Congratulations!
Florida ISEF Winners 2021

Regeneration ISEF - Largest Global High School STEM Competition

MAY 21, 2021

Washington, D.C.—Society for Science and Regeneron announced Grand Awards of the Regeneron ISEF 2021. Student winners are in ninth through twelfth grades who earned the right to compete at the Regeneron ISEF 2021 by winning a top prize at a local, regional, state or national science fair.

Grand Awards are presented in each of the 21 ISEF categories:
- 1st Award: $5,000
- 2nd Award: $2,000
- 3rd Award: $1,000
- 4th Award: $500

Winners of the Top Awards are selected from among the 1st Award winners:f
- [George D. Yancopoulos Innovator Award](#) of $75,000
- [Regeneron Young Scientist Awards](#) (2) of $50,000 each
- [The Gordon E. Moore Award](#) for Positive Outcomes for Future Generations of $50,000
- Craig R. Barrett Award for Innovation of $10,000
- Robert Horvitz Prize for Fundamental Research of $10,000
- Peggy Scripps Award for Science Communication of $10,000

ANIMAL SCIENCES, sponsored by Society for Science

First Award of $5,000
ANIM011 — *Year 4: Developing a Multiple Linear Regression Model to Predict the Specific Effects of Various Lactic Acid Bacteria Dosages on the Overall Honey Bee Gut Microbiota and Nosema ceranae Reduction*
- Varun Madan, Lake Highland Preparatory School, FL, United States of America

Third Award of $1,000
ANIM007 — *Novel Geotaxic Data Show Botanical Therapeutics Slow Parkinson's Disease in A53T and ParkinKO Models*
- Kristi Biswas, Paxon School for Advanced Studies, FL, United States of America

ANIMAL SCIENCES, sponsored by Society for Science

Fourth Award of $500
ANIM004 — *Utilization of Mechanically Simulated Kangaroo Care as a Novel Homeostatic Method to Treat Mice Carrying a Remutation of the Ppp1r13l Gene as a Model for Humans with Cardiomyopathy*
- Nathan Foo, West Shore Junior/Senior High School, FL, United States of America

BEHAVIORAL AND SOCIAL SCIENCES, sponsored by Society for Science

First Award of $5,000
BEHA064 — *Digital Phenotyping Autism: Investigating Objective Vocal and Movement Quantification for Characterizing Autism Severity*
- Emilin Mathew, American Heritage School, FL, United States of America

CELLULAR AND MOLECULAR BIOLOGY, sponsored by Regeneron

Fourth Award of $500
CELL002T — *Extrathymic T-Cell Development in the Mesenteric Lymph Nodes of Mice*
- Sandhya Kumar, Lawton Chiles High School, FL, United States of America
- Surabhi Kumar, Lawton Chiles High School, FL, United States of America

CHEMISTRY, sponsored by Society for Science

Third Award of $1,000
CHEM061 — *Fabrication of Napthalimide Point-of-Care (POC) Chemosensor Using InkJet Printing on Cellulose Paper for Determination of Uric Acid (UA) in Synthetic Urine and Aqueous Solution of Grain Samples, and Chromium Metal (Cr) in Drinking Water*
- Vedant Karalkar, Eastside High School, FL, United States of America

COMPUTATIONAL BIOLOGY AND BIOINFORMATICS, sponsored by Regeneron

Second Award of $2,000
CBIO090 — *Determining the Optimal MRI Sequence for the Automatic Segmentation of Multiple Sclerosis Using Convolutional Encoder Networks*
- Shaurnav Ghosh, Pine Crest School, FL, United States of America

EARTH AND ENVIRONMENTAL SCIENCES, sponsored by National Geographic Society

Second Award of $2,000
EAEV003 — *A Novel Deep Learning Model for Estimating Tropical Cyclone Intensity from Satellite Images*
- Sunny You, Miami Palmetto Senior High School, FL, United States of America

EAEV010 — *The Creation and Practical Application of Industry Standards Water Analysis via PXRF*
- Julia Kagiliery, Episcopal School of Jacksonville, FL, United States of America

