

REGENERON

ISEF

A PROGRAM OF
SOCIETY FOR SCIENCE

PHOENIX | 2026

FUTURE FORWARD

Regeneron International Science and Engineering Fair
May 9–15, 2026

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Welcome from Regeneron



Regeneron

Leonard S. Schleifer, MD, PhD

Board co-Chair, President and Chief Executive Officer

George D. Yancopoulos, MD, PhD

Board co-Chair, President and Chief Scientific Officer

Dear Finalists,

Congratulations on being a 2026 Regeneron International Science and Engineering Fair (ISEF) finalist. We hope your ISEF experience lives up to your expectations of this distinguished competition. Many brilliant and important science, technology, engineering and math (STEM) leaders have passed through ISEF's halls, and now you are among this next generation of inventors, entrepreneurs and educators. We are proud of all that you have accomplished.

Since 2019, Regeneron has been honored to sponsor ISEF, shining a global spotlight on the world's most promising young STEM talent and the critical role you and your research can play in tackling the world's most pressing challenges. Supporting ISEF is a natural extension of Regeneron's mission to turn bold ideas into life-changing solutions, and we look forward to seeing how you will rise to this moment and help shape the future of science.

We both got our start with science research in high school, as part of the then Westinghouse Science Talent Search (STS), now known as the Regeneron STS, the oldest science and math competition for high school seniors in the United States.

It was this positive experience that helped set us on our paths and gave us the confidence to become physician-scientists and entrepreneurs. Since founding our biotechnology company nearly 40 years ago, we have worked to turn groundbreaking science into medicines that improve human lives, including our treatments for blindness-causing diseases, numerous cancers, allergic diseases and even Ebola. In this spirit, we are committed to supporting the young scientists who will keep improving our world and public health for generations to come.

We believe that you will be the ones making the important discoveries of tomorrow.

We look forward to learning about your projects during ISEF and watching as you spend the week celebrating innovation, competing for top honors and making life-long friends.

At Regeneron, we've built a culture that shares much of this energy—one of entrepreneurship, curiosity, scientific excellence and camaraderie. Our dream was to create a company where scientists are the heroes. Your work at ISEF helps extend this dream even further: you are our heroes, and we can't wait to see how you will one day change the world!

Congratulations once again, and good luck in all your future endeavors.

Sincerely,

Leonard S. Schleifer, MD, PhD

Board co-Chair, President
and Chief Executive Officer

George D. Yancopoulos, MD, PhD

Board co-Chair, President
and Chief Scientific Officer

Welcome from Society for Science



Society for Science

Maya Ajmera

President & CEO

Executive Publisher, Science News

Congratulations on being a finalist at the Regeneron International Science and Engineering Fair 2026! Society for Science is thrilled to be back in Phoenix. Welcome!

Earning your spot at Regeneron ISEF was no small feat. You identified a question worth asking, designed an experiment to pursue it and saw your work through to the end. Tens of millions of students compete in science fairs every year around the globe, with nearly 2,000 competing at Regeneron ISEF – making your achievement all the more remarkable.

At Society for Science, we seek to advance science for the benefit of humanity. You are that mission in action. Whether you are exploring solutions to climate change, pushing the frontiers of medicine or uncovering new truths about the universe, your curiosity and dedication give me enormous hope for the future.

Regeneron ISEF is about much more than competition. Look around: you are among the top student scientists and engineers in the world. That is the real prize. This week is a rare opportunity to connect with peers from across the globe who share your passion for discovery. The relationships and lifelong friendships you build here may shape your path for years to come. I encourage you to embrace every moment.

I also encourage you to thank the people who helped you get here—your teachers, parents and mentors who supported you along the way. It takes a true community to develop talent like yours! Society for Science would like to thank all our sponsors, including our title sponsor, Regeneron; the judges and volunteers who make this week possible; and the science fair directors around the world who make up our affiliated fair network.

I hope all of you have a wonderful time at Regeneron ISEF 2026, and we hope to see you next year in Los Angeles for Regeneron ISEF 2027!

