Intel International Science and Engineering Fair

Winner Announcement
Intel ISEF 2012 Special Awards Ceremony

May 17, 2012, Pittsburgh, Pennsylvania – Society for Science & the Public, in partnership with the Intel Foundation, announced special awards of the Intel ISEF 2012 Special Awards Ceremony. Student winners are ninth through twelfth graders who earned the right to compete at the Intel ISEF 2012 by winning a top prize at a local, regional, state or national science fair.

Intel ISEF Special Awards are presented by nearly 70 scientific, professional and educational organizations and include scholarships, summer internships, equipment grants, and trips. Awards are listed in alphabetical order by the presenting special award organization.

Acoustical Society of America

Since its organization in 1929, the Society has grown steadily in membership and stature. At this time about 7,500 men and women who work in acoustics throughout the U.S. and abroad belong to this prestigious Society. The premier international scientific society in acoustics, dedicated to increasing and diffusing the knowledge of acoustics and its practical applications.

First Award of $1,000; in addition, the student's school will be awarded $500 and the student's mentor will be awarded $250

BE011 **Who Do You Listen To? An Exploration on the Effects of Age and Gender on Listening Comprehension**
Savanah Quinn Frisk, 16, Kapa'a High School, Kapa'a, Hawaii

Second Award of $500; in addition, the student's school will be awarded $200, and the student's mentor will be awarded $100

EE085 **(BAS) Bracelet Alarm System for the Hearing Impaired Parents**
Hawraa Fawzi AlQallaf, 18, Salmiya High School, Kuwait, Kuwait

Certificate of Honorable Mention

EN324 **Setting Up a Measuring Protocol of the Reverberation Time of a Room to Improve Its Soundscape Quality**
Nofoume Ben Ahmed Aly, 17, Lycee Isaac Newton, Clichy, France
Alban Teytaud, 16, Lycee Isaac Newton, Clichy, France
Paul Chassagne, 18, Lycee Isaac Newton, Clichy, France

ET026 **Polyvinylidene Fluoride (PVDF) Piezoelectric Generator: A Novel Approach to Harvesting Vibrations from Human Respiration to Power Biological Implant Devices**
Bridget Mary Oei, 16, East Catholic High School, Manchester, Connecticut

Each winner will also receive a one-year ASA membership.

ADA Foundation

As dentistry's premier philanthropic and charitable organization, the ADA Foundation is a catalyst for uniting people and organizations to make a difference through better oral health. We secure contributions and provide grants for sustainable programs in dental research, education, access to care and assistance for dentists and their families in need. Our strategic ties with the American Dental Association, coupled with our strong volunteer leadership and our generous donors, give us a powerful yet flexible infrastructure to anticipate and quickly respond to the most pressing needs affecting dentistry and the public's oral health. Indeed, the ADA Foundation connects people and changes lives.

First Award of $2,000

MI010 **An Effective Method to Annihilate Toothbrush Pathogenic Bacteria**
Chene Mostert, 17, Ladysmith High School, Ladysmith, Northern Kwazulu Natal, South Africa

Second Award of $1,000

EN024 **Engineering a Novel Hydrogel Matrix for Bone Cell Regeneration**
Sneha Subramaniam, 18, Westborough High School, Westborough, Massachusetts

Third Award of $500

ME089 **Effects of Chemotherapeutic Drugs on Oral Flora**
Farhat Alucozai, 18, West Lafayette Junior/Senior High School, West Lafayette, Indiana

Agilent Technologies

Agilent's worldwide community involvement programs, known collectively as Agilent Action, tangibly demonstrates the company's values and commitment to corporate citizenship. Agilent supports programs that are designed to increase students' interest and achievement in science education, with an emphasis on women, and populations under-represented in the technology industry. Agilent Action inspires minds and enriches lives in the communities where Agilent people live and work.

The Agilent Teacher Award will be presented to the teacher of an Intel ISEF finalist. This award will be presented to the teacher who has best proposed how they would use the funds to support their professional development in the sciences and further their support of students in independent research.

Wendy Slijk, Canyon Crest Academy, San Diego, California

Parul Kumar, Lexington High School, Lexington, Massachusetts

Wan Rohani Harun, MARA Junior Science College Taiping, Taiping, Malaysia

Pavel Vital'evich Bibikov, Lyceum "Vtoraya Shkola," Moscow, Russia

Agilent offers paid summer internships at an Agilent site that aligns with the student and his/her background.

BI016 **Weaving Health: The Weaving of New Drugs from the Web Silk of Spiders, III**
Leonardo de Oliveira Bodo, 17, Colegio Dante Alighieri, Sao Paulo, Brasil

BI025 **Fungal Enzymes for Bio-Ethanol**
Julia Cavrell Garcez, 18, American School of Campinas, Campinas, Sao Paulo, Brasil

CB032 **A Microfluidic-Based Single Cell Analysis Identifies a Critically Depleted Vasculogenic Subpopulation in Diabetic Mesenchymal Stem Cells**
Shubha Srinivas Raghvendra, 18, Saint Francis High School, Mountain View, California

EE064 **The Z-Engine: My Internal Combustion Rotary Engine with Only Four Moving Parts**
David Andrew Zarrin, 17, Saratoga High School, Saratoga, California

Agilent Technologies is proud to offer a $25,000 award to the student whose research exemplifies the work that Agilent does in close collaboration with engineers, scientists, and researchers around the globe to meet the communications, electronics, life sciences, and chemical analysis challenges of today and tomorrow.

CS019 **Documents Confidential Cabinet Based on Mobile Phone Key**
BingChen Gong, 18, Middle School Attached to Northern Jiaotong University, Beijing, China

EN028 **Effects of Polycaprolactone and UV Treated Poly (Methyl Methacrylate) Electrospun Fibers on Osteogenic Differentiation of Dental Pulp Stem Cells**
Manita Singh, 17, Canyon Crest Academy, San Diego, California

Air Force Research Laboratory on behalf of the United States Air Force

Established in 1947, the United States Air Force is one of the seven Uniformed Services of the United States. The mission of the Air Force is to deliver sovereign options for the defense of the United States of America and its global interest -- to fly and fight in Air, Space and Cyberspace. The USAF is the largest and most technologically advanced force in the world. Characterized by science and technology, the Air Force is totally committed to rewarding science projects that exhibit these high standards. Today we wish to take this opportunity to thank the parents, teachers, mentors as well as the Society for Science & the Public for providing support and inspiration to these students by giving them the opportunity to excel.

