheimer's Disease Targeting the CDK5 and CRMP2 Pathway**
Nandita Srikumar, 17, Senior, Solon High School, Solon, Ohio, T: Brad Sims
https://isef.net/project/224580

BEHA032 **Diffusion Tensor Imaging for Predicting Cochlear Implant Outcomes: A Novel Application of Noninvasive Microstructural Analysis**
Rishi Pampati, 16, Junior, Walnut Hills High School, Cincinnati, Ohio, T: John Caliguri
https://isef.net/project/225389

EAEV024 **Machine Learning for Coral Bleaching Diagnosis and Forecasting Using Images and Environmental Data**
Warren Bradley Field, 16, Sophomore, Chagrin Falls High School, Chagrin Falls, Ohio, T: Ben Ko
https://isef.net/project/224602

EBED023 **Sensora: A Wearable AI-Powered Sound Detection and Alert System for Enhanced Environmental Awareness in Deaf and Deafblind Individuals**
Anuki Mudalige, 15, Sophomore, Olentangy Orange High School, Lewis Center, Ohio, T: Sarah Hanna
https://isef.net/project/224578

EGSD016 **Molecular Passivation of ZnO Interfaces Using Self-Assembled Monolayers To Improve Electron Transport in Organic Photovoltaics**
Ayat Ali Jaffar, 16, Junior, Hawken School, Gates Mills, Ohio, T: Lacy Chick
https://isef.net/project/224579

EGSD017 **Graphene Quantum Dot Additives Promote Efficient Perovskite Solar Cells**
Sarang Srikanth, 15, Sophomore, William Mason High School, Mason, Ohio, T: Karen Young
https://isef.net/project/224601

Mentor, USOH02, Northeastern Ohio Science and Engineering Fair

CBIO047 **Transcriptome Dynamics and ADAR-Mediated RNA Editing in Fluoroquinolone-Treated Astrocytes Exposed to Cadmium**
Kamil Balci, 16, Freshman, Solon High School, Solon, Ohio, T: Samil Balci
https://isef.net/project/225285

EAEV039 **FireChain: A Satellite-Driven Deep Learning System for Autonomous Wildfire Response**
Karan Bahl, 14, Sophomore, University School, Chagrin Falls, Ohio, T: Amy Wujnovich
https://isef.net/project/225577

EGSD018 **Impact of Mechanical Design on Piezoelectric Energy Collection**
Yifan Wang, 17, Junior, Solon High School, Solon, Ohio, T: Guojian Wang
https://isef.net/project/224675

ENBM041 **An Integrated Robotic System With EEG Intent Recognition for Customizable Home-Based Upper Limb Rehabilitation**
Xianhao Wu, 17, Junior, Western Reserve Academy, Hudson, Ohio, T: Wanda Boesch
https://isef.net/project/224676

MATH018 **Beyond the Riemann Hypothesis: A Novel Geometric Approach to Deterministic Prime Location for Enhanced Cryptographic Security**
Hassan Al-Shafee, 17, Senior, Normandy High School, Parma, Ohio, T: Jennifer McCalla
https://isef.net/project/224673

TMED032 **Decoding GLP-1: Digital Twins to Separate Neural Pathways From Metabolic Pathways in Brain Health**
Ayushman Dey, 14, Freshman, Solon High School, Solon, Ohio, T: Rachel Chessar
https://isef.net/project/224674

Shaker Heights, USOH05, Hathaway Brown Upper School Fair

ANIM013 **Investigating the Role of Innexins and Calcium Regulation of a Highly Conserved Mechanism for Axial Patterning in the *Drosophila* Embryo**
Naisha Lakshmi Kesari, 17, Junior, Hathaway Brown School, Shaker Heights, Ohio, T: Janna Mino
https://isef.net/project/224164

CBIO019 **Ketogenic Context and Glycolytic State Are Associated With Fatty Acid and Glutamine Coordination in Pancreatic Ductal Adenocarcinoma**
Salma Fareed, 18, Senior, Hathaway Brown School, Shaker Heights, Ohio, T: Janna Mino
https://isef.net/project/224162

CELL015 **α-Synuclein Accelerates Mitochondria-Dependent Axonal Degeneration in a Mouse Model of MPAN: Axonal Enlargement Without Dopaminergic Neuron Loss**
Samia Walid Khaled, 16, Junior, Hathaway Brown School, Shaker Heights, Ohio, T: Janna Mino
https://isef.net/project/224163

TMED031 **A Promising Intervention: Dynamic Cycling Modulates Subthalamic Activity and Intra-Nuclear Connectivity in Parkinson's Disease Patients With Deep Brain Stimulation**
Manya Raina, 16, Junior, Hathaway Brown School, Shaker Heights, Ohio, T: Janna Mino
https://isef.net/project/224657

OKLAHOMA

Ada, USOK07, East Central Oklahoma Regional Science and Engineering Fair

MCRO004 **Manuka Honey and Temperature: An Experimental Study of Antimicrobial Activity**
Joshua Ray Branscum, 18, Senior, Sasakwa High School, Sasakwa, Oklahoma, T: Clarence Story
https://isef.net/project/223970

BARTLESVILLE, USOK02, Bartlesville District Science Fair

EAEV019 **Breathe Smarter: Unlocking Intelligent Indoor Air Insights Using a Smart IoT Indoor Air Quality Monitor**
Mathimalar Jayaprasad, 15, Sophomore, Bartlesville High School, Bartlesville, Oklahoma, T: Jessica Strain
https://isef.net/project/224238

ENEV029T **A Cleaner Cure: Medical Bioplastics Derived From Seaweed**
Carson Michael Lee, 17, Junior
Caylen Lee, 17, Junior
Bartlesville High School, Bartlesville, Oklahoma, T: Shelley Brown
https://isef.net/project/224250

MATS020 **From Waste to Strength: Leveraging Synergistic Effects To Enhance Sustainable Composite Bioplastics Through Upcycling Shrimp Shell Waste**
Jonathan Lai, 16, Sophomore, Bartlesville High School, Bartlesville, Oklahoma, T: Jessica Strain
https://isef.net/project/224249

Stillwater, USOK50, Oklahoma State Science and Engineering Fair

ANIM038 **More Than Muscle: A Comparative Analysis of Functional Anatomy: Heart vs. Tongue Size in Plains Bison (*Bison bison*) in Relation to Weight per Day of Age (WDA)**
Slade Dixon, 17, Junior, Quapaw High School, Quapaw, Oklahoma, T: Jason Couch
https://isef.net/project/226984

ANIM051 **Impact of Introducing a Single Persistently Infected (PI) Animal Into a Group of PI-Negative Cattle**
Seth Daniel Dunivan, 16, Junior, Morrison High School, Morrison, Oklahoma, T: Tammy Will
https://isef.net/project/227848

EAEV048 **The Hidden Cost of Sun Protection: A Comparative Analysis of the Bleaching Impact in *Acropora* Corals Exposed to Chemical and Mineral (Nano and Non-Nano) UV Filters**
Ragavarsha Karuppan Chetty, 15, Freshman, Bartlesville High School, Bartlesville, Oklahoma, T: Shelly Brown
https://isef.net/project/227039

MATS059 **Upon Impact: The Effects of Shear-Thickening Fluid Impregnation Into Kevlar on High Speed Impact**
Isabel Adele Thoreson, 15, Sophomore, Bartlesville High School, Bartlesville, Oklahoma, T: Jessica Strain
https://isef.net/project/226977

Tulsa, USOK10, Tulsa Regional Science Fair

CELL007 **Characterization of Epithelial Cells-Derived Extracellular Vesicles for Studying Upper Respiratory Tract Inflammation**
Sahas Reddy Vemula, 17, Junior, Jenks High School, Jenks, Oklahoma,
T: Vikramsingh Gujar
https://isef.net/project/223839

ENEV015 **GAP: A Novel Genetic Algorithm Design of PETase Variants Optimized To Biodegrade Crystalline PET**
Emma Zhang, 17, Senior, Jenks High School, Jenks, Oklahoma, T: Michael Horn
https://isef.net/project/223922

OREGON

BANKS, USOR50, Northwest Science Expo

CBIO080 ***De novo* Design of Broadly Neutralizing Antibodies for Rapidly Evolving Pathogens**
Arush Goswami, 18, Senior, Wilsonville High School, Wilsonville, Oregon, T: CJ Koll
https://isef.net/project/227684

CBIO088 **Integrative Multi-Omic Data Profiling of Pancreatic Ductal Adenocarcinoma for Identification of Oncofetal Targets and Designing a Novel Bispecific Antibody-Drug Conjugate**
Aashi Dixit, 17, Senior, Catlin Gabel School, Portland, Oregon, T: Marguerite Mckean
https://isef.net/project/227931

ENEV083 **Cultivating *Pleurotus ostreatus* on Mixed Cloth Waste To Grow Into a Biodegradable Styrofoam Alternative**
Tara Mahalakshmi Reddy, 17, Junior, Lakeridge High School, Lake Oswego, Oregon,
T: Matthew Briggs
https://isef.net/project/227932

MATS082 **Advancing Pediatric ADHD Treatment: Spray-Dried Atomoxetine Microparticles for Extended-Release Therapy**
Anvi Singh, 16, Junior, Wilsonville High School, Wilsonville, Oregon, T: Danielle Schroeder
https://isef.net/project/227798

MCRO039T **Lipid Nanocarrier-Mediated siRNA Targeting of Viral Genes in Burkitt's Lymphoma**
Shriya Rao Raghavendra, 17, Junior
Ishita Grandhi, 17, Junior
Ashwika Rao Pesara, 17, Junior
Jesuit High School, Portland, Oregon, T: Lara Shamieh, T: Korin Riske
https://isef.net/project/227796

PHYS055 **A Novel Einstein Radius Lensing Framework for Galaxy Mass Decomposition: Deriving Central Dark Matter Fractions and Their Scaling With Stellar Dynamics**
Zoe Kramer, 17, Junior, South Eugene High School, Eugene, Oregon, T: Michael Leahy
https://isef.net/project/227288

ROBO057 **Winning the Lottery by Preserving Network Training Dynamics With Concrete Ticket Search**
Tanay Arora, 16, Junior, Jesuit High School, Portland, Oregon, T: Lara Shamieh
https://isef.net/project/227797

Beaverton, USOR04, Beaverton-Hillsboro STEM Expo

CELL019 **Machine Learning Biomarker Discovery and AI-Based Protein Design for Low-Cost Oral Cancer Screening**
Shyam Ravidath, 16, Junior, Sunset High School, Portland, Oregon, T: Korin Riske
https://isef.net/project/224333

PLNT049 **Creating a Circular Machine Learning-Based Platform for Sustainable Agriculture, Climate Change Mitigation and Plastic Waste Reduction**
Anisha S. Dhoot, 17, Junior, Westview High School, Portland, Oregon, T: Jose Hernandez
https://isef.net/project/228005

SFTD017 **Designing a Competitive Point System for Among Us**
Matthew William Hui, 18, Senior, Liberty High School, Hillsboro, Oregon,
T: Steffan Ledgerwood
https://isef.net/project/224240

SFTD018 **Enhancing Healthcare Communication for the Deaf and Hard of Hearing Community Using Landmark-Based ASL Recognition**
Yunah Kim, 17, Junior, Mountainside High School, Beaverton, Oregon, T: Lesley Stevens
https://isef.net/project/224242

Bend, USOR08, Central Oregon Community College Regional Science Expo

ROBO029T **AlphaHand: Individual Finger Movement Identification Using CNN/LSTM From Consumer-Grade EEG**
Liam Bales, 17, Junior
Oliver Buchanan, 17, Junior
Jonathan Davanzo, 16, Junior
Summit High School, Bend, Oregon, T: Lisa Lamb
https://isef.net/project/224765