Only my best,

A handwritten signature in black ink that reads "Maya Ajmera". The signature is fluid and cursive.

Maya Ajmera

President & CEO

Society for Science

Executive Publisher, Science News



The Regeneron International Science and Engineering Fair (Regeneron ISEF), a program of Society for Science, is the world's largest global science competition for high school students. Through an international network of local, regional and national science fairs, millions of students are encouraged to explore their passion for scientific inquiry. Each spring, a group of these students is selected as Regeneron ISEF finalists and offered the opportunity to compete for more than \$7 million in awards and scholarships.

Launched as the National Science Fair in 1950, the first countries joined the competition in 1958 and the competition's name changed to the International Science and Engineering Fair in 1971. Intel became the title sponsor in 1997, a role Regeneron took over in 2019.

Regeneron ISEF is supported by a community of additional sponsors, including Adam R. Scripps Foundation, Akamai Foundation, Aramco, Arizona Science Center, Arizona State University, Burton Family Foundation, Caltech, Catalyzer Venture Partners, Central Arizona Project, Cesco Linguistic Services, Google.org, Gordon and Betty Moore Foundation, Howmet Aerospace Foundation, Insaco, Intel, Jacobs, Jane Street, Microsoft, Midjourney, Musical Instrument Museum, National Bank of Arizona, Natural Resources Defense Council, Pivotal Foundation, Schattner Foundation, Scripps Research, Siemens Energy and Zoox.

ISEF alumni have gone on to have world-changing careers in science and engineering and have earned some of the most esteemed honors. Our alumni include National Medal of Science recipients, MacArthur Foundation Fellows, National Academy of Sciences and National Academy of Engineering inductees and a range of entrepreneurs.

Learn more at www.societyforscience.org/isef

Grand Awards at Regeneron ISEF 2026

George D. Yancopoulos Innovator Award: \$100,000

The George D. Yancopoulos Innovator Award recognizes the Best of the Best among the outstanding students from around the world who participate in Regeneron ISEF. The winning project will be selected on the basis of outstanding and innovative research, as well as on the potential impact of the work— in the field and on the world at large.

Regeneron Young Scientist Awards: \$75,000

This award will be presented to two projects that are best able to demonstrate their commitment to innovation in tackling challenging scientific questions, using authentic research practices and creating solutions to the problems of tomorrow.

Gordon E. Moore Award for Positive Outcomes for Future Generations: \$50,000

This award will be presented to the project that best demonstrates the founding principle of the Gordon and Betty Moore Foundation to make an enduring difference for future generations through rigorous scientific inquiry and a passion for discovery and invention.

F. Thomson Leighton and Bonnie Berger Family Prize for STEM Excellence: \$50,000

This award will be presented to the project that best demonstrates mastery in algorithm design and large-scale data analysis.

Craig R. Barrett Award for Innovation: \$10,000

This award will be presented to the project that best demonstrates an innovation in Science, Technology, Engineering and Math, recognizing that research and innovation are dependent on the integration of these disciplines, and the impact they collectively have on our everyday lives.

Mary Sue Coleman Award for Life Science Innovation and Impact: \$10,000

This award will be presented to the finalist who best demonstrates excellence in life science research and seeks to improve the human condition.

Peggy Scripps Award for Science Communication: \$10,000

This award will be presented to the finalist who is best able to communicate their project to the general public, explaining both the science and its potential impact on society.

H. Robert Horvitz Prize for Fundamental Research: \$10,000

This award will be presented to the project that represents the best in fundamental research that furthers our understanding of science and/or mathematics and promotes the understanding of natural phenomena without clearly defined applications towards processes or products in mind.

Dudley R. Herschbach SIYSS Award

This award is a multidisciplinary seminar inspiring youth to science, highlighting some of the most remarkable achievements by young scientists around the world. The award is named for Dudley R. Herschbach, Harvard Professor Emeritus and 1986 Nobel Laureate in Chemistry. He is Board Chairman Emeritus of the Society for Science. The winning finalists will receive an all-expense paid trip to attend the Stockholm International Youth Science Seminar during Nobel Week in Stockholm, Sweden.