First Award of $3,000

AS045 **Transcriptional Changes in *Borrelia burgdorferi* that Cross the Blood Brain Barrier in Neurological Tick-Borne Lyme Disease**
Lucy Michelle Hritzo, 16, Villa Joseph Marie High School, Holland, Pennsylvania

BE038 **Predicting Real World Characteristics from Virtual Behavior**
Athman Ramana Adiseshan, 15, Ramana Academy, San Jose, California

BI036 **Role of Cytochrome P450 1B1 in the Renin-Angiotensin System**
Jonathan Louie Lin, 17, Germantown High School, Germantown, Tennessee

CB043 **Determining the Role of Thalamic Neurotrophin-3 on Neocortical Projection Neuron Development**
Miguel Ignacio Paredes, 17, American Heritage School, Plantation, Florida

CH008 **A Novel Microscale Spectrophotometric Assay to Monitor Hydrogen Evolution for the Characterization of Catalysts**
Matthew Jay Goodman, 16, Liberal Arts & Science Academy, Austin, Texas

CS040 **Improving 3D Virtualization and Object Recognition in Real-Time Using Kinect Sensors**
Akash Krishnan, 17, Oregon Episcopal School, Portland, Oregon

EA001 **Evaporation vs. Evapotransporation**
Breanne Williams, 17, South Sumter High School, Bushnell, Florida

EE073 **Far-Field Wireless Power Transmission: A Novel Energy Efficient Method for Producing Spatially Dynamic Coherent Radiation in Real-Time**
Austin Kingsley Russell, 17, Saint Margaret's Episcopal School, San Juan Capistrano, California

EM026 **Mycoremediation of PCB Soil Contaminants with *Pleurotus ostreatus***
Mallory Claire Madfes, 16, Greenwich High School, Greenwich, Connecticut

EN017 **Design and Evaluation of a Cell-Phone Compatible Wireless Electrocardiograph**
Catherine Wong, 16, Morristown High School, Morristown, New Jersey

ET049 **Effect of Chemical Induction on the Direct Conversion of Cellulose to Aviation Biofuels by Fungi Gliocladium Species**
Sathvik Ramanan, 15, Hanford High School, Richland, Washington

EV032 **The Removal of Harmful Contaminants in Water Using Low Temperature Microplasma**
Mervy Atif Michael, 18, Union City High School/Academy For Enrichment and Advancement, Union City, New Jersey

MA021 **Aerial Navigation: A Mathematical System of Equations Capable of Navigating an Aerial Device without the Use of Satellites**
Gerald Paul Lawlor, 16, Notre Dame High School, Chattanooga, Tennessee

ME026 **Diabetes: A Rising Epidemic? Or Can It Be Controlled? To Study the Hypoglycemic, Hypotensive, and Hypocholesterolemic Effects of Gymnema Sylvestre Capsules on Non-Insulin Dependent Diabetic Human Subjects and Its Role in the Prevention of Cardiovascular Disease**
Soiba Khalid Mansoor, 15, Albuquerque Institute of Math and Science, Albuquerque, New Mexico

MI041 **Creation of Alginate Microparticles as a Novel Drug Delivery Vehicle**
Melissa Rachel Fagan, 17, San Diego Jewish Academy, San Diego, California

PH037 **The Development of Low Voltage, Solid-State Plasma Focus Devices for Portable Radiation Sources**
Adam Joseph Bowman, 16, Montgomery Bell Academy, Nashville, Tennessee

PS013 **Electric Algae Proliferation**
Wayne Walter Vigil Jr, 17, Grants High School, Grants, New Mexico

Second Award of $1,500

AS019 **Longitudinal Study of Effects of B-estradiol on Reproduction and Longevity in *Drosophila melanogaster***
Laura Kathryn Irons, 17, Notre Dame Academy, Park Hills, Kentucky

BE022 **The Effects of Multi-Talker Background Noise on Overt Spontaneous Speech Production**
Josh Feng, 16, Sheboygan North High School, Sheboygan, Wisconsin

BI002 **How Can Biodiesel Be Created from Different Types of Oil (Canola, Soybean, Corn, Peanut, and Used) and Which Oil Source Is the Most Efficient Compared to Regular Diesel?**
Navin Buxani, 15, Houston County High School, Warner Robins, Georgia

CB045 **The Insufficiency of Biomarkers in the Identification of Breast Cancer Stem Cells: Hybrid Spheroids as an Alternative Assay**
Talal Syed, 17, The Bronx High School of Science, Bronx, New York

CH033 **Spectroscopic Characterization of the Reactivity of Substrate Water Molecules in Bio-inspired Catalysts for Water Oxidation**
Aneesh Shah, 17, Half Hollow Hills High School East, Dix Hills, New York

CS007 **Simulating Orbital Dynamics & Planetary Collisions in a Video Game**
Erik Keoni Wessel, 18, Hale Kula Home School, Ewa Beach, Hawaii

EA005 **Analysis of the Components of the Swirl Ratio and Their Impact on the Structure of a Tornadic Vortex**
Casey Richard Densmore, 15, Musselman High School, Inwood, West Virginia

EE067 **Can You Hear Me Now?**
Sampath Sai Duddu, 15, Capital High School, Olympia, Washington

EM033 **Improving Reverse Osmosis Membranes for Desalination: The Modification of Cellulose Nanofibers**
Rajkumar Shivraj Pammal, 16, Commack High School, Commack, New York

EN043 **Layer-by-Layer Self Assembly to Develop DNA Based Biomaterial for Fuel Cell Application**
Kimberly Renee McRae, 17, Spring Valley High School, Columbia, South Carolina

ET037 **The Revolution of Supersonic Technology: Implementing Dihedral Winglets for Performance Optimization in Supersonic Flow**
Sumukh S. Bharadwaj, 16, Capital High School, Olympia, Washington