Gresham, USOR01, Gresham-Barlow Science Expo

CBIO023 **Spatial Pseudotiming and Adaptive Gradient Encoding: A Novel Framework for Early Metastatic Trajectory Inference and RNA-Based Therapeutic Intervention**
Nidhi Yadalam, 18, Senior, Jesuit High School, Portland, Oregon, T: Lara Shamieh
https://isef.net/project/224419

CHEM025T **Environmental Effects of Oxidation on Iron, Copper and Zinc and the Electrochemical Reduction of Resulting Corrosion Products**
Alexandra Nicole Harpole, 17, Junior
Zoey Avarie Mattingly, 17, Junior
Gresham High School, Gresham, Oregon, T: Cyrus Harshfield
https://isef.net/project/224423

EBED020 **A New Spectral-Geometric Optimized Architecture for Distortion-Free Binaural Speech Intelligibility**
Elizabeth D. Shen, 16, Junior, Jesuit High School, Portland, Oregon, T: Lara Shamieh
https://isef.net/project/224467

Portland, USOR05, Aardvark Science Exposition

BCHM007T **A Low-Cost, Tyrosinase-Based Biosensor for Colorimetric Toxicity Screening of Water Samples**
Ishaan Bhardwaj, 17, Senior
Jia Bhardwaj, 16, Sophomore
Oregon Episcopal School, Portland, Oregon, T: Joshua Caditz
https://isef.net/project/224100

BMED016T **Examining the Effects of Over-the-Counter Supplements on Paralysis Rates of *Caenorhabditis elegans* Exhibiting Alzheimers-Like Amyloid-ß Plaques**
Joel Guimaraes, 17, Junior
Connor Kai Rosenstein, 17, Junior
Freddy Zahr, 17, Junior
Oregon Episcopal School, Portland, Oregon, T: Joshua Caditz
https://isef.net/project/223625

PHYS010 **Dynamic of Kerr Spacetime: Geodesics, Frame Dragging and the Penrose Process**
Edwin Yiu, 18, Junior, Oregon Episcopal School, Portland, Oregon, T: Joshua Caditz
https://isef.net/project/223984

ROBO012 **Physics-Informed Deep Learning for Robust Landslide Detection: A Dual-Stream Architecture With Geomorphological Constraints**
Tiger (Zheyuan) Qu, 17, Sophomore, Oregon Episcopal School, Portland, Oregon, T: Joshua Caditz
https://isef.net/project/224005

Salem, USOR07, Central Western Oregon Science Expo

BCHM019T **Finding Effective Dosing for Copper Chemotherapy Mimics: Can Copper Replace Platinum?**
Joselyn Longworth, 18, Senior
Jayden Anthnoy Reid, 16, Junior
Junction City High School, Junction City, Oregon, T: Christine McDevitt
https://isef.net/project/225726

Wilsonville, USOR06, CREST-Jane Goodall Science Symposium

CBIO034 **A Novel, Clinically-Validated Deep RL Agent for Personalized Crohn's Disease Treatment**
Anshu Mukherjee, 16, Junior, West Linn High School, West Linn, Oregon, T: Danielle Schroeder
https://isef.net/project/224998

ENEV047 **Reducing Plastic and Forever Chemical Pollution With a Biodegradable, Bio-Based Coating of Single-Use Paper Products**
William Brezina, 15, Sophomore, West Linn High School, West Linn, Oregon, T: Danielle Schroeder
https://isef.net/project/225286

MCRO015 **Cyantific Sight: A Novel, Synergistic Approach to Combating Antifungal Resistance Using Naturally Derived Compounds Phycocyanobilin and Curcumin**
Niyati Bhaskar, 16, Junior, Wilsonville High School, Wilsonville, Oregon, T: Danielle Schroeder
https://isef.net/project/224936

PHYS036 **KITE: Kilonova Intelligent Targeting Engine for Time-Resolved Multi-Messenger Forecasting of Neutron Star Merger Transients**
Annika Martin, 18, Senior, Wilsonville High School, Wilsonville, Oregon, T: Danielle Schroeder
https://isef.net/project/224952

PENNSYLVANIA

Duncannon, USPA01, Capital Area Science and Engineering Fair

CHEM031 **The Efficacy of Near Infrared-activated Gold Nanoparticles To Treat Atherosclerosis: A Simulation Study**
Rachita Bandi, 17, Junior, Trinity High School, Camp Hill, Pennsylvania, T: Nick Sansone
https://isef.net/project/224970

ENEV039 **SeedSetter: A Drone-Based Seed Planting System Designed To Prioritize Seed Germination for Reforestation Efforts**
Cameron Michael Crosswell, 16, Sophomore, Hershey High School, Hershey, Pennsylvania, T: Jason Sibbach
https://isef.net/project/224766

TMED037 **Multi-Modal Prediction of Laryngeal Cancer Recurrence for Identifying Adjuvant Radiotherapy Benefit**
Shaunak Dalal, 18, Senior, Hershey High School, Hershey, Pennsylvania, T: Jason Sibbach
https://isef.net/project/224969

Lancaster, USPA02, North Museum Science and Engineering Fair

ANIM030 **The Effects of Dietary Fiber on *Rattus norvegicus***
Emily Claire Stauffer, 18, Senior, Warwick High School, Lititz, Pennsylvania, T: Doug Balmer
https://isef.net/project/225265

CHEM032 **New Green Chemistry Iridium Catalysts**
Benedikt Nikolas Kienle, 19, Senior, Lancaster Country Day School, Lancaster, Pennsylvania, T: Todd Trout
https://isef.net/project/224971

MATS037 **Bugged Out, A Novel Approach to Reforestation: Developing a Biodegradable, Multi-Modal Pest Deterrent Composite (MPDC) via Biopolymer Encapsulation of Amorphous Silica and Capsaicin for Broad-Spectrum Seed Protection**
Ethan Mark Albright, 18, Senior, Hempfield High School, Landisville, Pennsylvania, T: Neal Kuhn
https://isef.net/project/224972

Pittsburgh, USPA04, Pittsburgh Regional Science & Engineering Fair

BEHA042 **Identifying and Preserving Communities-of-Interest in PA Congressional Maps via Graph Theory and Markov Chain Algorithms**
Antara Mondal, 16, Sophomore, Upper St. Clair High School, Pittsburgh, Pennsylvania, T: Dawn Mostowy
https://isef.net/project/227245

CELL036 **Stromal Mitochondrial Changes in High-Grade Serous Ovarian Carcinoma**
Angelina Li, 17, Junior, North Allegheny Senior High School, Wexford, Pennsylvania, T: Robyn Byrnes
https://isef.net/project/226568

EBED044 **MoreCkt: Automating Analog Circuit Design With Preference-Driven Multi-Objective Reinforcement Learning**
Vivan Neil Poddar, 18, Senior, Shady Side Academy, Pittsburgh, Pennsylvania, T: Wade Znosko
https://isef.net/project/227244

TMED062 **Uncovering a New Avenue To Fight Retinal Diseases: Identifying Retinal Ganglion Cells as a Novel Signaling Pathway Through Fixational Eye Movements With Discovery of the ZNF385D Biomarker Group for AKB-9778 Therapeutic Intervention**
Shivum Telang, 16, Junior, North Allegheny Senior High School, Wexford, Pennsylvania, T: Robyn Byrnes
https://isef.net/project/226569

Reading, USPA05, Reading and Berks Science and Engineering Fair

BMED020 **qPCR Methodology for Quantifying Latent Hepatitis B Virus: First Step to Finding a Cure**
Heidi Yuan Ding, 18, Senior, Wilson High School, West Lawn, Pennsylvania, T: Joseph Melograna
https://isef.net/project/224254

ROBO017 **Hopper: A Biomimetic, Tendon-Driven Series Elastic Jumping Robot**
William Ferenchick, 18, Senior, Wilson High School, West Lawn, Pennsylvania, T: Joseph Melograna
https://isef.net/project/224253

West Chester, USPA03, Delaware Valley Science Fairs

BCHM028 **Developing a CNP-Based Therapy to Strengthen Dysregulated Connective Tissue Signaling in Hypermobile Ehlers-Danlos Syndrome**
Abhiram Kaakarla, 17, Junior, Central Bucks High School South, Warrington, Pennsylvania, T: Mark Hayden
https://isef.net/project/227213

BCHM039 **Development of a Curcumin-Based Pentraxin Conjugate for Targeted Cancer Therapy**
Athena Yee Huen Man, 17, Senior, Central Bucks High School East, Doylestown, Pennsylvania, T: Mark Hayden
https://isef.net/project/227794

BCHM040 **PentraCOR: Bioengineering a Novel Synthetic Fusion Protein Therapeutic for Targeted Regulation of CORIN Gene Signaling in Hypermobile Ehlers-Danlos Syndrome**
Shreejith Krishnamoorthy, 18, Senior, Central Bucks High School South, Warrington, Pennsylvania, T: Mark Hayden
https://isef.net/project/227842

EGSD033 **"My Battery Is Low, And It's Getting Dark": An Evaluation of Energy Recovery Efficiency of Solar Panel Cleaning Strategies Under Simulated Martian Dust Conditions**
Saharsha Konda, 14, Freshman, Parkland High School, Allentown, Pennsylvania, T: Jaclyn Svetcov
https://isef.net/project/227042

ENBM083 **TremorPause: A Wearable Inertial Hand Tremor Evaluation and Suppression System**
Kai Alexander Vajapey, 17, Junior, Moorestown High School, Moorestown, New Jersey, T: Sean Watson
https://isef.net/project/227364

MATH034 **Detecting Causality in (2+1)-Dimensional Globally Hyperbolic Spacetimes Using Conjugation Quandles Over Dihedral Groups**
Zining Fan, 17, Junior, Emmaus High School, Emmaus, Pennsylvania, T: Brent Landrum
https://isef.net/project/227212

PHYS070 **Advancing Scalable Quantum Algorithms for Simulating Multi-Qubit Systems With Colored Noise**
\# Eric Guo, 15, Sophomore, High Technology High School, Lincroft, New Jersey, T: Craig Queenan
https://isef.net/project/227795

ROBO047 **RMST: Continuous Myoelectric-to-Kinematic Decoding via Recursive Multimodal Cross-Attention and 2:4 Structured Sparsity for Bionic Prosthetic Control**
Aaditya Kambli, 16, Sophomore, Central Bucks High School South, Warrington, Pennsylvania, T: Michelle Rhodes
https://isef.net/project/227211

SFTD051 **A Faster Algorithm for Solving Constant and Variable Delay Differential Equations via Quantum Block Encoding**
Snayhin Sharma, 15, Sophomore, Central Bucks High School East, Doylestown, Pennsylvania, T: Judith Elinow
https://isef.net/project/227043

TECA019 **Accent or Impediment? Using Machine Learning To Prevent Speech Misdiagnosis in Children**
Sarah Maria Vaida, 15, Freshman, Cherry Hill High School East, Cherry Hill, New Jersey, T: Mark Brandreth
https://isef.net/project/227841

TMED078 **SepsisGuard: An Uncertainty-Aware Ensemble Early Warning System for Reliable and Scalable Detection of Sepsis and Acute Clinical Deterioration**
\## Jophy Lin, 18, Senior, Manalapan High School, Manalapan Township, New Jersey, T: Jelena Komitas
https://isef.net/project/227535

TMED091 **The First Six Hours: Tracking Neural Damage Through Cerebrospinal Fluid**
Adi Iyer, 14, Freshman, Strath Haven High School, Wallingford, Pennsylvania, T: Marc Dejong
https://isef.net/project/227789

York, USPA06, York County Science and Engineering Fair

CELL027 **Aptamer Beacon-Based Rapid Detection of Delta-9-THC for Roadside Use**
Jason Robert Brick, 17, Junior, Central York High School, York, Pennsylvania, T: Stacey Seitz
https://isef.net/project/224935

ENBM058 **Noninvasive Peripheral Pulse Monitoring Using Photoplethysmography for Pre-Hospital Bone Reduction**
Abigail Halina Zayatz, 16, Junior, Central York High School, York, Pennsylvania, T: Stacey Seitz
https://isef.net/project/225380