EU Contest for Young Scientists Award

This award will be presented to two projects that will represent Regeneron ISEF at the EU Contest for Young Scientists to be held in Kiel, Germany, from September 22–27, 2026.

Category Sponsors at Regeneron ISEF 2026

Animal Sciences (ANIM)

Jane Street

Behavioral and Social Sciences (BEHA)

Jane Street

Biochemistry (BCHM)

Regeneron

Biomedical and Health Sciences (BMED)

Regeneron

Biomedical Engineering (ENBM)

Regeneron

Cellular and Molecular Biology (CELL)

Regeneron

Chemistry (CHEM)

Scripps Research

Computational Biology and Bioinformatics (CBIO)

Regeneron

Earth and Environmental Sciences (EAEV)

Natural Resources Defense Council (NRDC)

Embedded Systems (EBED)

Jane Street

Energy: Sustainable Materials and Design (EGSD)

Siemens Energy

Engineering Technology: Statics and Dynamics (ETSD)

Google.org

Environmental Engineering (ENEV)

Jacobs

Materials Science (MATS)

Howmet Aerospace Foundation

Mathematics (MATH)

Akamai Foundation

Microbiology (MCRO)

Schattner Foundation

Physics and Astronomy (PHYS)

Jane Street

Plant Sciences (PLNT)

Society for Science

Robotics and Intelligent Machines (ROBO)

Zoox

Software Design (SFTD)

Microsoft

Technology Enhances the Arts (TECA)

Midjourney

Translational Medical Science (TMED)

Regeneron

ISEF Special Award Organizations

Special Award Organizations—representing a wide variety of scientific disciplines—provide awards, scholarships, internships and prizes to hundreds of ISEF finalists.

Thank you to these organizations!

Academy 32 / King Abdulaziz City for Science and Technology (KACST)
Adam R. Scripps Foundation
American Chemical Society
American Mathematical Society
American Psychological Association
Association for Computing Machinery
Association for the Advancement of Artificial Intelligence
Association of Old Crows
Broadcom Foundation
Chemistry and the Law (CHAL) Howard Peters
Consortium for Mathematics and Its Applications
DataClassroom
Drug, Chemical & Associated Technologies Association (DCAT)
Florida Institute of Technology
IEEE Foundation
International Council on Systems Engineering - INCOSE
International Precious Metals Institute Educational and Scientific Foundation, Inc
Lehigh University
London International Youth Science Forum (LIYSF)
Mawhiba (King Abdulaziz and His Companions Foundation for Giftedness and Creativity)
Midjourney
Midwest Microelectronics Consortium
Missouri University of Science and Technology
Mu Alpha Theta, National High School and Two-Year College Mathematics Honor Society
National Anti-Vivisection Society (NAVS)
National Taiwan Science Education Center
NC State College of Engineering

ISEF Special Award Organizations

Special Award Organizations—representing a wide variety of scientific disciplines—provide awards, scholarships, internships and prizes to hundreds of ISEF finalists.

Thank you to these organizations!

Office of Naval Research on behalf of the United States Navy and Marine Corps
Patent and Trademark Office Society

Qatar Research, Development, and Innovation Council (QRDI)

Ricoh USA, Inc

Sigma Xi, The Scientific Research Honor Society

Shanghai Science Association for Young Talents

The Knowledge Society (TKS)

TÜBİTAK The Scientific and Technological Research Institution of Türkiye

Westlake University

YM American Academy

Zydus Pharmaceuticals USA Inc.

Memorial Scholarship SAOs

Robert Silence Community Scientist Award (Hannah Bentley)

Soumyanath Memorial Award

Opening Ceremony

Monday, May 11 at 7:00 p.m. | North Building Exhibition Hall ABC

Kick off the world's largest international STEM research competition for high school students and hear from top leaders making an impact on our world.