EV054 **Determining the Iron Concentration of Water Using Modern Technology: How iOS Devices Can Indicate Water Quality**
Brandon Joseph Bocklund, 18, Battle Creek Area Math and Science Center, Battle Creek, Michigan

MA035 **Novel Optimized Runge-Kutta Methods to Increase Computational Accuracy in Numerical Integration of Differential Equations**
Pratheek Nagaraj, 18, Marjory Stoneman Douglas High School, Parkland, Florida

ME006 **MITOCHONDRIA & ALZHEIMER'S: Modulating the GCLc Gene to Mitigate Redox Stress and ETC Complex Dysfunction**
Lisa P. Michaels, 16, Shepton High School, Plano, Texas

MI004 **Genetic Characteristics of Influenza A Viruses in Swine Populations**
Keshav Kumar Mangalick, 17, Mounds View High School, Arden Hills, Minnesota

PH034 **Inferring Shape and/or Attitude from Non-resolved Photometric Measurements of Geosynchronous Satellites**
Travis Crockett, 18, V. Sue Cleveland High School, Rio Rancho, New Mexico

PS033 **Conventional vs. Aquaponics vs. Hydroponics (A Third Year Study)**
Taylor Lorraine Kennedy, 16, Keystone Heights High School, Keystone Heights, Florida

First Team Award of $1,500 for each member

ET310 **The Development and Maximization of a Novel Photosynthetic Microbial Fuel Cell Using *Rhodospirillum rubrum***
Gavin Mai, 16, Century High School, Rochester, Minnesota
Marcus Vincent Gomez, 16, Century High School, Rochester, Minnesota

Second Team Award of $1,000 for each member

EN318 **Fabrication of Hollow Polymer Nanofiber Membranes via Co-axial Electrospinning for Water Purification**
Aileen Yee-Ru Huang, 17, Plano Senior High School, Plano, Texas
Renee Beach, 17, Plano Senior High School, Plano, Texas

Each winner will receive a medallion, plaque and a certificate of recognition.

Alcoa Foundation

Alcoa Foundation is one of the largest corporate foundations in the U.S., with assets of approximately $446 million. Founded more than 50 years ago, Alcoa Foundation has invested more than $550 million since 1952. In 2011, Alcoa and Alcoa Foundation contributed $38 million to nonprofit organizations throughout the world, focusing on Environment, Empowerment, Education and Sustainable Design. Through this work, Alcoa Foundation is building innovative partnerships, engaging its people to improve the environment, and educating tomorrow's leaders.

First Award - Water

CH048 **Creating and Optimizing Porous MOFs for the Capture of Carbon Dioxide from Flue Gas Mixtures**
William Weili Xu, 17, Princeton High School, Princeton, New Jersey

Second Award - Water

EM309 **Using Colorimetry to Monitor Nickel Contamination of Water**
Alyson Lorraine Roth, 17, Avon High School, Avon, South Dakota
Emily Elizabeth Mudder, 17, Avon High School, Avon, South Dakota

Third Award - Water

EE319 **Volcano of Energy**
Asuwie Marie Serrano, 17, Luis Munoz Marin High School, Barranquitas, Puerto Rico
Jennifer Colon, 17, Luis Munoz Marin High School, Barranquitas, Puerto Rico

First Award - Sustainable Material

EM306 **SOWP-DTS Solar Water Purification Using Drop Technology System**
Avishai Ketko, 18, Moshe Sharet High School, Netanya, Israel
Maya Braun, 17, Moshe Sharet High School, Netanya, Israel

Second Award - Sustainable Material

EN009 **Smart Windows: New Template Synthesis of Thin Nickel Hydroxide Film for Electrochromic Devices**
Polina Kovalenko, 16, Chemical Ecological Lyceum, Dnipropetrovsk, Ukraine

Third Award - Sustainable Material

EM323 **Antileaks: A Device for Detection and Discontinuation of Leakages in Domestic Water Supply Systems**
Nerya Yair Stroh, 20, Torah & Science û Yeshivah High School at Machon Lev, Jerusalem, Israel
Gal Oren, 20, JCT Torah & Science Yeshiva High School, Jerusalem, Israel

American Association for Clinical Chemistry

The American Association for Clinical Chemistry (AACC) is an international society comprised of medical professionals with an interest in clinical chemistry, clinical laboratory science, and laboratory medicine.

First Award of $1,500

ME028 **A Novel Paper Sensor for the Detection of Pancreatic Cancer**
Jack Thomas Andraka, 15, North County High School, Glen Burnie, Maryland

Second Award of $1,000

ME072 **Identification of the Best Method for Storing Autopsy Blood for DNA Forensic Investigation**
Dominique Helen Tlomak, 15, University School of Milwaukee, Milwaukee, Wisconsin

Third Award of $500

ME063 **Citracil: The Anti-Colorectal Cancer Activity of an Essential Oil from Lemongrass**
Yichen Zhang, 16, Richmond Secondary School, Richmond, British Columbia, Canada

Fourth Award of $250

ME026 **Diabetes: A Rising Epidemic? Or Can It Be Controlled? To Study the Hypoglycemic, Hypotensive, and Hypocholesterolemic Effects of Gymnema Sylvestre Capsules on Non-Insulin Dependent Diabetic Human Subjects and Its Role in the Prevention of Cardiovascular Disease**
Soiba Khalid Mansoor, 15, Albuquerque Institute of Math and Science, Albuquerque, New Mexico

ME038 **Exogenous Retinoic Acid Supplements as a Novel Approach to Reduce the Negative Phenotypes of Fetal Alcohol Syndrome Using a Zebrafish Model of Development**
Ayana Jamal, 17, Niles North High School, Skokie, Illinois

American Association of Pharmaceutical Scientists

The American Association of Pharmaceutical Scientists is a professional, scientific organization comprised of members employed in academia, industry, government and other research institutes worldwide. AAPS provides a dynamic international forum for the exchange of knowledge among scientists to serve the public and enhance their contributions to health. The AAPS is awarding projects which contribute to scientific research relevant to the pharmaceutical sciences.