Third Award of $1,000
EAEV005 — *Demonstrating D. pulex as Environmental Buffers to Acetylcholinesterase Inhibitors on H. littoralis*
- Jordan Harrow, Episcopal School of Jacksonville, FL, United States of America

EARTH AND ENVIRONMENTAL SCIENCES, sponsored by National Geographic Society

Fourth Award of $500
EAEV016 — *Analyzing In-situ Environmental Impacts on Long Term Durability, Cohesivity, and Viability Sodium Alginate Immobilized Chlorella vulgaris Bioremediation Units (A Novel Third Year Study)*

- Morgan Barnes, Canterbury School, FL, United States of America

ENERGY: SUSTAINABLE MATERIALS AND DESIGN, sponsored by King Abdul-Aziz & his Companions Foundation for Giftedness & Creativity

Fourth Award of $500
EGSD034 — *Characterizing the Electrical and Thermal Performance of a Circular Exhaust Pipe Thermoelectric Generator*
- Taehee Um, Oviedo High School, FL, United States of America

ENVIRONMENTAL ENGINEERING, sponsored by Jacobs
Fourth Award of $500
ENEV002 — *An Efficient and Cost-Effective Cooling System for Nuclear Power Plants*
- Zoe Diederich, Maritime and Science Technology Academy, FL, United States of America

ENEV037 — *Development of a Combinatory Filtration System for Pollution and Virus Abatement*
- Ishika Nag, Oviedo High School, FL, United States of America

MICROBIOLOGY, sponsored by Regeneron

Second Award of $2,000
MCRO010 — *Prevention of Healthcare Associated Infections using AntibacterialBoron Carbonitride Nanoparticle Coating on Medical Devices*
- Varsha Naga, Winter Springs High School, FL, United States of America

ENVIRONMENTAL ENGINEERING, sponsored by Jacobs

Fourth Award of $500
MCRO062 — *In vitro Evaluation of a Herbal Bionematicide and Its Effect on the Management of Nematodes in Solanum iycoperiscum*
- Shloke Patel, Hillsborough High School, FL, United States of America

PHYSICS AND ASTRONOMY, sponsored by Richard F. Caris Foundation

Third Award of $1,000
PHYS017 — *Dynamic Contact Angle Measurements of Superhydrophobicity in Dip Coated Face Masks to Minimize Exposure to COVID-19 Sized Nanoparticles*
- Annika Vaidyanathan, Winter Springs High School, FL, United States of America

PLANT SCIENCES, sponsored by Society for Science

Third Award of $1,000
PLNT042 — *Minimizing Food Waste Using a Nature-Derived Coating – An Innovative Step Towards Addressing Global Food Security*
- Laboni Santra, Oviedo High School, FL, United States of America

Fourth Award of $500
PLNT043 — *Dissolved Oxygen Augmentation Effects on the Hydroponic Cultivation of Eruca sativa in a NFT System*
- Nicole Stover, Samuel W. Wolfson High School, FL, United States of America

ROBOTICS AND INTELLIGENT MACHINES, sponsored by Siegel Family Endowment

Third Award of $1,000
ROBO004 — *Convolutional Neural Network Approaches for Smartphone-Based Rapid Detection of Tomato Diseases Supporting Mitigation of Unwarranted Pesticide Usage*
- Sruthi Sentil, James Rickards High School, FL, United States of America

ROBO039 — *Engineering a Robot Arm with Computer Vision and Simulated Grabbing for Manipulation of Objects*
- George Delong, Episcopal School of Jacksonville, FL, United States of America

ROBOTICS AND INTELLIGENT MACHINES, sponsored by Siegel Family Endowment

Fourth Award of $500
ROBO015 — *Novel Architectures for the Artificial Neural Network: Implementation of Virtual Neurotransmitters*
- Nikhil Iyer, Edgewood Junior Senior High School, FL, United States of America

ROBO056 — *A Novel Approach to Citrus Disease Management: Leveraging Computer Vision, Machine Learning and Convolutional Neural Networks*
- Arko Ghosh, C. Leon King High School, FL, United States of America

Regeneron ISEF 2021 Special Awards Congratulations Florida!