Maya Ajmera

President & CEO, Society for Science
Executive Publisher, Science News
STS 1985

Ambassador Barbara M. Barrett

25th Secretary of the Air Force

Craig Barrett, PhD

Retired CEO and Chairman of Intel Corporation
Society for Science former Board of Trustees member

George D. Yancopoulos, MD, PhD

Board co-Chair, President and Chief Scientific Officer, Regeneron

The Future of AI: A Conversation with David Holz and Maya Ajmera

Tuesday, May 12 at 10:30 a.m. | North Building Exhibition Hall ABC

David Holz

Founder of Midjourney
Society for Science Board of Trustees member
ISEF 2006

Maya Ajmera

President & CEO, Society for Science
Executive Publisher, Science News
STS 1985

Excellence in Science and Technology Panel

Tuesday, May 12 at 11:20 a.m. | North Building Exhibition Hall ABC

Presented by Aramco

Moderated by:

Joe Palca, PhD

Science Correspondent, Joe Palca Productions LLC

Society for Science Honorary Board member

W.E. Moerner, PhD

Harry S. Mosher Professor of Chemistry and Professor by courtesy

of Applied Physics, Stanford University

2014 Nobel Prize in Chemistry

Society for Science Board of Trustees member

Sethuraman “Panch” Panchanathan, PhD

University Professor of Technology and Innovation and Foundation Chair

in Computing and Augmented Intelligence, Arizona State University

Former Director, National Science Foundation

Sarah Stewart, PhD

Professor and Associate Director of Graduate Initiatives,

School of Earth and Space Exploration, Arizona State University

2018 MacArthur Fellow

Amber Wutich, PhD

Regents and President’s Professor, Arizona State University

National Academy of Sciences member

2023 MacArthur Fellow

Special Awards Ceremony Fireside Chat

Thursday, May 14 at 7:00 p.m. | North Building Exhibition Hall ABC

Join Arizona State University President **Michael M. Crow** and Society for Science President & CEO **Maya Ajmera** in a fireside chat, as they kick off the Special Awards Ceremony at the world’s largest international STEM research competition for high school students.

In Recognition

Thank you to the dedicated committee members of Regeneron ISEF 2026.

Display & Safety Committee

Courtney Gooding, Co-Chair

Ryan Patterson, Co-Chair

Kim Rex, Co-Chair

Erin Stoesz, Co-Chair

Tom Conroy

Bethany Derousie

Mickey Disston

Patrick Foley

Jennifer Hess

Carmella House

Brenda Kroft

Tom Marshall

Maggie Molledo

Brian Monson

Julia Nahman

Melissa Niemi

Mike Powell

Pam Probert

Leonesa Sanchez

Henri Shimojo

Warren Spalinger

Alan Spencer

Larry Walker

Kerrm Yau

Brighton Yau

Judging Advisory Committee

Chris Rodee, Chair

Tom Conroy

Carmella House

Monica Khural

Beverly Miller

Sarina Mohanty

In Recognition

Thank you to the dedicated committee members of Regeneron ISEF 2026.

Scientific Review Committee

Susan Appel

Henry Disston

Paula Johnson

Tim Martin

Evelyn Montalvo

Joe Scott

Lisa Scott

Andrea Spencer

Jeanne Waggener

Scientific Review Committee Readers

Fuat Baran

Tom Conroy

Andrew Denner

William Furiosi

Jennifer Green

Chen Ling

Ellen Murphy

Siddharth Nandagopal

Jody Oaks

**Larry Sernyk

Trudi Skinner

Jimmy Thorne

Janet Vukotich

Kerrm Yau

Phoenix Local Arrangements Committee

Jen Gutierrez, Chair

Kimberly Adkins

Callee Anthony

Cori Araza

Jeremy Babendure

Geneva Baker

Chelsea Bowdren

Liz Bowman

*Jacque Ekladyous

Allison Ewers

William Glaunsinger

Lorna Glaunsinger

Katia Goldmuntz

Carmela House

Michael Lang

Amanda Courtright-Lim

*Kal Mannis

Tim Martin

Rachna Nath

Beth Nickel

Shannon Prince

*Carrie Repp

*Chris RoDee

Sarah Sleasman

Sara Torres

Dani Wright

Steve Zylstra

*Phoenix Local Arrangements Committee Core Volunteers

In Recognition

Society for Science, Regeneron and the Phoenix Local Arrangements Committee recognize with gratitude the judges, volunteers, parents, teachers and fair directors who make Regeneron ISEF possible year after year.