First Award of $2,000

ME003 **Identifying Novel Inhibitors of DNA Methyltransferase 1 as a Treatment for DNMT1 Overexpression Caused Tumors**
Alexander William Forsyth, 17, Episcopal School of Jacksonville, Jacksonville, Florida

Second Award of $1,000

ME302 **Carbonic Anhydrase IX Inhibitors: Discovery of Novel Therapeutic Cancer Agents**
Vanna Nga Hovanky, 16, James Bowie High School, Austin, Texas
Keyur Mayur Mehta, 17, Westlake High School, Austin, Texas

Third Award of $500

MI020 **Antibiotic Discovery through Selective Cultivation of Subtropical Environmental Samples**
Nancy Gao, 16, Nicolet High School, Glendale, Wisconsin

Fourth Award of $250

CH031 **Paper Analytical Devices (PADs) for Counterfeit Drug Detection**
James Robert Firth, 17, Marian High School, Mishawaka, Indiana

ME303 **Novel Bioactivities and Mechanistic Insights of the Medicinal Fungus *Antrodia cinnamomea* against Human Breast Cancer Cells**
Tzu-Hsuan Su, 17, Taipei Municipal Chien-Kuo High School, Taipei City, Chinese Taipei
Kuang-Ming Shang, 17, Taipei Municipal Chien-Kuo High School, Taipei City, Chinese Taipei

The winners will also receive a certificate, a one-year membership in the association including three AAPS journals, reduced rates for meetings and numerous educational materials.

American Association of Physics Teachers and the American Physical Society

AAPT is a strong professional physics science society dedicated to the pursuit of excellence in physical science education. Each sponsoring teacher of a finalist who receives an AAPT and APS award also will receive a certificate.

First Award of $1,200

PH018 **A Generalized Holographic Model of Cosmic Accelerated Expansion**
Henry Wanjune Lin, 16, Caddo Parish Magnet High School, Shreveport, Louisiana

Second Award of $800

PH055 **A Novel Process for the Production of Medically Relevant Radioisotopes**
Taylor Ramon Wilson, 17, Davidson Academy of Nevada, Reno, Nevada

Third Award of $500

PH036 **Nano-Tesla Magnetic Field Sensors for an Early Warning System for Earthquakes**
Ananya Mukundan, 17, International Academy East, Troy, Michigan

Certificate of Honorable Mention

PH011 **New Ideas in Physics: The Mass Ratio of Elementary Particles from Torus Geometry**
Viola Mocz, 16, Mililani High School, Mililani, Hawaii

PH042 **N-Body Computational Simulations of Planetesimal Agglomeration in Early System Gas Giant Formation**
Ian A Sohl, 17, DaVinci Academy of Science and the Arts, Ogden, Utah

PH305 **Multiplied Water Transport by Water-Jet**
Koichi Shiga, 16, Hiroshima Prefectural Hiroshima Kokutaiji Senior High School, Hiroshima, Japan
Kazushige Ueda, 16, Hiroshima Prefectural Hiroshima Kokutaiji Senior High School, Hiroshima, Japan
Hiraku Doi, 16, Hiroshima Prefectural Hiroshima Kokutaiji Senior High School, Hiroshima, Japan

Top award-winners receive a one-year AAPT and APS student membership, a certificate from both AAPT and APS, as well as subscriptions to AAPT's "The Physics Teacher" journal and other APS journals.

American Chemical Society

Founded in 1876, the American Chemical Society is a self-governed individual membership organization that consists of members at all degree levels and in all fields of chemistry. The organization provides a broad range of opportunities for peer interaction and career development.

First Award of $4,000

CH301 **The Development of Novel Sutures that Store and Deliver Nitric Oxide for Wound Healing**
Kevin Anh Nguyen, 17, Plano East Senior High School, Plano, Texas
Punya Chittajallu, 16, Plano East Senior High School, Plano, Texas

Second Award of $3,000

CH024 **Comparison of Traditional Thermally Cured Epoxy-Amine/Kevlar Composites vs. UV-Cured Thiol-Ene/Kevlar Composites**
DeAndre DeShaun Stafford May, 17, Hattiesburg High School, Hattiesburg, Mississippi

Third Award of $2,000

CH040 **Polyoxovanadate-based Surfactants: The Search for an Effective Heterogeneous Catalyst**
Joy Yiran Wang, 16, Parkland High School, Allentown, Pennsylvania

Fourth Award of $1,000

BI301 **Improving the Life Conservation: New Purposes to Separate Lactobionic Acid and Sorbitol**
Eduardo Thadeu Rodrigues, 19, Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo, Rio Grande do Sul, Brasil
Juliana Hoch, 18, Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo, Rio Grande do Sul, Brasil

Certificate of Honorable Mention

CH009 **Asymmetric Conjugate Addition of Ortho-Quinone Methides as a Pathway to the Core of Nomofungin**
Joshua Moses Kubiak, 18, Louisiana School for Math, Science, and the Arts, Natchitoches, Louisiana

CH016 **The Electrochemical Effects of Saccharides on the Voltage Output of a Microbial Fuel Cell Using Penicillium chrysogenum**
Jack Erdozain, Jr., 17, Westminster Christian School, Palmetto Bay, Florida

CH021 **Modification of Graphene with Enhanced Efficiency for Direct Methanol Fuel Cells**
Sheng-Huai Wang, 17, Taipei First Girls High School, Taipei City, Chinese Taipei

CH023 **Synthesis of Nanostructured Materials (MOF-5) from Recycled PET Bottles**
Marcos Vinicius Silva Amorim, 19, Colegio de Aplicacao Emmanuel Leontsinis, Rio de Janeiro, Brasil

CH039 **Determining the Quantum Limit of Palladium and Gold Nanometallic Supercatalyst by Kinetic Method**
Mai-Anh Nguyen Vu, 16, McNeil High School, Austin, Texas

CH053 **Depolymerization of Chitin Using Ionic Liquids**
Vivian Vu Ho, 16, Murphy High School, Mobile, Alabama

All award winners and honorable mentions receive a subscription to "ChemMatters."