RHODE ISLAND

Warwick, USRI50, Rhode Island Science and Engineering Fair

CBIO054 **Enhancing Gene Editing Safety: Leveraging 3D Genome Architecture and Epigenetics To Predict CRISPR-Cas9 Off-Target Mutations via Deep Learning**
Shiven Jha, 14, Freshman, Cumberland High School, Cumberland, Rhode Island, T: Anthony Silva
https://isef.net/project/225610

ROBO034 **Automated Column Chromatography Using Open Hardware: Applications in Past Climate Reconstruction**
Arjun N. Dasari, 17, Junior, The Wheeler School, Providence, Rhode Island, T: Mark Harris
https://isef.net/project/225237

SOUTH CAROLINA

Central, USSC08, South Carolina Region 1 Science Fair

CBIO056 **Sentinel AI: An LLM-Driven Framework for Real-Time Automated Outbreak Detection Using Doctor-Patient Conversations**
Arjun Vir Jain, 17, Junior, D. W. Daniel High School, Central, South Carolina,
T: Jenifer Tidwell
https://isef.net/project/225718

CELL035 **Pharmacoperone-Mediated Rescue of Melanocortin-4 Receptor: Evaluating SM-001 in Restoring Intracellular cAMP Signaling**
Ritesh Jegan Babu, 15, Freshman, D. W. Daniel High School, Central, South Carolina,
T: Jenifer Tidwell
https://isef.net/project/225717

Charleston, USSC03, Low Country Science Fair

ENEV036T **Rapid-Deployment Micro-Buoy System for Aquatic Environmental Monitoring**
Avraham Gavriel Lieberman, 17, Senior
Vedant Rahulkumar Parmar, 17, Senior
Henry Rudloff Plante, 18, Senior
Academic Magnet High School, North Charleston, South Carolina,
T: Katharine Metzner-Roop
https://isef.net/project/224454

PHYS029 **The Eardrum Conundrum: Creating Tinnitus Tranquility**
Owen Young, 15, Freshman, Whitham Academy, Mount Pleasant, South Carolina,
T: Karen Young
https://isef.net/project/224455

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

TMED079 **Neural Stem Cell-Derived Exosomes for Adult Neuroregeneration**
Zhixuan Annie Xu, 17, Junior, Dutch Fork High School, Irmo, South Carolina,
T: Barry Lindler
https://isef.net/project/227116

Hartsville, USSC05, Sand Hills Regional Science Fair

CELL029 **Engineering MART-1 Antigen-Specific T-Cells: Evaluating Transfection Efficiency and Functional Cytotoxicity**
Snikitha Garapati, 18, Senior, South Carolina Governor's School for Science and Mathematics, Hartsville, South Carolina, T: Josh Witten
https://isef.net/project/224973

Spartanburg, USSC07, Piedmont South Carolina Region III Science Fair

TMED070 **Computational Modeling of Bispecific T-Cell Engager Targeting B7H3 (CD276) for Immunotherapy in Medulloblastoma**
Monica Gude, 15, Sophomore, Fort Mill High School, Fort Mill, South Carolina,
T: Blair Tate
https://isef.net/project/227087

SOUTH DAKOTA

Aberdeen, USSD01, Northern South Dakota Science and Math Fair

ANIM044T **Enhancing Chicken Productivity Using Insect-Based Protein Sources**
Emily Jacqueline Brick, 16, Sophomore
Allie Jo Hoekman, 17, Junior
Northwestern High School, Mellette, South Dakota, T: Denise Clemens
https://isef.net/project/227267

CHEM037 **LOCK IN**
Bryxx Daniel Bawek, 16, Sophomore, Doland High School, Doland, South Dakota,
T: Melissa Knox
https://isef.net/project/225731

EAEV042 **The Hidden Threat: Microplastics and Gut Formation in Sea Urchin Larvae**
Kaylee Kiesow, 18, Senior, Aberdeen Central High School, Aberdeen, South Dakota, T: Charles Hermansen
https://isef.net/project/225658

Brookings, USSD02, Eastern South Dakota Science and Engineering Fair

EGSD047 **Investigating Biogas Production Under Low-Moisture Conditions: A Kinetic Analysis of Anaerobic Digestion Performance**
Murtadha Akram Jodhari, 16, Junior, Brookings High School, Brookings, South Dakota, T: Laura Hummel
https://isef.net/project/227682

ETSD054 **Effect of Aging on Mechanical Performance and Chemical Characteristics of PG 58–28 Asphalt Binder**
Navneeth Narasimha Rao, 17, Junior, Brookings High School, Brookings, South Dakota, T: Laura Hummel
https://isef.net/project/227681

MCRO035 **A Novel Self-Sustainable Kit To Combat Rural Vitamin A Deficiency During Pregnancy and Early Childhood**
Sanhita Tummala, 15, Freshman, Brookings High School, Brookings, South Dakota, T: Laura Hummel
https://isef.net/project/227360

TMED086 **Scalable Hybrid Framework for Mapping the GPCR-Peptide Interactome: A Proactive Genome-Scale Safety Audit of GLP-1**
Malya M. Chakravarty, 17, Junior, Brookings High School, Brookings, South Dakota, T: Laura Hummel
https://isef.net/project/227683

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

SFTD052 **Ai²: Artificial Intelligence Meets Artificial Insemination — Can a Non-Technical Student Build a Tool That Analyzes Cattle Data Better Than Spreadsheets and Paper?**
Atlee Olson, 18, Senior, Belle Fourche High School, Belle Fourche, South Dakota, T: Austin Bishop
https://isef.net/project/227078

TENNESSEE

Chattanooga, USTN01, Chattanooga Regional Science and Engineering Fair

BCHM016 **Ionizable Amphiphilic Janus Dendrimer Optimization: Investigating Dendrimersome Nanoparticles for Enhanced mRNA Transfection *in vitro***
\# Joshua Hyungwan Kim, 17, Senior, McCallie School, Chattanooga, Tennessee, T: Ashley Posey
https://isef.net/project/224974

CELL026 **Using Collagen-19 Expression in *Caenorhabditis elegans* Development To Further Expand the let-7 microRNA Genetic Interactome**
James Tillman McCorkle, 18, Senior, Baylor School, Chattanooga, Tennessee, T: Antonio Herrera
https://isef.net/project/224767

Knoxville, USTN04, Southern Appalachian Science and Engineering Fair

ENEV058T **Combating "Forever Chemicals": Efficient PFAS Removal via Microbially Enhanced Biochar Sorption**
Dinh An Phan, 17, Junior
Rickie Wu, 17, Junior
Farragut High School, Knoxville, Tennessee, T: Matthew Milligan
https://isef.net/project/226859

MATS077T **Automating Electron Microscopy for Materials Analysis Using Large Language Model Agents**
\# Levi Dunn, 17, Senior
Dominick Louis Pelaia, 17, Junior
L&N STEM Academy, Knoxville, Tennessee, T: Bryan Schultz
https://isef.net/project/227680

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

CHEM061 **Toward Next-Generation Plastics: Quantifying the Donor Ability of Schiff Base Ligands for Olefin Polymerization Catalysis**
Melody Akemi McCloskey, 16, Junior, HomeLife Academy, Jackson, Tennessee,
T: Thomas McCloskey
https://isef.net/project/227858

Nashville, USTN06, Middle Tennessee Science and Engineering Fair

BEHA039 **Testing Spatial Memory and Associative Learning in *Planaria* With Chronic Nicotine Usage**
Jessica Alessandra Toledo-Franco, 17, Senior, John Overton High School, Nashville, Tennessee, T: Gregory Smith
https://isef.net/project/227110

BEHA056 **The Cognitive Cost of Addictive Design: A Mechanistic Framework for Supra-Additive Extraneous Load in Persuasive Interfaces**
Evalyn Nyitong Ujwok, 18, Senior, Rutherford County Virtual School, Murfreesboro, Tennessee, T: Jennifer Courtney
https://isef.net/project/227914

BMED060 **Regulation of the PPAR? Pathway Using Antagonists and Inverse Agonists Across 2D and 3D Lung Cancer Models**
Parker Nunnery, 18, Senior, John Overton High School, Nashville, Tennessee,
T: Gregory Smith
https://isef.net/project/227679

EGSD051T **Thick or Thin? Investigating How Electrolyte Viscosity Affects DSSC Efficiency and Stability**
Ishan Chakrabarti, 17, Junior
Jason Moon, 17, Junior
Rossview High School, Clarksville, Tennessee, T: Brian Story
https://isef.net/project/227845

ROBO061T **Alternative Distillation Methods in Sim-to-Real Transfer**
Brash Wolford Cook, 17, Junior
Kevin Silu Li, 17, Junior
Montgomery Bell Academy, Nashville, Tennessee, T: Chris Lankford
https://isef.net/project/227930

TEXAS

Arlington, USTX03, Fort Worth Regional Science and Engineering Fair

EAEV017 **Storm-Graph Vision Transformer: Max-Pooling Spatial Attention for Severe Weather Nowcasting**
Aanya Kotla, 17, Junior, Texas Academy of Mathematics and Science, Denton, Texas,
T: Eric Gruver
https://isef.net/project/224148

EGSD009 **Modeling Hydrogen Production From Methane Pyrolysis Using Machine Learning**
Eugenia Jin, 17, Junior, Colleyville Heritage High School, Colleyville, Texas,
T: Sonya Loughran
https://isef.net/project/224092

ENBM042 **NeuroPatch: A Wearable, Minimally Invasive Bidirectional Photoacoustic Neural Interface for Ultra-Low-Latency Brain-Computer Interaction**
Samuel Skotnikov, 18, Senior, Marcus High School, Flower Mound, Texas,
T: Christopher Hinsley
https://isef.net/project/224677

ETSD016 **Development of a Low-Cost Grating-Based Surface Plasmon Resonance Sensor for Detection of Waterborne Toxins**
Vivian Huilin Liu, 17, Junior, Texas Academy of Mathematics and Science, Denton, Texas,
T: Eric Gruver
https://isef.net/project/224093

FINALIST DIRECTORY

MATH012 **Adaptive seqNMF for Analysis of Zebra Finch HVC Neuronal Activity: Implications for the Central Pattern Generator Hypothesis**
Piyush Mallick, 17, Senior, Colleyville Heritage High School, Colleyville, Texas, T: Sonya Loughran
https://isef.net/project/224146

PHYS017T **Electron-Irradiated Carbon Nanomaterials for Solid-State Hydrogen Storage**
Avin Gupta, 17, Junior
Jian Park, 16, Junior
Texas Academy of Mathematics and Science, Denton, Texas, T: Eric Gruver
https://isef.net/project/224233

SFTD013 **ATC-Copilot: Automatic Speech Recognition and Natural Language Processing for Air Traffic Control Communications**
Cody Li, 14, Freshman, Carroll High School, Southlake, Texas, T: Kayla Murphy
https://isef.net/project/224147

Austin, USTX13, Greater Austin Regional Science and Engineering Fair

BCHM005 **Decoding Plastic Waste: Novel AI-Guided Engineering of PETase Mutants for Enhanced PET Plastic Bioremediation**
David Pan, 19, Senior, Westwood High School, Austin, Texas, T: Avni Kantawala
https://isef.net/project/223792

BMED015 **Glia-Neuron GPCR Signaling as a Therapeutic Route to Axon Regeneration: cAMP-PKA Activation Elevates Excitability and Survival in Neurons**
Uma Maya Sthanu, 18, Senior, Westwood High School, Austin, Texas, T: Avni Kantawala
https://isef.net/project/223816

CHEM011 **Evaluating CD44–Aptamer Binding Energetics Using Membrane-Embedded Molecular Dynamics**
Adheesh Chincholi, 16, Sophomore, Westwood High School, Austin, Texas, T: Avni Kantawala
https://isef.net/project/223854