The following individuals, volunteers and organizations are recognized for their special dedication to Regeneron ISEF.

Milena Acosta

Nancy Besley

John Chang

Andrea Clinkenbeard

Glen Cook

Melina Duarte

Ron Freeland

Jill Forrest

Janetta Greenwood

Kenneth Hallinen

Judith Hallinen

Kim Holifield

Emily Keeler

Sean Kennedy

Karen Kinsman

Laney Lane

Barb Lease

John Lease

Oanh Loi-Powell

Chris Mucha

Dayton Mucha

Will Murray

Gwen Noda

Doreen Oswald

Jerry Overman

Francisco Porras

Kumar Ramajayam

Shelley Seagraves

**Larry Sernyk

Tim Sears

**It is with great sadness that we share the news of Larry Sernyk's passing on May 1st at Mercy Hospital in Joplin, MO. Larry was a remarkable friend and a dedicated champion of genuine science and STEM education, whose impact has quietly inspired countless individuals across the country. His contributions and his many years of ISEF volunteer leadership have influenced many of the lives he touched. Larry is survived by his brother Tom, who resides in Canada. We remember Larry not only for his achievements but also for his unwavering commitment to advancing knowledge and supporting others. His legacy will continue to encourage future generations and reminds us all of the importance of true dedication to science and education.

Our thoughts are with Tom and the entire Sernyk family during this difficult time.

Finalist Directory

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, ARMO02, 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>

Finalist Directory

- 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 CO₂ 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>

Finalist Directory

- 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>

Finalist Directory

- 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 Femicide 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
EEMT Marconi Coelho Reis, Cascavel, Ceara, Brazil, T: Guilherme Nascimento
<https://isef.net/project/225627>

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- 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 Schauben
<https://isef.net/project/227120>
- PLNT034** **AnisGuard: A Multifunctional Biofungicide of Fennel Seeds for Controlling *Penicillium* spp. in Postharvest Coffee Beans**
Kenisson Moraes 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, **BGRO01, 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>

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- 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>

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- 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 CO₂ 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>

Finalist Directory

- 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>

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- 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>

Finalist Directory

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-PDE δ 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>

Finalist Directory

- ENBM002T** **StediGrip: 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 lam 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>
- CELLO13T** **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>

Finalist Directory

- 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, Prispěvkova 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>
- CELLO42** **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>

Finalist Directory

- BMED003** **Evaluation of New FLT3 Inhibitors as New Drugs in Acute Myeloid Leukemia**
Amalie Koblovska, 18, Junior, Masarykovo Gymnazium, Pribor, Prispěvkova Organizace, Pribor, Moravskoslezský 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, Olomoucký 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, Jihomoravský Kraj, Czech Republic, T: Katerina Videnkova
<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, Nordsjællands 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. Ørsted 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>

Finalist Directory

- 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: Ebtahal 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>

Finalist Directory

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>

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 Mustamäe 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, Bischöfliches Cusanus-Gymnasium, Koblenz, Rhineland Palatinate, Germany, T: Simon Hoffling
<https://isef.net/project/223877>

Finalist Directory

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>

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- CELLO43** **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>
- CELLO45** **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>
- 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>

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- 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>

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- 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 Odellia 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>

Finalist Directory

- 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, JPNO01, 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 Seiryō High School, Suwa,
Nagano, Japan, T: Yoshifumi Yokozawa
<https://isef.net/project/224431>

Finalist Directory

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
Hirotoshi 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>
- 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 High School, 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>

Finalist Directory

- 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, Bunkyo, 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-Shaghnoobi, 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>

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- 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>

Finalist Directory

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: Naurzybay 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>

Finalist Directory

- 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 Fe₂NiO₄**
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>

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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 Tecnológico Agropecuario No. 13, Merida, Yucatan, Mexico, T: Suemy Terezita Echeverría Echeverría
<https://isef.net/project/225529>