American Committee for the Weizmann Institute of Science

The International Summer Science Institute at the Weizmann Institute of Science provides students with an opportunity to work alongside top Weizmann Institute researchers, as well as to learn about life in Israel today.

All expense paid four week trip and scholarship to the Bessie Lawrence International Summer Science Institute.

MI023 **Investigating the Compatibility of Autoinducer Systems: One Molecule to Target Multiple Signal Transduction Pathways**
Felix F. Angelov, 18, Niles Township West High School, Skokie, Illinois

Alternate for trip

MA011 **Small Geometric Progressions Modulo N for Deterministic Polynomial Selection**
Aishwarya A. Vardhana, 17, Jesuit High School, Portland, Oregon

Trip and scholarship is held at the Weizmann Institute of Science in Rehovot, Israel each July. A valid passport is required for travel.

American Geosciences Institute

Founded in 1948, AGI strives to increase public awareness of the vital role that the geosciences play in modern society. AGI is pleased to recognize three projects that best reflect the study of Earth and the mission of AGI. First Award of $1,000; Second Award of $750; and two Third Awards of $250.

First Award of $1,000

EA012 **A Geochemical and Geomicrobiological Examination of the Red Sea – Dead Sea Canal**
Mofeed Wael Sawan, 16, Oakridge Secondary School, London, Ontario, Canada

Second Award of $750

EV045 **Modeling Salinity to Evaluate Saltwater Intrusion: A Case Study of the Loxahatchee River**
Christopher X. Wan, 16, Alexander Dreyfoos School of the Arts, West Palm Beach, Florida

Third Award of $250

EA013 **Let There Be No Light! ESR Dating of the Quartz from the Bytham River Palaeochannel**
Edward Cho, 17, Stuyvesant High School, New York, New York

EE307 **Innovative Application of Facial Mask as Moisture Sensor for a Low Cost Debris Flow Warning System**
Jingjing Peng, 18, Chengdu Shude High School, Chengdu, Sichuan, China
Yuan Tian, 17, Chengdu ShiShi High School, Chengdu, Sichuan, China
Zhuoli Feng, 16, Chengdu No. 7 High School, Chengdu, Sichuan, China

AGI will present their winners with a vast selection of related publications.

American Intellectual Property Law Association

A national bar association constituted primarily of lawyers in private and corporate practice, in government and in the academic community. The AIPLA represents a wide and diverse spectrum of individuals,

companies and institutions involved directly or indirectly in the practice of patent, trademark, copyright, and unfair competition law, as well as other fields of law affecting intellectual property. The AIPLA is proud to nurture the innovation and scientific achievement of young researchers at the Intel ISEF.

First Award of $1,000

ET304 **A Study of Solar Paint**
Allison Rose Martin, 16, Academy of Science and Technology, The Woodlands, Texas
Toluwani Temiloluwa Soares, 16, Academy of Science and Technology, The Woodlands, Texas
Shyamsunder Raghavan, 15, Academy of Science and Technology, The Woodlands, Texas

ME028 **A Novel Paper Sensor for the Detection of Pancreatic Cancer**
Jack Thomas Andraka, 15, North County High School, Glen Burnie, Maryland

Second Award of $250

EE047 **Quaternary Computing**
William Randall Shipley, 18, Bear River High School, Garland, Utah

ME055 **Diagnosing Premature Cancer Mathematically Utilizing Minkowski Dimension**
Daniel David White, 16, Somerset Berkley Regional High School, Somerset, Massachusetts

American Mathematical Society

The AMS, founded in 1888 to further the interest of mathematical research and scholarship, serves the national and international community through its publications, meetings, advocacy and other programs.

First Award of $1,000

MA311 **(Almost) Unit-Distance Points in the Polychromatic Plane: Colorings of the n-Dimensional Space**
Fabian Henneke, 19, Kippenberg-Gymnasium, Bremen, Germany
Xianghui Zhong, 18, Kippenberg-Gymnasium, Bremen, Germany
Danial Sanusi, 19, Kippenberg-Gymnasium, Bremen, Germany

Second Award of $500

MA005 **The Probability of Generating the Symmetric Group with a Commutator Condition**
Raman A. Birulia, 16, School No. 41, Minsk, Belarus

MA015 **Completing Graphs**
Katherine Leigh Cordwell, 16, Manzano High School, Albuquerque, New Mexico

Third Award of $250

MA006 **Partially Conjugate-Permutable Subgroups and Their Applications**
Viachaslau I. Murashka, 17, Gymnasium No. 71, Gomel, Belarus

MA025 **(C, B, A)-Permutations, Their Young Diagrams and Arnold Discrete Dynamic Systems**
Danila Alexandrovich Baygushev, 14, Lyceum "Vtoraia shkola," Moscow, Russia

MA027 **Complexity of Interlocking Polyominoes**
Sidharth Dhawan, 18, Westview High School, Portland, Oregon

MA033 **A Unitary Group Relaxation of the Traveling Salesman Problem and Its Applications**
Anirudh Prabhu, 17, West Lafayette Junior/Senior High School, West Lafayette, Indiana

Certificate of Honorable Mention

MA007 **Continued Fractions and e**
Frederik Benzing, 18, Landesgymnasium fur Hochbegabte, Schwabisch Gmuend, Baden-Warttemberg, Germany

MA009 **On the Fine Classification of Periodic Orbits of Continuous Endomorphisms on the Real Line with Application in Chaos Theory**
Rashad Abdulla, 15, West Shore Junior/Senior High School, Melbourne, Florida

MA036 **Lorenz & Modular Flows Are Knot Similar**
Anita Kummamuri Rao, 15, Glenda Dawson High School, Pearland, Texas

MA309 **Counting Zeros of Rational Harmonic Functions: Parameter Spaces**
Lyndon Ji, 17, Carmel High School, Carmel, Indiana
Youkow Homma, 18, Carmel High School, Carmel, Indiana

MA310 **Neighbors with Prescribed Prime Factors**
Theresa Lynn McLaughlin, 16, Ann Sobrato High School, Morgan Hill, California
Mark Alan Holmstrom, 17, Live Oak High School, Morgan Hill, California

American Meteorological Society

The American Meteorological Society, founded in 1919, promotes the development and dissemination of information and education on the atmospheric and related oceanic and hydrologic sciences and the advancement of their professional applications. The AMS awards are given to the best Intel ISEF exhibits in the area of atmospheric and related sciences. Winners receive a certificate, an AMS Journal/Bulletin Archive DVD, and a one-year student membership to the AMS. The student membership includes a subscription to the "Bulletin of the American Meteorological Society" or "Weatherwise" magazine.