EGSD007T **Carnot-Guided Warm-Optimization of Dilution Refrigerators: A Reduction in the Electrical and Cost and Material Cost Drivers in Quantum Computing**
Arnav Malhotra, 16, Junior
Aiden Singh, 16, Junior
Leander High School, Leander, Texas, T: Syeda Zuma
https://isef.net/project/223887

MATH010 **Invariant-Guided Exploration of the Weyl Chamber for Universal Quantum Gate Discovery**
Arnav Shandilya, 17, Senior, Westlake High School, Austin, Texas, T: Elizabeth Phillips
https://isef.net/project/223952

MATS013 **Biopolymer-Based Microcarriers for Controlled Nutrient Release: A Sustainable Alternative to Commercial Fertilizers**
Navnith Naveen Prabhu, 16, Junior, Round Rock High School, Round Rock, Texas, T: Erica Brokaw
https://isef.net/project/223966

TMED013 **From MRI to Implant: Development of an Open-Source Computational Pipeline for Patient-Specific 3D Voronoi Meniscus Scaffold Generation With Anisotropic Voxel Correction and Regional Tribological Gradients**
Amrit Yadav, 16, Sophomore, Vista Ridge High School, Cedar Park, Texas, T: Jacob Hoffman
https://isef.net/project/224031

Burkburnett, USTX16, Red River Regional Science and Engineering Fair

CELL011 **Effects of Hidden Visual Stimuli on Visual Cortex Activity and Behavior**
Maria Teodora Pojoga, 16, Junior, Christ Academy, Wichita Falls, Texas, T: Sam Ross
https://isef.net/project/223843

College Station, USTX50, Texas Science and Engineering Fair

BCHM037 **Targeting Pathological Neurotransmission Dynamics Through *de novo* Regulatory Modulation to Suppress Glioma Progression**
Sahana Pandey, 17, Junior, Vandegrift High School, Austin, Texas, T: Justyne Biddle
https://isef.net/project/227676

EAEV046 **Project Purify: A Hybrid Electro-Photocatalytic System for Targeted Degradation of Microplastics**
Rhea Chidambaram, 16, Sophomore, The Village School, Houston, Texas, T: Sharon Carswell
https://isef.net/project/226574

EGSD034 **Design and Optimization of a Hybrid Piezoelectric–Electromagnetic Energy Harvesting System for Mechanical Energy Conversion**
Rithvika Pradeesh, 16, Junior, College Park High School, The Woodlands, Texas, T: Debra Creel
https://isef.net/project/227081

ENEV073 **Moo-ving Towards Cleaner Water**
Sydney Grace Stephens, 16, Junior, Harleton High School, Harleton, Texas, T: Gwen Wright
https://isef.net/project/227677

ETSD048 **HandTalk: A Translation System for American Sign Language**
Ana Spiride, 16, Junior, Plano East Senior High School, Plano, Texas, T: Amanda Miller
https://isef.net/project/227196

MATS076 **Complex Coacervate: Novel Methodology To Crystallize Hydrophobic Drugs**
Anvesha Subramanian, 17, Junior, Ridge Point High School, Missouri City, Texas, T: Jeauxbert Fields
https://isef.net/project/227674

MCRO028 **Targeting the GraRS Two-Component System in *Staphylococcus epidermidis*: Computational Identification and *in vitro* Validation of a Novel Adjunctive Cocktail Therapy for Antibiotic-Resistant Infections**
Aditi Srikanth, 17, Junior, Carroll Senior High School, Southlake, Texas, T: Erin Burkamp
https://isef.net/project/225811

MCRO038 **ANTicipate: Engineering a *Camponotus* Enzyme-Functionalized Aerobic Microbe for Simultaneous CO_2 Mitigation and Fertile Compost Production From MSW Landfill Food Waste**
Ananya Nagendra, 18, Senior, Plano East Senior High School, Plano, Texas, T: Amanda Miller
https://isef.net/project/227689

TECA018 **SAMA: A Self-Evolving AI Multimodal Assistant for Dementia Care**
Shiqing (Ellie) Tang, 16, Sophomore, Allen High School, Allen, Texas, T: Meghan Wish
https://isef.net/project/227678

TMED085 **MALAT1 Silencing Reduces EDB-Fibronectin Expression and Invasive Morphology in Triple-Negative Breast Cancer**
Nikila Swaminathan, 17, Senior, Allen High School, Allen, Texas, T: Noah Fisher
https://isef.net/project/227675

CORPUS CHRISTI, USTX15, Coastal Bend Regional Science Fair

CBIO011 **Development of Non-Invasive Imaging Biomarkers for Predicting Immunotherapy Response in Breast Cancer Patients**
Soaham Kumar, 15, Sophomore, Veterans Memorial High School, Corpus Christi, Texas, T: Porforio Zamora
https://isef.net/project/223827

TMED007 **A Multi-Target Chronopharmacotherapy for the Inhibition and Clearance of Toxic Proteins in Alzheimer's Disease**
Sharmada Palakurthi, 18, Senior, W.B. Ray High School, Corpus Christi, Texas, T: Pedro Benavidez
https://isef.net/project/224025

FINALIST DIRECTORY

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

BMED026 **Fusing Digital Biomarkers: A Multimodal AI Framework for Parkinson's Disease Detection Using Gait, Voice, and Handwriting**
Devaj Shourya Bhogireddi, 17, Junior, Allen High School, Allen, Texas, T: Noah Fisher
https://isef.net/project/224659

CHEM027 **Synthesis and Chemical Stability of L-Citrulline Ethyl Ester Across Alkaline Conditions**
Pardhiva Penna, 17, Senior, Plano East Senior High School, Plano, Texas, T: Amanda Miller
https://isef.net/project/224529

EBED028T **When Plants Speak: Real-Time Electrophysiology-Driven Early Plant Stress Detection Through a Multi-Stage Embedded Biopotential Acquisition Pipeline and Edge-Deployed Supervised Machine Learning**
Pratyush Kumar Shukla, 17, Junior
Khajan Singh, 17, Junior
Justin Wakeland High School, Frisco, Texas, T: Cathy Toups
https://isef.net/project/224757

EGSD015 **The Bionic Leaf: Developing a Novel Self-Healing, Bi-Functional Manganese Oxide Catalyst To Use With the Bacterium *Ralstonia eutropha* for Sustainable Ethanol Production**
Arya Gurumukhi, 17, Senior, Plano East Senior High School, Plano, Texas,
T: Amanda Miller
https://isef.net/project/224528

ENBM037 **OncoScan-X: Uncertainty-Aware Deep Learning System for Ovarian Cancer Subtype Diagnosis on Low-Cost Hardware**
Rithvik Puppala, 14, Freshman, Rock Hill High School, Frisco, Texas, T: Adam McMahon
https://isef.net/project/224568

MATH016 **Fractal-Type Structures Associated With the Riemann Xi Function**
Vidhi Desai, 16, Sophomore, Frisco High School, Frisco, Texas, T: Elyse Wudeck
https://isef.net/project/224514

MCRO013 **Characterizing Chlamydial Cytotoxins as Inflammatory Modulators: *C. muridarum* and *C. Trachomatis* Putative Glycosyltransferase Activity and NF-κ B Regulation**
Vijay Shivnani, 17, Junior, Plano West Senior High School, Plano, Texas, T: Emily Sharma
https://isef.net/project/224570

PHYS031 **OptiSkew: A Biophysical Approach for Self-Assessment Eye Refractive Disorders (Year II)**
Aarini Sen, 17, Junior, Plano West Senior High School, Plano, Texas, T: Bev Mahoney
https://isef.net/project/224572

TMED027 **Smart Vision for AMD: A Closed-Loop, AI-Adaptive AR System for Real-Time Optimization of Reading Acuity in Central Scotomas**
Jonathan Zuo Shen, 15, Sophomore, Rick Reedy High School, Frisco, Texas,
T: Margaret Parker
https://isef.net/project/224569

El Paso, USTX02, Sun Country Science Fair

ANIM010T **Hold My Paw; Determining Paw Dominance in Dogs**
Marina Itzel Lares-Garcia, 16, Sophomore
Bella Marie Vargas, 16, Sophomore
Mission Early College High School, El Paso, Texas, T: Antonio Castruita, T: Javier Rios
https://isef.net/project/224101

BCHM002T **The Impact of Emollient, Humectant and Occlusive Formulations on Stratum Corneum Hydration**
Ivanna Mia Aragon, 18, Junior
Abigail Aromin Caguingin, 17, Junior
Mia Alexis Olivas, 16, Junior
Franklin High School, El Paso, Texas, T: Shala Lee-Lopez
https://isef.net/project/223492

ENBM015 **GIRYO: A Novel Approach to Detecting and Tracking Chronic and Episodic Migraines With Commercial EEG and Stimulated Non-Invasive Neuromodulation for Long-Term Treatment Purposes**
\# Hanah Koh, 16, Sophomore, Harmony Science Academy-El Paso, El Paso, Texas,
T: Anais Vazquez
https://isef.net/project/223902

Houston, USTX05, Science Engineering Fair of Houston

ANIM011 **Year III: Development of *M. mercenaria* Neoplastic Hemocytes as a Novel Alternative Experimental Model for BCL-2 Interactions in Blood Cancers: An Application for Targeted Drug Studies**
\# Iris Shen, 18, Senior, College Park High School, The Woodlands, Texas, T: Debra Creel
https://isef.net/project/224102

BEHA009 **A Gamified Go/No-Go Paradigm Replicates Behavioral and Neural Signatures of Inhibitory Control in Neurosurgical Patients**
Geoffrey Liu, 18, Senior, Glenda Dawson High School, Pearland, Texas, T: Mark Sheler
https://isef.net/project/223801

CBIO020T **Frankenstein-Synuclein: Rapid, Structure-Informed *in silico* Generation of *de novo* Replacement Protein Variants Using Benign Homologs for Parkinson's Disease Prevention**
Manashwin Nelluri, 16, Sophomore
Manas Telikepalli, 16, Sophomore
College Park High School, The Woodlands, Texas, T: Courtney Sweebe
https://isef.net/project/224234

CHEM015 **Controlling Drug Release From Alginate Hydrogel Beads Using Polymer Coatings**
Madeleine Marie Melancon, 15, Freshman, Carnegie Vanguard High School, Houston, Texas, T: Paul Mata
https://isef.net/project/224235

EAEV036 **Toward Sustainable and Efficient Hydraulic Fracturing: A Causal Machine Learning Approach to Geologically Informed Completion Design in Shale Oil Production**
Claire Sophie Zhou, 14, Freshman, Dulles High School, Sugar Land, Texas,
T: Kristin Mathew
https://isef.net/project/225378

EBED014 **EcoHawk: YOLOv11 Low-Altitude Drone System for Simultaneous Detection, Geospatial Quantification, and Risk Mapping of Invasive Species With Real-Time Authority Notification**
Shriya Venkat, 17, Junior, College Park High School, The Woodlands, Texas,
T: Debra Creel
https://isef.net/project/224104

ENBM026T **POCKET: A Multiplexing Point-of-Care Kinetic Electrochemical Test Using Aptamers for Accessible, Rapid Diagnostics**
Jiya Joshi, 17, Junior
\# Sai Spoorthi Maram, 17, Junior
William B. Travis High School, Richmond, Texas, T: Matthew Hindmarch
https://isef.net/project/224167

ETSD015 **AeroHive: A Novel Honeycomb Electrohydrodynamic Thruster Array With Vectorized Propulsion**
Cayson Wang, 17, Junior, College Park High School, The Woodlands, Texas,
T: Debra Creel
https://isef.net/project/223626

MATH029 **GerrySim: A Markov Chain Monte Carlo Framework for Reducing Partisan and Racial Gerrymandering**
Sahil Kulkarni, 17, Junior, College Park High School, The Woodlands, Texas,
T: Debra Creel
https://isef.net/project/226491