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PLNTO28T 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 Bachillerato Tecnológico 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 CO₂ 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 Oghenechukwo Okpara, 17, Junior
Victoria Onoshaogbe 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 Oforidum
<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>

Finalist Directory

- 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 Rusydi
<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>

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- EGSD028T** **WinDTurbinePower: A Novel Hybrid Dimple-Tubercle Blade Configuration Integrating Physics-Informed Gaussian Process (PIGP) for Power Coefficient (C_p) 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 Jalandon 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 Fritzer 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** **ViMo: 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 Ogólnokształcące z Oddziałami 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 Ogólnokształcące z Oddziałami Dwujęzycznymi im. Andrzeja Struga w Gliwicach, Gliwice, Silesian Voivodeship, Poland, T: Blazej Tomiczek
<https://isef.net/project/223953>

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TMED001T **Novel ACE-I Inhibitory Peptides Derived From *Limnospira platensis***
Paulina Jadwiga Duszynska, 19, Senior
Marta Truszczynska, 18, Senior
I Liceum Ogólnokształcące im. Mikołaja Kopernika, Gdansk, Pomorskie, Poland,
T: Monika Kozłowska, 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-Hemorrhagic 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 Pachiaridi, 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>

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- 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 Benvenuti
<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 Benvenuti
<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>
- 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>

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- 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 Kennel 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 Garcia 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 Echevarria, 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>

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Ponce, Puerto Rico, TEPRO9, 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, TEPRO8, 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>

CELLO40 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 Almeraikh, 17, Senior

Qatar Science and Technology Secondary School for Boys, Doha, Ain Khalid, Qatar,

T: Ali Alsaari

<https://isef.net/project/227616>

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- 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>

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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** **PPAR γ -PGC-1 α -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>
- CHEM052** **Design of a Novel Dual-Functional Photocatalyst Based on Metal Oxides and Carbon Dot-Modified MOF-5 for CO₂ 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 Province, Saudi Arabia, T: Mofeeda Alsheikh
<https://isef.net/project/227303>
- CHEM054** **Engineering a BiPO₄-CuBi₂O₄ Heterojunction for Highly Selective and Stable Electrochemical Conversion of CO₂ 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 CO₂-to-Methanol Conversion Through Novel Macroporous Cobalt-Indium Catalyst Design**
Abdallah Jamal Basim Jamal, 18, Senior, Jeddah Knowledge International School, Jeddah, Makkah, Saudi Arabia, T: Nisma Rahhal
<https://isef.net/project/227350>

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- EAEV060** **Interfacial Crystallization for Oil Spill Remediation Using Divalent Ions Zn²⁺ and Ca²⁺ 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 WO₃/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 Al₂O₃-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-NiCoO₂ 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**
Reilam 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>

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- 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 VO₂ 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>

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- 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 Mohamed Amir 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>
- CELLO28T** **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>

Finalist Directory

- 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>

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>

Finalist Directory

- 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 - $\text{Ca}(\text{OH})_2$ 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**
Sewoo 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 Abdukhmidov, T: Eunsaem Lee
<https://isef.net/project/224283>

Finalist Directory

- 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>
- 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>

Finalist Directory

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>

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- 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>

SWEDEN

- Stockholm, Sweden, SWE001, Utställningen 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, Nyköping, 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>

Finalist Directory

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 Chulabhorn 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: Chaloeangkit Phetpoo
<https://isef.net/project/227412>

Finalist Directory

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: Kiattisak 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: Suwana Ampornndanai

<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 Tiditjumreonpon, 17, Junior
The Prince Royal's College, Mueang Chiang Mai, Thailand, T: Rungkan Wangboon

<https://isef.net/project/227074>

Finalist Directory

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 WAYER - 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>

CELLO01T 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>

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- 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**
Sofiiia Nevmerzhyska, 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>

Finalist Directory

- 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

- BMEDO66** **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>

- BMEDO22** **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

- ENBMO48** **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>

Finalist Directory

Mobile, USALO4, 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, USALO1, 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>
- 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>