First Award of $2,000

CS001 **Efficient Automated Generation and Dissemination of Meteorological Data Representations**
Joseph Christopher Woodson, 18, Home School, Tulsa, Oklahoma

Second Award of $1,000

EA009 **Hurricane Signatures within Tree Ring Records, Fire Island, New York**
Nickolas Boroda, 17, Massapequa High School, Massapequa, New York

Third Award of $500

EA005 **Analysis of the Components of the Swirl Ratio and Their Impact on the Structure of a Tornadic Vortex**
Casey Richard Densmore, 15, Musselman High School, Inwood, West Virginia

Certificate of Honorable Mention

EA302 **Observing Sudden Stratosphere Warming by Using Data from FORMOSAT-3**
Yun-Chu Chen, 18, National Taichung Girls' Senior High School, Taichung, Chinese Taipei
Hao-Chen Wang, 17, National Taichung Girls' Senior High School, Taichung, Chinese Taipei

EV008 **Frosty Air: How Air Temperature Affects Soil Frost Depth**
Alisha Ruth Mosloff, 17, Lincoln High School, Thief River Falls, Minnesota

EV049 **Influential Factors that Lead to Increased Levels of Atmospheric Haze**
Kristina Marie Thoren, 16, American Heritage School, Plantation, Florida

American Physiological Society

The American Physiological Society (APS) is a nonprofit devoted to fostering education, scientific research, and dissemination of information in the physiological sciences.

First Award of $1,500

ME011 **Arterial Hemodynamics in Atherosclerosis Patients, a Mathematical Model**
Aprotim Cory Bhowmik, 15, Parkview High School, Lilburn, Georgia

Second Award of $1,000

BI010 **Exploration of Antidiabetic Compound in Foxglove and Its Molecular Mechanism of Action**
Peiyan Duan, 17, No. 2 Secondary School Attached to East China Normal University, Shanghai, China

Third Award of $500

BI008 **The Evaluation of Small Molecule Inhibitors of PKM2, a Downstream Product of mTOR, in Neuroblastoma**
Christina Diane Collins, 18, Caddo Parish Magnet High School, Shreveport, Louisiana

APS Exceptional Science Award for $500

ME067 **The Effect of Deer Antler on the Proliferation of Endothelial Cells *in vitro***
Christina Ren, 15, Monte Vista High School, Danville, California

Winners will receive a certificate, a t-shirt, and a one-year subscription to APS publications.

American Psychological Association

The mission of the American Psychological Association is to advance the creation, communication and application of psychological knowledge to benefit society and improve people's lives. The APA is a scientific and professional organization that represents psychology in the United States. APA is the largest association of psychologists worldwide.

First Award of $1,500

BE052 **Quantifying Implicit Stereotypes through the Cognition of Ambiguous Speech Associated with Visual Meanings**
Nicholas Joseph Corpuz, 17, Academy for Math Engineering and Science, Murray, Utah

Second Award of $1,000

BE047 **A Big Fat Deal, Phase III: Attributions of Body Talk, Risk Assessments of Steroid/Dietary Supplement Use, Perceptions of Media Images, and Self-Esteem**
L. Elisabeth Burton, 16, Rio Rancho High School, Rio Rancho, New Mexico

Third Award of $500

BE007 **The Development of an Educational Board Game to Improve the Study Techniques of High School Students**
Brandon Gary Ramnath, 16, Christian Brothers' College, Boksburg, Guteng, South Africa

BE021 **OMG: Look Who Joined Facebook! The Relationship between Parenting and Adolescent Risk Behaviors**
Benjamin Jake Kornick, 17, Roslyn High School, Roslyn Heights, New York

BE028 **An Investigation of the Economic, Social, and Consequential Factors that Affect Moral Decision-Making: A Behavioral and fMRI Study**
Katherine Michelle Mangialardi, 18, Ossining High School, Ossining, New York

BE043 **An Innovative Method for the Comprehensive Textual Reading Ability of the Visually Impaired**
Abdullah Abdulfatah Mashat, 17, Ain Jalout Secondary School, Makkah, Saudi Arabia

BI042 **Effect of Artificial Sweeteners on Neurodegenerative Disorders: Using PC12 Neuronal Cells as a Model**
Abhilasha Gokulan, 15, Little Rock Central High School, Little Rock, Arkansas

American Society for Horticultural Science

ASHS is the cornerstone of research and education in horticulture and an agent for active promotion of horticulture science. Each awardee and his/her school will receive a one-year subscription to ASHS "HortScience" and "Hort Technology" plus a mounted certificate.

First Award of $1,000

PS026 **DNA-Binding Protein in Xcv Bacteria Manipulates Plant bHLH Gene to Promote Pathogen Growth during Infection: A Genetic Study**
Moniyka Sachar, 16, Irvington High School, Fremont, California

Second Award of $500

PS049 **HPLC Extraction of Noni (Morinda Citrifolia) Compounds and Its Inhibition of *E. coli***
Peter Huang Leng, 16, Father Duenas Memorial School, Chalan Pago, Guam

Third Award of $250

PS024 **Understanding the Evolutionary Consequences of Genetic Duplication and Divergence: A Functional Characterization of the APETALA1/FRUITFULL Homologs in Papaveraceae**
Amelia Lyn Clements, 17, Ossining High School, Ossining, New York

American Society for Microbiology

Founded in 1899, the American Society for Microbiology (ASM) is the largest single life science membership organization in the world. Members worldwide represent 26 disciplines of microbiological specializations plus a division for microbiology educators. The ASM's awards honor the most outstanding microbiology projects.