MATS015 **Low-Cost Nanocrystalline Nickel Reinforcement of Additively Manufactured Polymers for Extreme Industrial Environments**
Derek Jiu, 17, Junior, Saint John's School, Houston, Texas, T: Franco Posa
https://isef.net/project/224103

PLNT011 **Optimization of *Spartina alterniflora*–Microbe Interactions To Enhance Methane Degradation in Wetland Environments**
\# Vibhan Kiran Emmi, 18, Senior, College Park High School, The Woodlands, Texas, T: Stephanie Marts
https://isef.net/project/224105

SFTD021 **Safer Hands in Hazardous Environments: Object-Centric Reinforcement Learning for Sim-to-Real Dexterous Manipulation**
\# May Lynn Espinola, 18, Senior, Obra D. Tompkins High School, Katy, Texas, T: Bryan Johnson
https://isef.net/project/224410

Kilgore, USTX06, East Texas Regional Science Fair

SFTD016 **School Buddy | Streamlining School Communication**
Armaan Rajani, 16, Senior, Nacogdoches High School, Nacogdoches, Texas, T: Lindy Arbuckle
https://isef.net/project/224200

Laredo, USTX07, United Independent School District Regional Science Fair

BEHA017 **Cognitive Stimulation via Multi-Sensory Integration: Testing the Impact of Childhood Multimedia Tools on Engagement in Alzheimer's and Dementia Patients**
Victor Ramos, 16, Sophomore, John B. Alexander High School, Laredo, Texas, T: Nancy Martinez
https://isef.net/project/224502

Laredo, USTX14, Laredo Independent School District Science Fair

ENEV040T **Development and Evaluation of a Coconut Coir–Activated Carbon Sorbent Pillow for Oil Spill Remediation**
Jorge Isaias Martinez, 17, Senior
Rodrigo Gael Peralta, 18, Senior
Raymond & Tirza Martin High School, Laredo, Texas, T: Tomas Guerra
https://isef.net/project/224949

Lubbock, USTX08, South Plains Regional Science and Engineering Fair

EAEV018 **Sunflower's Impact on Soil Recovery and Native Grass Growth**
Aideen Chaloupka, 16, Junior, Christ the King Cathedral School, Lubbock, Texas, T: Alicea Chaloupka
https://isef.net/project/224232

TMED022 **Multimodal Prediction of Alzheimer's Disease: An AI-Ensembled Approach Integrating MRI Imaging and Blood-Based Biomarkers**
Ruhan Anhad P. Reddy, 17, Senior, Lubbock High School, Lubbock, Texas, T: Christine Teaff
https://isef.net/project/224231

San Antonio, USTX11, Alamo Regional Science and Engineering Fair

BCHM006 **Harnessing RNA Nanotechnology: *In silico* Design and Structural Modeling of RNA Aptamers Targeting BRCA1 for Early Detection of Breast and Ovarian Cancer**
Sydney Elizabeth Banks, 16, Junior, Canyon High School, New Braunfels, Texas, T: Chelsea Corder
https://isef.net/project/223793

BEHA008 **MINDFUL: Multi-Modal Integrated Neuro-Diagnostic Detection of Five-Factor Inventory Using Layered Attention**
Ethan Guan, 14, Freshman, BASIS San Antonio Shavano Campus, San Antonio, Texas, T: Sarah Chavez
https://isef.net/project/223594

CBIO010 **OncoBind: A Personalized Computational Pipeline Integrating Quantum Mechanics/ Molecular Mechanics for Discovering Mutation-Specific Antibodies in HER2-Driven Cancers**
\# Prajesh Mishra, 17, Junior, BASIS San Antonio Shavano Campus, San Antonio, Texas, T: Sarah Chavez
https://isef.net/project/223826

EAEV013 **Stormwater Dynamics: The Influence of Rainfall and Soil Characteristics on Soil Erosion Estimates on Construction Sites**
Emily Liu, 17, Junior, Keystone School, San Antonio, Texas, T: Jason Nydegger
https://isef.net/project/223869

ENBM020 **Autonomous Trocar Insertion Robot to Aid in Minimally Invasive Surgery**
Kyle Matthew Jackson, 18, Senior, John Jay Science and Engineering Academy, San Antonio, Texas, T: Autumn Sancho
https://isef.net/project/223907

MATH007 **Irreducible Polynomials Over Finite Fields as Cryptographical Frameworks for Cybersecurity**
Jiseop Lee, 16, Junior, BASIS San Antonio Shavano Campus, San Antonio, Texas, T: Sarah Chavez
https://isef.net/project/223949

TMED016T **Exploring Genetic, Immune and Physiological Resilience Trends in Active-Duty Warfighters**
Siddharth Raghu, 17, Junior
Elizabeth Amelia Reilly, 18, Senior
Northside Health Careers High School, San Antonio, Texas, T: Erin Snow
https://isef.net/project/223692

Waco, USTX12, Central Texas Science and Engineering Fair

ENEV013 **The Plastic Cow: Microplastic Dry Removal From Bovine Feed With Elimination Device for Distinct Plastics: Year 6**
Mabry K. Miller, 17, Junior, McGregor High School, McGregor, Texas, T: Kendra Miller
https://isef.net/project/223921

MATS009 **Year 5 Study of Developing a Novel, Eco-Friendly and Economic Alternative to Construction Materials, Utilizing a Composite Prototype of Recycled Polyethylene Terephthalate (PET), Polycarbonate and *Agave sisalana* Fibres**
\## Jorge David Leon Martinez Morris, 18, Senior, La Vega High School, Waco, Texas, T: Rachel Stolle
https://isef.net/project/223961

Weslaco, USTX04, Rio Grande Valley Regional Science and Engineering Fair

CBIO014 **Accelerating Whole-Brain Axonal Mapping With FastRandomForest and Proof of Concept in a Familial Alzheimer's Disease Mouse Model**
\## Zeviel Pineda, 18, Senior, Veterans Memorial Early College High School, Brownsville, Texas, T: Yesenia Portales
https://isef.net/project/223831

CBIO015 **AI-Driven Prognosis of Dementia: Risk Stratification From Baseline Clinical Profiles in a Large Longitudinal Cohort**
\# Claire Kim, 16, Junior, Lamar Academy, McAllen, Texas, T: Lauren Rubio
https://isef.net/project/223832

EGSD008 **The Development of a Mycelium-Based Proton Exchange Membrane for Ethanol Detection in Fuel Cells**
Faiza Islam, 17, Junior, UTRGV Mathematics and Science Academy, Edinburg, Texas, T: Armando Montes
https://isef.net/project/223888

TMED014 **AI-Driven Graph Neural Networks for Dual-Target AChE and BACE1 Drug Repurposing in Alzheimer's Disease**
Erin Hou, 15, Sophomore, Lamar Academy, McAllen, Texas, T: Lauren Rubio
https://isef.net/project/224032

UTAH

Cedar City, USUT02, Southern Utah Science and Engineering Fair

BEHA011 **The Evolution of Color Interpretation Over Time**
Addilyn Brielle Lowe, 17, Junior, Success Academy DSU, St. George, Utah, T: Megan Liljenquist
https://isef.net/project/223629

CHEM021 **Selective Binding of Iron and Copper by Humic Acid Supplements**
Jocelyn Emily Reyes, 17, Junior, Success Academy DSU, St. George, Utah, T: Megan Liljenquist
https://isef.net/project/224319

ETSD029 **Low-Cost and Easily Accessible Flash Flood Detection System**
Sedona Sachatello, 14, Freshman, Vista School of Performing Arts and Technology, Ivins, Utah, T: Drake Baltzer
https://isef.net/project/224769

Farmington, USUT01, North Davis Area Science and Engineering Fair

CELL012 **CRISPR Knockout of Hif1a in Glioblastoma Cancer: *In vitro* and *in vivo* Evaluation**
Neve Eliza Bawden, 17, Senior, Bountiful High School, Bountiful, Utah, T: Ruth Cole
https://isef.net/project/223694

ETSD049T **Piezo Power: A Piezoelectric Tile That Uses the Pressure From Steps and Converts It Into a Useable Voltage Current**
Cambria Nelson, 15, Freshman
Samantha Riley Stander, 15, Freshman
Shoreline Junior High School, Layton, Utah, T: Alicia Yost
https://isef.net/project/226964

MCRO010T **The Effect of Light Exposure Time on the Bioluminescent Glow Produced by Marine Dinoflagellates**
Ryker Wallace, 14, Freshman
Luke Joseph Williams, 15, Freshman
West Point Junior High School, West Point, Utah, T: Haylie Tracy
https://isef.net/project/224471

PHYS019 **Determining the Concentration of Sugar Within a Liquid Using the Refraction of Light**
Drey Holzer, 16, Sophomore, Woods Cross High School, Woods Cross, Utah, T: Janette Duffin
https://isef.net/project/224246

Ogden, USUT03, Weber Area Science and Engineering Fair

BEHA016T **Promptly Speaking: The Relationship Between AI Prompts, the Results You Receive and Their Effect on Student Learning**
Megan Kristine Pautz, 15, Freshman
Charley Madelyn Wintle, 14, Freshman
Orion Junior High School, Harrisville, Utah, T: Sara Yearsley
https://isef.net/project/224438

EAEV022 **The Extent to Which UV Filtering Compounds Inhibit Hydrophyte Photosynthetic Systems**
Evelyn Taryn Stephens, 17, Junior, Weber High School, Pleasant View, Utah, T: Lareen Radle
https://isef.net/project/224292

ETSD022 **Designing a Single-Part 3D Printed Aerospike Thrust Chamber Assembly**
Dallan Andrew Hansen, 16, Junior, Weber High School, Pleasant View, Utah, T: Lareen Radle
https://isef.net/project/224437

MCRO016 **Evaluating Bleach-Based Sanitation for Reducing *Escherichia coli* Contamination on Baby Carrots**
Kamryn Drew Smith, 15, Freshman, Mountain View Junior High School, West Haven, Utah, T: Mathew Brown
https://isef.net/project/224939

PHYS024 **Curriculum Learning-Based Detection and Analysis of Dark Matter via Strong Gravitational Lensing**
Nicole Cristina Aguayo, 17, Junior, Roy High School, Roy, Utah, T: Claire Lindstrom
https://isef.net/project/224303

Ogden, USUT07, Harold W. & Helen M. Ritchey Science and Engineering Fair of Utah

MATS062T **Supervised Machine Learning for Post-Acquisition Background Suppression in Tip-Enhanced Raman Spectroscopy (TERS)**
Cameron Kay Gilbert, 16, Junior
Hydyr Yuvshanov, 16, Senior
InTech Collegiate High School, North Logan, Utah, T: Parker Gibby
https://isef.net/project/227104

PLNT032 **An Analysis of Mizuna (*Brassica rapa* var. *nipposinica*) Grown to Maturity in a Microgravity Environment**
Sarah Anne Pace, 18, Senior, Bear River High School, Garland, Utah, T: Rhonda Pace
https://isef.net/project/227103

SFTD053 **Efficient Lexical Encoding of Natural Language**
Brian Lukas Heers, 17, Senior, InTech Collegiate Academy, Logan, Utah, T: Parker Gibby
https://isef.net/project/227102

TMED071 **Optimizing Neural Networks for Fast and Accurate Breast Cancer Detection**
Deep Chakraborty, 15, Freshman, Green Canyon High School, North Logan, Utah, T: Mark Cowley
https://isef.net/project/225807

Provo, USUT04, Central Utah STEM Fair

EGSD022 **Development of a Novel Solution Using a Multi-Catalyst Process To Lower the Activation Energy To Produce Clean Hydrogen**
Davonna Hailey Smith, 16, Sophomore, Herriman High School, Herriman, Utah, T: Lynsey Williams
https://isef.net/project/225202