MAY 20, 2021

Washington, D.C.—Society for Science announced the Special Awards of the Regeneron ISEF 2021. Student winners are ninth through twelfth graders who earned the right to compete at the Regeneron ISEF 2021 by winning a top prize at a local, regional, state or national science fair.

Each year, organizations representing government, industry and education across a wide variety of scientific disciplines, affiliate with Regeneron ISEF as Special Award Sponsors, providing awards, scholarships internships and other prizes to hundreds of student finalists.

Air Force Research Laboratory on behalf of the United States Air Force
The Air Force Research Laboratory is a global technical enterprise, boasting some of the best and brightest leaders in the world. We are Revolutionary, Relevant, and Responsive to the Warfighter. We defend America by unleashing the unconquerable power of scientific and technical innovation. Our mission is leading the discovery, development, and integration of affordable warfighting technologies for our air, space, and cyberspace force.

First Award of $750 in each Regeneron ISEF Category
BEHA001 — *The Effect of Constraining Eye Movements on Learning Gains and Retention*
- Dante Amadeo Martinez, Westminster Christian School, Palmetto Bay, FL, United States of America
CELL003 — *Enzymatically Treated Cellulosic Packaging Waste Utilized to Release Fermentable Sugars for the Production of Bioethanol: A Second Year Study*
- Serenity Renee Derousie, Ridgeview High School, Orange Park, FL, United States of America

EGSD004 — *Designing and Testing a Novel 25% Degree of Reaction Steam Turbine*
- Benjamin Michael York, Creekside High School, Saint Johns, FL, United States of America

MCRO010 — *Prevention of Healthcare Associated Infections using Antibacterial Boron Carbonitride Nanoparticle Coating on Medical Devices*
- Varsha Naga, Winter Springs High School, Oviedo, FL, United States of America

PLNT025 — *Multinutrient Biofortification of Microgreens for Human Health*
- Lilian Crawford, Lincoln Park Academy, Fort Pierce, FL, United States of America

American Institute of Aeronautics & Astronautics
The American Institute of Aeronautics and Astronautics is committed to inspiring the next generation of aerospace professionals by recognizing exceptional students at all levels. We encourage students' progress through STEM-based educational programs, design competitions, scholarships, and awards such as the AIAA "Look Up!" Award. We will award a cash prize for the top three aerospace-related projects. We encourage students to Look Up! and see their future in aerospace.

First Award of $2000.00
ENMC033 — *In situ Resource Utilization of Martian Regolith for Construction, Year Four*
- Isabella Weiner, Holy Trinity Episcopal Academy, Rockledge, FL, United States of America

Third Award of $1000.00
PHYS002 — *Visualization of Three-Dimensional Aerospike Nozzle Flow Using Schlieren Photography*
- Melanie Deville, Westminster Christian School, Coral Gables , FL, United States of America

American Psychological Association

The American Psychological Association is the leading scientific and professional organization representing psychology in the United States, with more than 122,000 researchers, educators, clinicians, consultants and students as its members. APA's mission is to promote the advancement, communication, and application of psychological science and knowledge to benefit society and improve lives.

Second Award of $1,000

BEHA064 — *Digital Phenotyping Autism: Investigating Objective Vocal and Movement Quantification for Characterizing Autism Severity*

- Emilin Maria Mathew, American Heritage School, Davie, FL, United States of America

Third Award of $500

BEHA003 — *Jewish Identity Formation Processes within Reform Adolescents*

- Rachel Elizabeth Buksbaum, Wiregrass Ranch High School, Wesley Chapel, FL, United States of America

American Statistical Association

The American Statistical Association is the world's largest community of statisticians. The ASA supports excellence in the development, application, and dissemination of statistical and data science through meetings, publications, membership services, education, accreditation, and advocacy. Our members serve in industry, government, and academia in more than 90 countries, advancing research and promoting sound statistical practice to inform public policy and improve human welfare.