First Award of $2,500

MI308 **Isolation, Identification and Characterization of Endophytes from Cherokee Medicinal Plants: Yellowroot *(Xanthorhiza simplicissima),* Downy Rattlesnake Plantain *(Goodyera pubescens),* and Indian Tobacco *(Lobelia inflata)***
Meredith Grace Tooley, 14, Brevard High School, Brevard, North Carolina
Erika Kate Williams, 17, Brevard High School, Brevard, North Carolina
Jenna Kristine Petterson, 17, Brevard High School, Brevard, North Carolina

Second Award of $1,750

MI053 **Re-Evaluation of Fuzeon, the First Peptide Anti-HIV Drug, Reveals a Novel Mechanism of Action**
Tongzhu Xu, 18, The Bronx High School of Science, Bronx, New York

Third Award of $1,000

MI055 **A Unique Approach in DNA Based Identification of Airborne Fungal Population in the Sacramento Area**
Ryan Hsu, 17, Davis Senior High School, Davis, California

Fourth Award of $750

MI030 **Irradiation Extermination, Part Three: A Portable System to Eliminate Waterborne Microorganisms**
Kelli Ann Lynch, 18, Rocky Mountain High School, Fort Collins, Colorado

Fifth Award of $400

MI021 **The Antimicrobial Effectiveness of Silane Based Nanoparticle on Treated Surfaces**
Katherine Ann Marsh, 16, Richland High School, Richland, Washington

MI026 **Engineering RCAS-TVA Vectors for Generating a Novel Transgenic Mouse Model of Melanoma**
Bilal Ahmed Siddiqui, 18, Wellington C. Mepham High School, Bellmore, New York

MI027 **Anti-Batrachochytrium dendrobatidis Bacterial Symbionts on *Aneides aeneus* Epidermal Tissue**
Sarah Katherine Johnson, 17, Brevard High School, Brevard, North Carolina

MI035 **Effects of Green and Black Tea on the Growth and Viability of *Bacillus anthracis***
Shane David Falcinelli, 18, Middletown High School, Middletown, Maryland

MI045 **Human Hemoglobin Polymorphisms Affect Recognition by *S. aureus* Receptor IsdB**
Jiahe Gu, 18, Martin Luther King, Jr. Magnet High School, Nashville, Tennessee

MI046 **The Utility of Ustilago bullata to Control Cheatgrass Invasions**
Stacia Lynn Hill, 17, Big Sky High School, Missoula, Montana

All finalists in the Microbiology category receive a student membership to AMS which includes a one-year subscription to "Microbe," ASM's monthly news magazine, and access to the members only web resources.

American Statistical Association

The ASA is the world's largest community of statisticians, supporting excellence in the development, application, and dissemination of statistical science. The ASA is the second oldest continuously operating professional association in the United States. All students receive one-year subscriptions of "Significance" and "Chance." Their schools will also receive a one-year school membership in the American Statistical Association.

First Award of $1,500

MA039 **Developing a Novel Test to Detect Cancer Genes from Microarray Data**
Shreya Mathur, 15, Oxford High School, Oxford, Mississippi

Second Award of $500

PH018 **A Generalized Holographic Model of Cosmic Accelerated Expansion**
Henry Wanjune Lin, 16, Caddo Parish Magnet High School, Shreveport, Louisiana

Third Award of $250

CS049 **Apodora: Markov Chain-Inspired Microsearch**
Nicholas Benjamin Schiefer, 17, Holy Trinity School, Richmond Hill, Ontario, Canada

Certificate of Honorable Mention

AS027 **Rapid Evolution of Brown Trout in the Kerguelen Islands**
Mingsha Zhou, 18, Marianopolis College, Westmount, Quebec, Canada

BE006 **A Spectrum of Triangulation: ADHD, Circadian Rhythmicity, and Bipolar Symptoms**
Travis Coleman Sigafoos, 18, Champlin Park High School, Champlin, Minnesota

BE031 **The Effects of Mindful Decision Making on Post Decision Regret**
Emily Katherine Hu, 16, Lexington High School, Lexington, Massachusetts

EA303 **Characterizing the Elements of EarthÆs Radiative Budget: Applying Uncertainty Quantification to Climate Models**
Madison Ann Chakoumakos, 17, Oak Ridge High School, Oak Ridge, Tennessee
Zibo Zhuang, 17, Oak Ridge High School, Oak Ridge, Tennessee

American Veterinary Medical Association

The American Veterinary Medical Association, established in 1863, is a not-for-profit association representing more than 76,000 veterinarians working in private and corporate practice, government, industry, academia, and uniformed services. Structured to work for its members, the AVMA acts as a collective voice for its membership and for the professional.

First Award of $1,000 and a plaque

AS049 **The Ability of Trained Bees to Detect Volatile Substances**
Nicolena Teal Stiles, 16, Roanoke Valley Governor's School, Roanoke, Virginia

AS053 **Stress Affects on Swine**
Neela Ann Andres, 16, Big Sky High School, Missoula, Montana

BI303 **The Effects of Potential Anesthetics on the Nervous System of Humpy Shrimp *(Pandalus goniurus)***
Ariana Gross, 16, Juneau-Douglas High School, Juneau, Alaska
Amalia Tamone, 16, Juneau-Douglas High School, Juneau, Alaska

EM044 **The Impact of Varying Productivity Levels on Abundance and Feeding Patterns of *Callinectes sapidus:* What Does Blue Crab Behavior Tell Us About Wetlands Restoration?**
Jamie Rachel Odzer, 15, Dr. Michael M. Krop Senior High School, Miami, Florida

EV306 **Mussels, a Natural Approach to Water Quality Improvement: Assessing the Impact of Environmental Factors on *P. americanus* and *G. demissa* Status in Long Island Bays and Applying *G. demissa* as Biofilters**
Arianne Elizabeth Papa, 18, Long Beach Senior High School, Lido Beach, New York
Jane Elizabeth Smyth, 18, Long Beach Senior High School, Lido Beach, New York

Ansaldo STS

Ansaldo STS is a leader in the freight rail and mass transit industry, designing, manufacturing, installing and managing signaling technologies and transportation solutions around the world. With more than 4,300 employees in 28 countries, Ansaldo STS incorporates excellence and technological expertise that comes with over 150 years of experience.