ENEV048 **Cotton Belt Water Pump: A Novel Solution for Water Extraction in Remote and Arid Regions**
Kaster Boggs, 16, Sophomore, American Heritage School, American Fork, Utah, T: Ryan Anderson
https://isef.net/project/225320

MATS049 **Manufacturing With Moon Dust**
Clara Dawn Allen, 16, Junior, Springville High School, Springville, Utah, T: Doug Morris
https://isef.net/project/225530

MCRO026 **Cold Plasma: Sterilizing Dairy Biofilms**
Bentley Kelly Day, 15, Sophomore, Spanish Fork High School, Spanish Fork, Utah, T: Kaylee Stone
https://isef.net/project/225576

PHYS042 **Investigating Which Fin Shape Results in Minimal Induced Drag**
Garner Beardall Meads IV, 17, Junior, Pleasant Grove High School, Pleasant Grove, Utah, T: David Van Dijk
https://isef.net/project/225259

Salt Lake City, USUT05, University of Utah Science and Engineering Fair

BEHA024 **How AI Speaks Changes How People Think: Framing AI Advice To Keep Moral Reasoning Human**
Aadi Mishra, 17, Junior, The Waterford School, Sandy, Utah, T: Missy Johnson
https://isef.net/project/224975

BMED033 **Liposomal Encapsulation to Reduce Propofol Adsorption in Extracorporeal Membrane Oxygenation (ECMO) Systems**
Ian Jake Kim, 17, Junior, West High School, Salt Lake City, Utah, T: Hilary Thirlwell
https://isef.net/project/224976

CBIO033 **UnFolding Genetic Disorders: Evaluating AlphaFold Metrics on Predicting Pathogenic Missense Mutations**
Rayne Weinstein, 17, Junior, Rowland Hall - Lincoln Street Campus, Salt Lake City, Utah, T: Benjamin Smith
https://isef.net/project/224980

ETSD032 **Applying Principles of Electromagnetism and Resistive HeatingTo Develop a More Accessible Method of Metal Additive Manufacturing**
Ethan Erik Bo, 17, Senior, Judge Memorial High School, Salt Lake City, Utah, T: Tara Bo
https://isef.net/project/224979

PHYS037 **Applying Black Holes as Cosmological Standard Rulers**
Mo Choi Spiegel, 15, Freshman, Skyline High School, Salt Lake City, Utah,
T: Kevin Despain
https://isef.net/project/224978

TMED038 **Tumor Microenvironmental Signatures Associated With Low DARC/ACKR1 Expression in Solid Tumors, and Potential Mechanistic Insights**
Samuel Lu, 18, Senior, Rowland Hall- Lincoln Street Campus, Salt Lake City, Utah,
T: Padmashree Rida
https://isef.net/project/224977

VERMONT

Northfield, USVT50, Vermont Science, Technology, Engineering and Mathematics Fair

CBIO037 **Pathformer: Language Models for Automated CPT Billing Code Assignment in Multi-Institutional Pathology Reports**
Elijah Renner, 18, Senior, Thetford Academy, Thetford Center, Vermont,
T: Rachael Brown
https://isef.net/project/225007

EBED029 **Design and Evaluation of an FPGA-Based Interconnect for Energy-Efficient Data Center Operation**
Clay Nicholson, 18, Senior, Champlain Valley Union High School, Hinesburg, Vermont,
T: Susie Moakley
https://isef.net/project/225006

VIRGINIA

Ashburn, USVA07, Loudoun County Science and Engineering Fair

EBED032T **Computational Auditory Recognition Ocular Lenses (C.A.R.O.L)**
Lucas Fletcher, 18, Senior
Andrew Christopher Olejer, 18, Senior
Woodgrove High School, Purcellville, Virginia, T: Matthew Young
https://isef.net/project/225280

EGSD027T **Development of Spatially Engineered Microtextures Inspired by Lotus Leaf Structures for Enhanced Passive Photovoltaic Surface Cleaning**
Catherine Veselovskiy, 18, Senior
Avighna Sunil Wuthoo, 17, Senior
Independence High School, Ashburn, Virginia, T: Jennifer Flynn
https://isef.net/project/225281

MATS045 **Optimizing Composite 3D Printed Running Shoe Plates as a Replacement to Expensive Carbon Fiber Standards**
Isaac Pingry, 18, Senior, Academies of Loudoun, Leesburg, Virginia, T: Erik Kittelson
https://isef.net/project/225388

ROBO028T **Adaptive Inspection UAV: Real-Time Defect Segmentation and 3D Gaussian Splatting for Enhanced Infrastructure Diagnosis**
Ishita Goel, 16, Junior
Jeslene Kaur, 16, Junior
Academies of Loudoun, Leesburg, Virginia, T: Patrick White
https://isef.net/project/224682

TMED049 **BioZap: Iontophoresis-Assisted Transdermal Delivery of Epigallocatechin-Gallate Within a Skin-Simulating Membrane Towards Adjunctive Breast Cancer Treatment**
Gwenyth Elise Mayo, 18, Senior, Woodgrove High School, Purcellville, Virginia,
T: Matthew Young
https://isef.net/project/225407

Charlottesville, USVA02, Virginia Piedmont Regional Science Fair

ETSD028 **Design and Development of an Innovative Novel Hybrid Ionic-Electric Fixed Wing UAV: For Low-Noise, Sustainable and Energy-Efficient Electric Aircraft Propulsion**
Micah Appiah, 16, Sophomore, Albemarle High School, Charlottesville, Virginia,
T: Holly Newman
https://isef.net/project/224768

SFTD032 **Mutual Nearest Neighborhood: A Fundamental Solution to Data Clustering**
Crystal Feng, 17, Junior, Western Albemarle High School, Crozet, Virginia,
T: Carol Stutzman
https://isef.net/project/224990

Fairfax, USVA03, Fairfax County Regional Science and Engineering Fair

ANIM029 **Hidden Metals, Visible Consequences: The Effect of Lead Concentrations in Simulated Vape E-Liquid on *C. elegans*' Locomotor Behavior and Fertility**
Julia Elisabeth Hatcher, 16, Sophomore, James Madison High School, Vienna, Virginia, T: Padma Iddamalgoda
https://isef.net/project/225227

BEHA028 **LLMs Know When We Are Watching: A Lightweight Framework To Quantify Evaluation Awareness**
Lang Leo Xiong, 17, Senior, Langley High School, McLean, Virginia, T: David Paine
https://isef.net/project/225245

EAEV034 **TorSight: Transitioning From Tornado Detection to Prediction Through Pre-Tornadic Signatures**
Jack Gao, 17, Junior, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia, T: Adam Smolinsky
https://isef.net/project/225249

EGSD020T **The Effect of Pendulum Configuration on Energy Harvesting Efficiency Across Different Wave Conditions**
Utsav Das, 16, Junior
Benjamin Kwon, 17, Junior
Chantilly High School, Chantilly, Virginia, T: Eric Cohen
https://isef.net/project/225001

EGSD024T **The Effect of Different Gravitational Storage-Regeneration Applications on Power Efficiency**
Amaan Sajjad Khan, 17, Junior
Kavin Paturu Muralikrishnan, 17, Junior
Aiman Saleh Ullah, 16, Junior
Chantilly High School, Chantilly, Virginia, T: Latha Shankar
https://isef.net/project/225233

ENBM051 **Revolutionizing Targeted Therapeutics Using AI-Powered Origami Millirobots**
Sarah Park, 16, Junior, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia, T: Adam Smolinsky
https://isef.net/project/225234

ENEV044T **Harnessing Methyl Jasmonate Epigenetic Defense Modulation Through an Autonomous Robotic Precision Spraying System for Targeted Pest Control**
Bennett Huang, 17, Junior
Jason Pan, 17, Junior
Langley High School, McLean, Virginia, T: Timothy Ready, T: David Paine
https://isef.net/project/225231

PHYS041 **Exploration of the Motion-Induced Quicksand Effect With Vertical Rotation**
Parham Yeganeh, 17, Junior, George C. Marshall High School, Falls Church, Virginia, T: Amy Osborn
https://isef.net/project/225235

SFTD035 **MANA: Molecular Analysis of Non-Adiabatic Activity**
Sumer Chaudhary, 15, Sophomore, BASIS Independent McLean, McLean, Virginia, T: Nancy Fisher
https://isef.net/project/225222

TMED044 **Optimizing Alzheimer's Treatment: A Spatiotemporal Agent-Based Model of Combination Therapy in the Hippocampus**
Polina Anfilofyev, 16, Junior, George C. Marshall High School, Falls Church, Virginia, T: Amy Osborn
https://isef.net/project/225220

Falls Church, USVA01, Northern Virginia Science and Engineering Fair

CBIO024 **Engineering a More Thermostable Hemagglutinin H Measles Protein: A Computational Protein Engineering Approach**
Orgil Soronzonbold, 16, Sophomore, Washington-Lee High School, Arlington, Virginia, T: Mary Fretts
https://isef.net/project/224470

EGSD011 **Optimization of Wind Turbine Performance: Integrating Evolutionary-Based AI-Assisted Genetic Algorithms and XGBoost With Blade Element Momentum and Aero-Servo-Hydro-Elastic Simulations**
Janak Vasisht, 16, Junior, H-B Woodlawn Secondary Program, Arlington, Virginia, T: Hang Owen
https://isef.net/project/224187

Harrisonburg, USVA04, Shenandoah Valley Regional Science and Engineering Fair

BEHA051 **Culture and Disease: An International Analysis of Individualism and COVID-19 Outcomes**
Hind Mousa, 17, Junior, Massanutten Regional Governor's School, Mt. Jackson, Virginia, T: Kara Bates
https://isef.net/project/227586

Lynchburg, USVA05, Central Virginia Regional Science Fair

CELL031 **Analyzing Flavonoid-Induced Apoptosis in Colon Cancer Cells With and Without Functional p53**
Archit Arora, 17, Senior, Staunton River High School/Roanoke Valley Governor's School, Moneta, Virginia, T: Cindy Bohland
https://isef.net/project/224996

ETSD034 **From Plastic to Polyfill—Testing the Relationship Between Current and Temperature**
Margot Anne Marcais, 18, Senior, Amherst County High School, Amherst, Virginia, T: Michele Chamot
https://isef.net/project/224995

Manassas, USVA06, Prince William-Manassas Regional Science and Engineering Fair

BEHA018 **Designing for Presence: A Randomized Controlled Trial Comparing Incentive Structures To Reduce Smartphone Use During Social Interactions**
Atiksh Bhan, 16, Sophomore, Charles J. Colgan Sr. High School, Manassas, Virginia, T: Todd McGee
https://isef.net/project/224508

CBIO030T **SepsiSense: A Sepsis Detection and Post-Sepsis Health Monitoring Application for Continuous Recovery Assessment**
Belva Vallerie Fianko, 18, Senior
Bilal Ahmad Khan, 17, Senior
Naman Nitin Patel, 17, Senior
Governor's School at Innovation Park, Manassas, Virginia, T: Elizabeth Romano
https://isef.net/project/224960

EAEV027T **Design and Performance Analysis of Low-Cost Lead Filtration Systems**
James Yale Kim, 16, Sophomore
Abid Safwan, 16, Sophomore
Osbourn Park High School, Manassas, Virginia, T: Theresa Szabo-Maas
https://isef.net/project/224934

ETSD025T **AEROCOOL: Aerospike Engine Research on COOLing Through Biomimicry**
Mazen Ben Chouikha, 17, Junior
Michael Adu-Agyei Obeng, 17, Junior
Devin Ishaan Wanchoo, 17, Junior
Governor's School at Innovation Park, Manassas, Virginia, T: Elizabeth Romano
https://isef.net/project/224512

MATS024 **Sustainable Leather Alternatives: The Effect of Zinc Oxide and Microcrystalline Cellulose on Mechanical Properties and UV-Blocking of Sodium Alginate- and Gelatin-Based Biomaterials**
Erin Victoria Jansen, 16, Sophomore, Patriot High School, Nokesville, Virginia, T: Deborah Fisher
https://isef.net/project/224442