Finalist Directory

- 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>

Finalist Directory

- 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>
- CELLO21** **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** **KaktosPatch: Monitoring Necrosis in *Carnegieia 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>

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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>

Finalist Directory

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>

TMEDO21T **Discovering a Path From Molecular Modeling to Alzheimer's Phytotherapeutics: Characterizing Novel GSK3 β 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>

Finalist Directory

- 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>

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- 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 Nasser
<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>

Finalist Directory

- 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** **PREMPT— 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 Duttler
<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 Duttler
<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>

Finalist Directory

- 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**
Adithyan 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>

Finalist Directory

- 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>
- 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-TiO₂ 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>
- CELLO32** **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>

Finalist Directory

- 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>

Finalist Directory

- 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>

Finalist Directory

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

CELLO33T 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>

Finalist Directory

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>

Finalist Directory

- 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 Bijiyo, 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>

Finalist Directory

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, USFLO4, 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, USFLO9, 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>

Finalist Directory

- 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>

Finalist Directory

- 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>

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- CELLO44** **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**
- CELLO10** **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 Derosie
<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 Derosie
<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>

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- 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>

Finalist Directory

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 Intra-coastal 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>

Finalist Directory

- 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** **Quadruplexing 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>

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- 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 Stereoscapy, 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 Bartsenlager
<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>

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- 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 Bouso, 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 Chairios 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>

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- 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>

Finalist Directory

- 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**
CELLO05 **Not Just for Cooking: Effects of Turmeric and Neem on *Chlamydia* in a Cell Culture Model**
Peggy Osaе-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>
- CELLO30** **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>

Finalist Directory

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>

Finalist Directory

- 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, Kealahou 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, Kealahou 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>

Finalist Directory

IDAHO

Boise, USIDO2, 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, USIDO3, 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

BMEDO08 **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 Al³⁺/Fe³⁺-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

BMEDO40 **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>

BMEDO42 **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>

BMEDO44 **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>

Finalist Directory

- 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

- CHEMO46** **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>

Finalist Directory

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>

Finalist Directory

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: Michaela 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>

Finalist Directory

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 CO₂ 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>

Finalist Directory

- 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, ER β , 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>

Finalist Directory

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>

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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: Yvette 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>

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- 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**
- BMEDO48** **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 Kveskin, 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>

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- 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>
- 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>

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- 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>

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- 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, USMIO2, 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, USMIO5, 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, USMIO7, 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>

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PLNTO48T 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 Caldonia, 14, Freshman, Davies High School, Fargo, North Dakota,

T: Eugene Caldonia

<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>

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- ROBO016** **Detecting Outliers in 3D Point Clouds Using Higher-Order Geometric Cycles for Accurate 3D Reconstruction**
Rohan Kuruwila, 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>

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

- CELLO38** **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**
Maraïke 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 Prairie, Minnesota, T: Lawrence Tan
<https://isef.net/project/225782>

MISSISSIPPI

Booneville, USMS02, Mississippi Region IV Science Fair

- PLNTO44** ***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>

Finalist Directory

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>

Finalist Directory

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 Heinzl
<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>

Finalist Directory

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>

Finalist Directory

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 Ceerle
<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 Ceerle
<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 Ceerle
<https://isef.net/project/227085>

NEVADA

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

- ENBMO40T** **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>
- MCRO01** **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>
- ENBMO74** **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>

Finalist Directory

- 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**
- BMEDO49** **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>
- TMEDO65** **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>
- TMEDO55** **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>
- TMEDO56** **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>
- TMEDO57** **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>

Finalist Directory

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

- CHEMO40** **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>

Finalist Directory

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 Person-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>

Finalist Directory

- 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: Lorian Ciasulli
<https://isef.net/project/227248>

Finalist Directory

- 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>
- CELLO22** **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>
- CELLO23** **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>

Finalist Directory

- 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 CO₂ 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 Inflammation 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>

Finalist Directory

- 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>
- 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>

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- 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>

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Poughkeepsie, USNY01, Dutchess County Regional Science Fair