Certificate of Honorable Mention

BEHA064 — *Digital Phenotyping Autism: Investigating Objective Vocal and Movement Quantification for Characterizing Autism Severity*

- Emilin Maria Mathew, American Heritage School, Davie, FL, United States of America

Arizona State University

Arizona State University is pleased to offer a scholarship combining a monetary award and an environment focusing on knowledge, learning and research. The New American University ISEF Scholarship is renewable for four years. Individuals and teams will be considered for these awards.

Arizona State University ISEF Scholarship

ENBM003 — *A Mathematically Generated Bessel Function Based Ultrasonic Waveform Tractor Beam for Optimizing Blood Circulation*

- Isabela Victoria Perdomo, MAST at FIU Biscayne Bay Campus, Miami Beach, FL, United States of America

Association for the Advancement of Artificial Intelligence

AAAI is a scientific society devoted to advancing the scientific understanding of the mechanisms underlying thought and intelligent behavior and their embodiment in machines. AAAI promotes research in, and responsible use of, artificial intelligence, as well as public understanding of artificial intelligence. AAAI also strives to improve the teaching and training of AI practitioners, and provide guidance on the importance and potential of current AI developments and future directions.

Honorable Mention
ROBO015 — *Novel Architectures for the Artificial Neural Network: Implementation of Virtual Neurotransmitters*
- Nikhil Hari Iyer, Edgewood Junior Senior High School, Merritt Island, FL, United States of America

Florida Institute of Technology

Florida Institute of Technology is a nationally ranked, doctoral degree granting research university. The university offers degrees in engineering, science, computing, aeronautics, business, psychology and liberal arts. It's location just south of the Kennedy Space Center provides incredible research opportunities for students interested in engineering and science. Florida Tech will offer three presidential scholarships to ISEF participants that equal full tuition each year for four years upon fulltime enrollment at the university. Awardees must complete the FAFSA to be Eligible.

Full Tuition Presidential Scholarship
ENBM011 — *Biomaterial Fabrication Technique: Using Decellularized Plants as Perfusable Engineering Scaffolds*
- Kaitlyn R. Dunn, Tavares High School, Leesburg, FL, United States of America

ENEV015 — *Development and Implementation of a Bio-based Filter to Mitigate the Effusion of Harmful Pollutants from Internal Combustion Engines and Combustion Processes*
- Jonathan Clayton Walker, Rutherford High School, Lynn Haven, FL, United States of America

International Council on Systems Engineering – INCOSE
The International Council on Systems Engineering (INCOSE) is a not-for-profit membership organization founded to develop and disseminate the interdisciplinary principles and practices that enable the realization of successful systems. The INCOSE Best Use of Systems Engineering awards are awarded to the best interdisciplinary projects that can produce technologically appropriate solutions that meet societal needs. There will be a first, second, and third place award.

Certificate of Honorable Mention
ENBM009 — *Muscle Controlled Exoskeleton*
- Sebastian David Kouchakjy, Orange Park High School, Orange Park, FL, United States of America

ROBO039 — *Engineering a Robot Arm with Computer Vision and Simulated Grabbing for Manipulation of Objects*
- George Daniel Delong, Episcopal School of Jacksonville, Jacksonville , FL, United States of America

National Anti-Vivisection Society
Since 1929, the National Anti-Vivisection Society has promoted greater compassion, respect and justice for animals. NAVS educational and advocacy programs advance better, more humane science; support the development of alternatives to the use of animals in research, testing and education; and effect changes which help to end the unnecessary suffering of animals.