Norfolk, USVA09, Tidewater Science and Engineering Fair

CELL034 **Exploring the Effects of Post-Translational Modifications on the Tau Proteins' Stability**
Maya Lillian Viau, 16, Junior, New Horizons Governor's School for Science and Technology, Hampton, Virginia, T: Alexandrea Duscher
https://isef.net/project/225645

TECA011 **Detecting Damage in Strings Using Acoustic Inharmonicity and Damping Coefficients**
Benjamin Gershowitz, 17, Junior, New Horizons Governor's School for Science and Technology, Hampton, Virginia, T: Alexandrea Duscher
https://isef.net/project/225775

Radford, USVA10, Blue Ridge Highlands Regional Science Fair

ANIM012 **Parent-Absent Begging in Eastern Bluebirds: Structural Characteristics, Environmental Correlates, and Parental Responses**
Xavier Gitre, 18, Unknown, Blacksburg High School, Blacksburg, Virginia,
T: Katharine Davis
https://isef.net/project/224106

ENBM023 **Analyzing the Effectiveness of Expansion Techniques for Meningeal Tissue**
Joshua Osemobor, 18, Senior, Southwest Virginia Governor's School, Pulaski, Virginia,
T: Rebecca Phillips
https://isef.net/project/224071

Richmond, USVA13, Metro Richmond Science and Engineering Fair

ANIM052 **Reversal of Bupivacaine-Induced Cardiotoxicity in *Daphnia magna* With Intralipid**
Katelyn Luu, 17, Junior, Cosby High School, Midlothian, Virginia, T: Julie Rix
https://isef.net/project/227854

BCHM044 **Analysis of MCT2 as a Selective Therapeutic Target in Cancer Metabolism**
Rohan Battula, 16, Sophomore, Deep Run High School, Glen Allen, Virginia,
T: Charles England
https://isef.net/project/228031

Roanoke, USVA08, Western Virginia Regional Science Fair

BMED029 **A Novel Noninvasive Method for Skin Hydration Quantification: A Data-Driven Approach for Early Physiological Monitoring**
Alishba Sofi, 17, Junior, Hidden Valley High School, Roanoke, Virginia, T: Maria Sherman
https://isef.net/project/224683

CBIO035 **Enhancing Lung Cancer Screening Through a Novel Deep Learning-Powered Software for Automated Lung Nodule Detection, Segmentation, Analysis, and 3D Modeling in CT Scans**
Aryan Madan, 16, Junior, Roanoke Valley Governor's School for Science and Technology, Roanoke, Virginia, T: Mark Levy
https://isef.net/project/225002

PLNT020 **Translational Genomics: Utilizing AgNORs, Chromosomal Aberrations and the Mitotic Index in *Allium cepa* To Identify Targets for Salinity Resistance in Rice**
Prisha Tiwari, 16, Junior, Roanoke Valley Governor's School for Science and Technology, Roanoke, Virginia, T: Mark Levy
https://isef.net/project/224680

Roanoke, USVA50, Virginia State Science and Engineering Fair

CBIO092 **From SMILES to Synergy: Biologically-Enriched Drug Screening for Synergistic Combination Therapy in Tamoxifen Resistant ER+ Breast Cancer**
Daniil Prokofev, 16, Junior, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia, T: Aubrie Holman
https://isef.net/project/228023

CHEM064 **The Effect of Different Rapidly-Composed, Biodegradable Hydrogel Formulations on Adhesion, Fire Retardation and Viscosity**
Margaret Saperstein, 16, Sophomore, Washington-Lee High School, Arlington, Virginia,
T: Mary Fretts
https://isef.net/project/227955

EAEV068 **Intercept the Drift: A Novel NOAA Data-Driven Lagrangian Model for Marine Debris Interception, Cleanup and Source Reduction in a Chesapeake Bay Case Study**
Lilian Hui, 16, Junior, Albemarle High School, Charlottesville, Virginia, T: Holly Newman
https://isef.net/project/228008

ENBM096T **EMG-Controlled Hand Exoskeleton With an Ensemble Machine Learning Model for Real-Time Assistive and Rehabilitative Control**
Benjamin David Meyer, 17, Junior
Max David Mizuba, 17, Junior
Roanoke Valley Governor's School for Science and Technology, Roanoke, Virginia,
T: Michael Clarkson, T: Michael Clarkston
https://isef.net/project/227856

PHYS069 **Real-Time Coronal Magnetic Field Modeling Using Physics-Informed Fourier Neural Operators**
Harshpreet Singh, 17, Junior, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia, T: William Linch
https://isef.net/project/227793

WASHINGTON

Edgewood, USWA04, Southwest Washington Science and Engineering Fair

ENBM034 **Automated and Personalized Catheter Design for Endomyocardial Biopsies**
Zain Mehbob Shariff, 17, Junior, Curtis Senior High School, University Place, Washington, T: Tess Goodnight
https://isef.net/project/224472

Kirkland, WA 98033, USWA03, Central Sound Regional Science & Engineering Fair

CBIO021 **GlueForge: A Generalizable Pipeline for Molecular Glue Discovery via Multi-Stage Screening and Geometry-Aware Ternary Learning, Demonstrated at the FBW7–MYC Interface**
Adhrith Vutukuri, 16, Junior, Nikola Tesla STEM High School, Redmond, Washington, T: Denise Komorous
https://isef.net/project/224330

CBIO022 **DeepFold: Discovering Thermostable PETase Variants for Industrial Usage**
Aarav Gupta, 16, Sophomore, Issaquah High School, Issaquah, Washington, T: Gregory Harrington
https://isef.net/project/224331

ENEV033 **Chitoflux: TFF-Optimized Chitosan Media Filtration System for Biofilm and Microplastic Inhibition**
Anay Tiwari, 16, Junior, Interlake High School, Bellevue, Washington, T: Philip Allen
https://isef.net/project/224326

MATS022 **Polydimethylsiloxane-Coated Polysaccharide Hydrogels for Sustainable Oil Spill Remediation**
Sanjay Srinivasan, 15, Sophomore, Eastlake High School, Sammamish, Washington, T: Lara Dean
https://isef.net/project/224323

PLNT016 **CornCount: A Phenologically-Aware Machine Learning Framework for Early-Season Yield Forecasting**
Anika Prakash, 16, Sophomore, Eastlake High School, Sammamish, Washington, T: Lara Dean
https://isef.net/project/224327

TECA008 **HARMONI: Harmonically Adaptive Real-Time Multimodal Output for Neural Integration, an AI-Powered Music Therapy Platform for Global Mental Health**
Anusha Arora, 15, Sophomore, Interlake High School, Bellevue, Washington, T: Philip Allen
https://isef.net/project/224440

Prosser, USWA01, Mid-Columbia Regional Science and Engineering Fair

BMED041 **ArogyaLoka: HealthBridge AI— Empowering Underserved Patients Across the Developing World Through a Multilingual AI-Powered System for Equitable Medical Guidance, Diagnostic Image Support and Health Monitoring**
Akshath Sai Motkuri, 15, Sophomore, Richland High School, Richland, Washington, T: Windy Hancock
https://isef.net/project/225644

EAEV041 **AquaShift: Synchronized Chemical Equilibrium Convergence as a Leading Indicator of Phycocyanin-Threshold Cyanobacterial Bloom Onset Across Contrasting Freshwater Systems**
Prayrona Choudhury, 16, Junior, Hanford High School, Richland, Washington, T: Brian Palmer
https://isef.net/project/225642

SFTD040 **Can Machines Evaluate Scientific Truth? Dual-Stream Bayesian Analysis for Automated Claim Verification Across Multiple Domains**
Aarav Manish Shrivastava, 15, Sophomore, Richland High School, Richland, Washington, T: Gloria Van Mason
https://isef.net/project/225643

Silverdale, USWA50, Washington State Science and Engineering Fair

CBIO061 **Riemann Surface-Based Gene Expression Profiling To Identify Resistance Mechanisms and Potential Therapeutic Targets in Group 3 Medulloblastoma**
Harshita Sinha, 16, Junior, Lake Stevens High School, Lake Stevens, Washington, T: Jennifer Cullison
https://isef.net/project/226571

CBIO079 **A Multi-Stage Computational Pipeline for Designing Therapeutic Peptides Against Alpha-Synuclein Aggregation, Utilizing a Geometry-Aware Machine Learning Model Trained on ProLIF Data**
Samanyu Ezhilarasan, 17, Junior, Nikola Tesla STEM High School, Redmond, Washington, T: James Boyd
https://isef.net/project/227673

CHEM041 **SolarEye: Novel Solar Energy-Harvesting Retinal Molecule Derivative and Rhodopsin-Inspired Protein Scaffold Biomaterial Designed by Utilizing a Large Language Model and Computational Tools**
Rishi Ved Srinivasan, 17, Junior, Redmond High School, Redmond, Washington, T: Joshua Hayes
https://isef.net/project/226567

CHEM047 **Stormwater Remediation of 6PPD and 6PPD-Quinone Using Sustainable Citric Acid and Aluminum Crosslinked Nanocellulose Hydrosponges**
Lakshmi Agrawal, 18, Senior, Interlake High School, Bellevue, Washington, T: Bret Cochrun
https://isef.net/project/227107

ENEV063 **DreaMS-PFAS: A Novel Transformer-Based Approach for Early Detection of PFAS Contamination in Drinking Water and Environmental Samples**
Hamsini Meenal Ramanathan, 16, Sophomore, Seattle Academy of Arts and Sciences, Seattle, Washington, T: Martin Brakke
https://isef.net/project/227115

MATS063 **BananaBaby: *Musa* spp. Anisotropic and Parallel Venation Biomimetic Neonatal Incubator Liner Preventing Hospital Acquired Infections (HAIs) in Developing Countries**
Vedika Devarajan, 14, Freshman, Redmond High School, Redmond, Washington, T: Kirby Zornes-Osborn
https://isef.net/project/227106

MCRO034 **LasRuptide: Design of a Host-Mimic Peptide Inhibitor To Disrupt *Pseudomonas aeruginosa* Quorum Sensing and Biofilm Formation via Targeted Dimer Interface Perturbation**
Lahari Nellore, 17, Junior, Lake Washington High School, Kirkland, Washington, T: Ashley Zydel
https://isef.net/project/227347

PHYS053 **SPINO: A Physics-Informed Fourier Neural Operator Surrogate for Accelerating Schrödinger-Poisson Simulation of Nanoscale Gate-All-Around Transistors**
Aashrith Pisupati, 17, Junior, Nikola Tesla STEM High School, Redmond, Washington, T: Denise Komorous
https://isef.net/project/227117

TMED084 **Unified Transcriptomic Melanoma Reference Map Reveals Predictive Molecular Signatures for Patient Prognosis**
Omkar Phadnis, 17, Junior, Redmond High School, Redmond, Washington, T: Kirby Zornes-Osborn
https://isef.net/project/227672

Spokane, USWA05, Eastern Washington Regional Science and Engineering Fair

CBIO031 **sliceGPCR: Predicting Biased Signaling in Drug Targets Using Novel Volumetric Protein Imaging and 3D Convolutional Neural Networks**
Arjun Natesan, 16, Junior, Lewis & Clark High School, Spokane, Washington, T: Eric Strate
https://isef.net/project/224967

CBIO032 **Designing Peptide Inhibitors To Prevent Amyloid Beta Aggregation**
Saanvi Krishnareddygari, 18, Senior, Lewis & Clark High School, Spokane, Washington, T: Eric Strate
https://isef.net/project/224968

CBIO036T **Discovering Novel Allosteric Antagonists for Purinergic Receptor P2X7, a Key Mediator in the Progression of Several Neurodegenerative Diseases**
Emma Chow, 18, Senior
Reagan Elyse Smith, 18, Senior
Sabrina Wang, 16, Junior
Lewis & Clark High School, Spokane, Washington, T: Eric Strate
https://isef.net/project/225005