CHEM067 **Evaluating MnO₂ as a Transparent Photocatalytic Alternative to TiO₂: 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-McCowan

<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>

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>

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- 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 Karellic, 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>

Finalist Directory

- 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>
- 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**
Keerthihhooshan Veerichetty, 15, Freshman, Green Hope High School, Cary, North Carolina, T: Tina Robinette
<https://isef.net/project/225413>

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- 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>

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- 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**
 Abigail 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>
- 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>

Finalist Directory

- 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>
- CELLO15** **α -Synuclein Accelerates Mitochondria-Dependent Axonal Degeneration in a Mouse Model of MPAN: Axonal Enlargement Without Dopaminergic Neuron Loss**
Samia Walid Khaleed, 16, Junior, Hathaway Brown School, Shaker Heights, Ohio, T: Janna Mino
<https://isef.net/project/224163>

Finalist Directory

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 Gujjar
<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>

Finalist Directory

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>

Finalist Directory

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>

CHEMO25T **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- β 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>

Finalist Directory

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>

Finalist Directory

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>
- CELLO36** **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>

Finalist Directory

- 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 Zayat, 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>

Finalist Directory

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>

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- EAEV042** **The Hidden Threat: Microplastics and Gut Formation in Sea Urchin Larvae**
Kaley 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** **AI?: 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 Dendrimer Nanoparticles for Enhanced mRNA Transfection *in vitro***
Joshua Hyungwan Kim, 17, Senior, McCallie School, Chattanooga, Tennessee, T: Ashley Posey
<https://isef.net/project/224974>
- CELLO26** **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>

Finalist Directory

- 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 γ 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
Rossvie 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**
- CELLO11** **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>

Finalist Directory

- 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 CO₂ 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**
- BMEDO26 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>
- EBEDO28T 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>
- TMEDO27 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 Caguisingin, 17, Junior
Mia Alexis Olivas, 16, Junior
Franklin High School, El Paso, Texas, T: Shala Lee-Lopez
<https://isef.net/project/223492>

Finalist Directory

- 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>

Finalist Directory

- MATSO15** **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**
- ENEVO40T** **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>
- TMEDO22** **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>

Finalist Directory

- 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>
- ENBMO20** **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>
- TMEDO16T** **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>
- MATSO09** **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>
- TMEDO14** **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>

Finalist Directory

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>

Finalist Directory

- 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, USUTO4, 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>

Finalist Directory

- 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 Heating To 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>
- TMEDO38** **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>
- MATSO45** **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>

Finalist Directory

- TMEDO49** **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 Iddamalghoda
<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>

Finalist Directory

- 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>

Finalist Directory

- EAEV027T** **Design and Performance Analysis of Low-Cost Lead Filtration Systems**
James Yale Kim, 16, Sophomore
Abid Safwan, 16, Sophomore
Osborn 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**
- CELLO34** **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: Alexandra 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: Alexandra 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**
- BMEDO29** **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>

Finalist Directory

- 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>

Finalist Directory

- 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**
- BMEDO41** **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 Hydrospunges**
Lakshmi Agrawal, 18, Senior, Interlake High School, Bellevue, Washington,
T: Bret Cochrun
<https://isef.net/project/227107>

Finalist Directory

- 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 Krishnareddygar, 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. *italica*: 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>

Finalist Directory

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>

Milwaukee, 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>

Finalist Directory

- TMEDO11** **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>
- TMEDO12** **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>

Finalist Directory

VIETNAM

Hanoi, Vietnam, VNMO01, 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 SBProbMol³: 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>

Finalist Directory

ZIMBABWE

Harare, Zimbabwe, ZWEO01, Zimbabwe National Science Fair

BMEDO28 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>

STEM College & Career Fair

Thanks to the following colleges, universities and other organizations for their support.

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Intel
Iowa State University of Science and Technology
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Johns Hopkins University
Lehigh University
Long Island University
Massachusetts Institute of Technology (MIT)
Mississippi State University
Missouri University of Science and Technology
Nazareth University
NC State University Engineering
New Mexico State University
New Mexico Tech
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