Third Award of $2,500
CBIO007 — *A Novel Computational Approach to Drug Discovery Through Drug Repositioning*
- Krithik Seela, Lake Highland Preparatory School, Orlando, FL, United States of America

National Taiwan Science Education Center
Established in 1956, the National Taiwan Science Education Center (NTSEC) is the only national center for science education in the country. The Taiwan International Science Fair Special Award recognizes projects with the best creativity and scientific applications.
Taiwan International Science Fair Special Award is a trip to participate in the Taiwan International Science Fair

CHEM051 — *Silica-Supported Perovskite Oxides for Low Temperature Carbon Dioxide Conversion*
- Anya Kirit Patidar, C. Leon King High School, Tampa, FL, United States of America

NC State College of Engineering
NC State is home to one of the world's finest colleges of engineering and computer science. NC State Engineering integrates classroom learning, research, and hands-on experience, and our graduates emerge with the skills they need to succeed. Award winners will take part in a week-long pre-selected summer camp, completing hands-on engineering challenges, exploring solutions, and sharing achievements along with other aspiring engineers.

Award to attend NC State Engineering Summer Camp
ENEV004 — *Substituting Plastic*
- Michael Vick, Wildwood High School, Wildwood, FL, United States of America

ENEV015 — *Development and Implementation of a Bio-based Filter to Mitigate the Effusion of Harmful Pollutants from Internal Combustion Engines and Combustion Processes*
- Jonathan Clayton Walker, Rutherford High School, Lynn Haven, FL, United States of America

Alternates
ENEV005 — *Using a Positive Charged Media to Remove Different Heavy Metal Ions from Contaminated Water Samples*
- Claire Jinbei Han, Pensacola High School, Pensacola, FL, United States of America
ENEV029 — *A Comparison of Domestic Dryer Contributions to Previous Domestic Washer Data of Microplastic Fiber Emissions in Waste Water Generated from Synthetic Textiles*
- Heidi Kinsey, Fort Myers High School, Fort Myers, FL, United States of America

Patent and Trademark Office Society
The PTOS is a membership-based organization for Patent and Trademark professionals and other interested individuals. From its inception in 1917, the Society has been dedicated to the improvement and appreciation of the United States Patent and Trademark Systems through promoting the systems' growth and well-being, as well as promoting the social and intellectual welfare of the Society members.

Top Award of $1,000, and an American flag and a framed copy of the first patent granted in the USA
PHYS017 — *Dynamic Contact Angle Measurements of Superhydrophobicity in Dip-Coated Face Masks to Minimize Exposure to COVID-19 Sized Nanoparticles*
- Annika Maria Larsson Vaidyanathan, Winter Springs High School, Oviedo, FL, United States of America

Second Award of $500
CHEM061 — *Fabrication of Napthalimide Point-of-Care (POC) Chemosensor Using InkJet Printing on Cellulose Paper for Determination of Uric Acid (UA) in Synthetic Urine and Aqueous Solution of Grain Samples, and Chromium Metal (Cr) in Drinking Water*
- Vedant Nilesh Karalkar, Eastside High School, Gainesville, FL, United States of America

Sigma Xi, The Scientific Research Honor Society
Founded in 1886, Sigma Xi is the international honor society of research scientists and engineers, with a distinguished history of service to science and society. This multi-disciplinary society includes members who were elected based on their research achievements or potential, and historically, more than 200 members have won the Nobel Prize. The Society is pleased to offer awards for the best demonstration of interdisciplinary research.

Honorable Mention Life Science Award
CELL002T — *Extrathymic T-Cell Development in the Mesenteric Lymph Nodes of Mice*
- Sandhya Kumar, Lawton Chiles High School, Tallahassee, FL, United States of America
- Surabhi Kumar, Lawton Chiles High School, Tallahassee, FL, United States of America

University of Arizona
Established in 1885, the University of Arizona is the state's land-grant university. Recognized as a global leader, Arizona is also a leader in research, bringing more than $622 million in research investment each year, and ranking 21st among all public universities. Arizona offers over 300 undergraduate and graduate degree programs in 16 academic colleges. Arizona will award scholarships to outstanding awardees who have demonstrated robust research for the greater good of society.

Renewal Tuition Scholarship
ANIM011 — *Year 4: Developing a Multiple Linear Regression Model to Predict the Specific Effects of Various Lactic Acid Bacteria Dosages on the Overall Honey Bee Gut Microbiota and Nosema ceranae Reduction*
- Varun Raj Madan, Lake Highland Preparatory School, Orlando, FL, United States of America