EAEV028T **The Chemical and Structural Effects of Wildfire Smoke on *Triticum aestivum Oryza sativa,* and *Brassica oleracea* var. i*talica*: A Multimodal Microscopy and Germination Matrix Analysis**
Teddy Osborne, 18, Senior
Anders Thogerson, 17, Senior
Joel E. Ferris High School, Spokane, Washington, T: Darci Hastings
https://isef.net/project/224966

ENEV042 **Development and Optimization of Agricultural Runoff Treatment Systems To Mitigate Glyphosate Impact on Freshwater Zooplankton *Daphnia magna***
Allison Monkman, 17, Junior, Joel E. Ferris High School, Spokane, Washington, T: Darci Hastings
https://isef.net/project/224965

WEST VIRGINIA

Charleston, USWV50, West Virginia State Science and Engineering Fair

CELL020 **TRPV1-Mediated Stress Tolerance Signaling in Glioblastoma Under Capsaicin Treatment**
Iqraa Naveed Zaman, 17, Senior, George Washington High School, Charleston, West Virginia, T: Mike Carte
https://isef.net/project/224424

CHEM024 **The Hybridization of Generative Diffusion Models With Molecular Dynamics Simulations: A Novel Method To Accelerate Drug Discovery**
Pavan Subramani, 16, Junior, Morgantown High School, Morgantown, West Virginia, T: Elvira Stanescu
https://isef.net/project/224418

ETSD024T **Shark-Skin Inspired Micro-Riblets: A Biomimetic Approach to Airfoil Drag Reduction**
Jaxon Wade Edward Milam, 17, Junior
Joseph Benjamin Nodurft, 17, Junior
Linsly School, Wheeling, West Virginia, T: Kim Harvey
https://isef.net/project/224507

WISCONSIN

Fond du Lac, USWI50, Badger State Science and Engineering Fair

EGSD023 **Sustainable Wave Energy: Harnessing Ocean Power With a Novel Linear Generator**
Kaitlyn Paullin, 17, Senior, University School of Milwaukee, Milwaukee, Wisconsin, T: Robert Juranitch
https://isef.net/project/225225

ETSD031 **Testing and Deployment of a Thermostatic Valve for Use in the Antarctic Rodwell Apparatus for the IceCube Upgrade Project**
Elliot Roald Koziol, 17, Junior, Madison Country Day School, Waunakee, Wisconsin, T: Rachael Lancor
https://isef.net/project/224963

TMED036 **Machine Learning Approaches To Predict Infection Risk in Multiple Myeloma Patients Receiving Bispecific Antibody Therapy**
Anand George, 18, Senior, University School of Milwaukee, Milwaukee, Wisconsin, T: Robert Juranitch
https://isef.net/project/224964

Glendale, USWI02, Nicolet Science and Engineering Fair

ANIM033 **An Analysis of Acute and Chronic Heat Stress to *Caenorhabditis elegans*' Motility, Fertility, and Protein Aggregation**
Nicole Lynn Brooks, 18, Senior, Nicolet High School, Glendale, Wisconsin, T: Stephanie Rasmussen
https://isef.net/project/225629

Madison, USWI04, Capital Science and Engineering Fair

PHYS050 **Modeling the Evolution of the Point-Symmetric Planetary Nebula IC 4634 Using a Three-Dimensional Morpho-Kinematic Model**

\# Aditi Muduganti, 17, Senior, Onalaska High School, Onalaska, Wisconsin, T: David Ferries
https://isef.net/project/226860

Miwaukee, USWI03, University School of Milwaukee - Science Fair

CBIO013 **Enhancing Prediction Models for Genetic Neurodegenerative Diseases Using TabDDPM-Based Data Augmentation**

\# Angela Wang, 18, Senior, University School of Milwaukee, Milwaukee, Wisconsin, T: Robert Juranitch
https://isef.net/project/223830

TMED011 **Inhalable Exosome-Based Dual Therapy: A Novel Strategy To Overcome Drug Resistance in Non-Small Cell Lung Cancer**

Xiaoxue Chen, 17, Junior, University School of Milwaukee, Milwaukee, Wisconsin, T: Robert Juranitch
https://isef.net/project/224029

TMED012 **Leveraging the Electrochemical Characteristics of α-Hemolysin Nanopores: Machine Learning and Low-Cost RNA Sequencing for Early Disease Diagnosis in Rural Areas**

\# Eashan Anne, 18, Senior, University School of Milwaukee, Milwaukee, Wisconsin, T: Robert Juranitch
https://isef.net/project/224030

WYOMING

Greybull, USWY01, Northern Wyoming District Science Fair

EAEV004 **Determining the Potential Toxicity of Fracking Surfactants: An Assessment of Product Viability to Reduce Environmental Water Contamination**

Caden Thacker, 18, Senior, Greybull High School, Greybull, Wyoming, T: Joel Kuper
https://isef.net/project/223860

Laramie, USWY50, Wyoming State Science Fair

CHEM022 **Removal of Lignin From Varied Biopolymers**

Robert Teo Moore, 15, Sophomore, Natrona County High School, Casper, Wyoming, T: Dustin Arellano
https://isef.net/project/224324

ENBM030 **Engineering an Overdose Detection Device**

Ash Kendell Cooper, 17, Junior, Pinedale High School, Pinedale, Wyoming, T: Michael Gregory
https://isef.net/project/224325

UNITED STATES VIRGIN ISLANDS

Kingshill, United States Virgin Islands, TEVI02, Good Hope Country Day School Science Fair

BEHA035T **Lunar Smart Adaptive Habitat Design With AI Psychological Monitoring for Crew Adaptive Positive Mental Health**

Madelyn Marie Donnelly, 17, Senior
Ella Evora, 17, Junior
Good Hope Country Day School, Kingshill, United States Virgin Islands, T: Jane Coles
https://isef.net/project/226494

ROBO052 **Geometric Structural Awareness From Monocular Visual SLAM for Low-Cost Robotic Navigation**

\## Tristan Shuichi Samuel, 16, Junior, Good Hope Country Day School, Kingshill, United States Virgin Islands, T: Jane Coles
https://isef.net/project/227686

VENEZUELA

Caracas, Venezuela, VEN001, Kurios Competition

ROBO045 **CATCH System 2.0: Enhanced Autonomous Ball-Collection Vehicle for Paralympic Table Tennis Athletes**

\# Jose Tomas Perera Giansante, 17, Senior, C.E Colegio Fray Luis Amigo, San Felipe, Yaracuy, Venezuela, T: Darwin Pardo Mendoza
https://isef.net/project/227200

TECA016T **Assistive Glasses for Venezuelan Sign Language: Sign-to-Speech Translation Using Computer Vision**
Ana Sofia Garofalo, 17, Senior
Martina Isabella Salas, 17, Senior
Farah Sleiman, 16, Senior
Colegio Bellas Artes, Maracaibo, Estado Zulia, Venezuela, T: Argenis Gonzalez
https://isef.net/project/227532

VIETNAM

Hanoi, Vietnam, VNM001, Vietnam Science and Engineering Fair

BCHM034T **Biomarker Development for Early Detection of Hepatocellular Carcinoma Using Proteomics**
Hieu Minh Ngo, 17, Senior
Manh Tien Nguyen, 18, Senior
Chu Van An High School, Hanoi, Vietnam, T: Toan Dao
https://isef.net/project/227529

BCHM035T **Development of Immune Checkpoint Inhibitors in Cancer Therapy Based on Nanobody Technology**
Anh Kim Bao Nguyen, 15, Sophomore
Anh Minh Tran, 16, Junior
High School for Gifted Students, Hanoi University of Science, Hanoi, Vietnam, T: Long Nguyen
https://isef.net/project/227531

CHEM048T **Developing a Real-Time Forecasting Model and Evaluating the Potential for Improving Pollution Levels in the Cau Bay River, Hanoi**
Phat Tan Le, 16, Junior
Linh Ha Pham, 16, Junior
Viet Duc Upper Secondary School, Hanoi, Vietnam, T: Quynh Nguyen
https://isef.net/project/227209

CHEM058T **Developing a Rapid Screening Approach for Milk Counterfeiting Risks Using Infrared Spectroscopy Combined With Chemometrics**
Thao Uyen Nguyen, 16, Junior
Khanh Dang Phan, 17, Junior
HUS High School for Gifted Student, Hanoi, Vietnam, T: Long Nguyen
https://isef.net/project/227621

CHEM059T **Development of Multifunctional Polyurethane Composites With Synergistic Flame Retardancy, Thermal Insulation and Controlled Antimicrobial Activity**
Tra Phuong Tong, 16, Junior
Don Van Hoang, 18, Senior
Luong Van Tuy Gifted High School, Ninh Binh, Vietnam, T: Dinh Noi**https://isef.net/project/227671**

EGSD043T **Optimization of the Design of Small-Scale Vertical-Axis Wind Turbines Suitable for Low Wind Conditions in Vietnam Using CFD Simulation Combined With Artificial Intelligence**
Chau Ngoc Kim Hoang, 16, Junior
Huy Quang Tran, 17, Junior
Yen My High School, Hung Yen, Vietnam, T: Bang Nguyen
https://isef.net/project/227528

ENEV071T **Development of Environmentally Friendly Biological Technologies for Plastic Waste Treatment**
Khanh Nam Hoang, 17, Senior
Quan Ngoc Nguyen, 17, Junior
Hanoi Amsterdam High School for the Gifted, Hanoi, Vietnam, T: Linh Nguyen
https://isef.net/project/227530

SFTD056T **SBProbMol^3: A Counterexample-Guided, Conditional Optimal-Transport Flow Matching for Structure-Based 3D Ligand Generation**
Bao Nhat Ha, 18, Senior
Duc Tan Nguyen, 18, Senior
Le Hong Phong High School for the Gifted, Ho Chi Minh, Vietnam, T: Triet Do
https://isef.net/project/227542

TMED083T **Developing a Method To Evaluate Skin Aging Using Proteomics Technology**
Lam Bao Hoang, 16, Junior
Minh Vu Tuan Tran, 17, Senior
High School for Gifted Students, Hanoi University of Science, Hanoi, Vietnam,
T: Van Bui
https://isef.net/project/227615

ZIMBABWE

Harare, Zimbabwe, ZWE001, Zimbabwe National Science Fair

BMED028 **Network-Level Dysregulation of Neurodevelopmental Signaling Pathways in Schizophrenia: A Transcriptomic Analysis**
Ibanathi Amutjilani Nkomboni, 17, Senior, Dominican Convent High School, Bulawayo, Zimbabwe, T: Phathisa Mlotshwa
https://isef.net/project/224678

ENEV075 **Development of Biodegradable Sanitary Pads From Indigenous Plant Fibres With Biodegradable Moisture and Removable, Reusable Electronic Sensors for Hygiene Monitoring**
Ashley Nyasha, Kafui Chifamba, 16, Junior, Arundel School, Harare, Zimbabwe,
T: Emmanuel Mlambani
https://isef.net/project/227695

ENEV076 **Hybrid Solar Dryer**
Ashleigh Kupakwashe Nyahwema, 18, Senior, Marist Brothers Nyanga High School, Mutare, Manicaland, Zimbabwe, T: Blessing Ndau
https://isef.net/project/227711

PHYS074 **Autonomous Mars Rover for Real-Time Geological, Chemical and Atmospheric Exploration**
Tavonga Musariri, 18, Senior, Milestone College, Rusape, Manicaland, Zimbabwe,
T: Stewert Mderere
https://isef.net/project/227916

ROBO053 **H.A.L.O. — Low-Cost Autonomous Landing System for Commercial Aircraft in Emergency Situations**
Tapiwa Moyo, 19, Junior, St. Leonard Academy, Harare, Zimbabwe, T: Emilia Gonzo
https://isef.net/project/227712