First Award of $5,000

EE073 **Far-Field Wireless Power Transmission: A Novel Energy Efficient Method for Producing Spatially Dynamic Coherent Radiation in Real-Time**
Austin Kingsley Russell, 17, Saint Margaret's Episcopal School, San Juan Capistrano, California

Second Award of $3,000

EE066 **High-Power, Frictionless Gear Reduction Using Magnetic Repulsion**
Jesse Samuel Martin, 18, Elizabethtown Area High School, Elizabethtown, Pennsylvania

Third Award of $2,000

CS052 **Navigation for the Visually Impaired**
Natalie Janet Nash, 17, Vincentian High School, Pittsburgh, Pennsylvania

Ashtavadhani Vidwan Ambati Subbaraya Chetty Foundation

An educational and medical service foundation dedicated to recognizing academic talent and providing services to the needy. AVASC will award projects that display outstanding creativity, ingenuity and have the potential to alleviate the human condition or mark a substantive advancement in the scientific field.

First Award of $1,000 U.S. savings bond

CB023 **Elucidating Pathways in Cancer Pathogenesis**
Nithin Reddy Tumma, 17, Port Huron Northern High School, Port Huron, Michigan

EN017 **Design and Evaluation of a Cell-Phone Compatible Wireless Electrocardiograph**
Catherine Wong, 16, Morristown High School, Morristown, New Jersey

Second Award of $500 U.S. savings bond

BI027 **Novel Strategies for the PET Imaging of Colorectal Cancer Using the A33 Antibody**
Priya Mohindra, 17, Yorktown High School, Yorktown Heights, New York

CB013 **Role of MyD88 in DNA Damage Response**
Yiyuan Hu, 18, Hamden High School, Hamden, Connecticut

CB032 **A Microfluidic-Based Single Cell Analysis Identifies a Critically Depleted Vasculogenic Subpopulation in Diabetic Mesenchymal Stem Cells**
Shubha Srinivas Raghvendra, 18, Saint Francis High School, Mountain View, California

CH048 **Creating and Optimizing Porous MOFs for the Capture of Carbon Dioxide from Flue Gas Mixtures**
William Weili Xu, 17, Princeton High School, Princeton, New Jersey

EN028 **Effects of Polycaprolactone and UV Treated Poly (Methyl Methacrylate) Electrospun Fibers on Osteogenic Differentiation of Dental Pulp Stem Cells**
Manita Singh, 17, Canyon Crest Academy, San Diego, California

ET048 **A Novel Solar Cell Combining Coordinated Metal Ion Substitution and Self-Assembly to Broaden the Absorption Spectrum and Efficiently Transform Light Energy into Electricity**
Nathan Sai Kondamuri, 17, Munster High School, Munster, Indiana

EV058 **Eco-friendly Pesticide for the control of Tea Mosquito Bug *(Helopeltis antonii sign.)* in *Theobroma cacao L.***
Sindura Saraswathi Bangaradka, 14, Vivekananda English Medium High School, Puttur, Karnataka, India

MA033 **A Unitary Group Relaxation of the Traveling Salesman Problem and Its Applications**
Anirudh Prabhu, 17, West Lafayette Junior/Senior High School, West Lafayette, Indiana

Equivalent awards available for non-U.S. winners.

Association for Computing Machinery

The ACM is an educational and scientific society uniting the world's computing educators, researchers and professionals to inspire dialogue, share resources and address the field's challenges. ACM supports the professional growth of its members by providing for life-long learning, career development, and professional networking.

First Award of $1,000

CS046 **Geolocation of Photographs by Horizon Matching with Digital Elevation Models**
Samuel Wye Pritt, 17, Pritt Home School, Walkersville, Maryland

Second Award of $500

CS308 **Generalized Quantum Tic-Tac-Toe**
Ananya Kumar, 17, NUS High School of Mathematics and Science, Singapore
Yan Sheng Ang, 18, NUS High School of Mathematics and Science, Singapore

Third Award of $300

CS049 **Apodora: Markov Chain-Inspired Microsearch**
Nicholas Benjamin Schiefer, 17, Holy Trinity School, Richmond Hill, Ontario, Canada

Fourth Award of $200

CS009 **Pediacenter**
William Barbaro, 17, Carroll High School, Dayton, Ohio

CS051 **Modeling the Adaptive Venation Network of *Physarum polycephalum***
Hannah Louise Blumberg, 17, Paul D. Schreiber High School, Port Washington, New York

CS052 **Navigation for the Visually Impaired**
Natalie Janet Nash, 17, Vincentian High School, Pittsburgh, Pennsylvania

CS306 **Dynamic Pathfinding: Chasing Enemies on Random Graphs**
David Lu, 16, Stuyvesant High School, New York, New York
Andre Asher Arslan, 16, Hunter College High School, New York, New York

All winners will receive complimentary ACM Student Memberships for the duration of their undergraduate education. The ACM's Student Portal Package also includes ACM's Digital Library.

Astronomical Society of the Pacific and the American Astronomical Society

The Astronomical Society of the Pacific increases the understanding and appreciation of astronomy by engaging scientists, educators, enthusiasts and the public to advance science and science literacy. The American Astronomical Society (AAS), is the major organization of professional astronomers, physicists, mathematicians, geologists, engineers and others whose research interests lie within the broad spectrum of subjects now comprising contemporary astronomy.

Priscilla and Bart Bok First Award of $1,000

PH005 **Photometric and Spectroscopic Analysis for the Determination of Physical Parameters of an Eclipsing Binary Star System**
Piper Michelle Reid, 15, Dripping Springs High School, Dripping Springs, Texas

Priscilla and Bart Bok Second Award of $500

PH018 **A Generalized Holographic Model of Cosmic Accelerated Expansion**
Henry Wanjune Lin, 16, Caddo Parish Magnet High School, Shreveport, Louisiana

The awarded funds are intended to be used by the recipients to further their education and research efforts. Up to $1000 in travel is also provided for each recipient to attend the winter meeting of the AAS following the receipt of the award.

Carnegie Mellon University Leonard Gelfand Center for Service Learning and Outreach

Carnegie Mellon University is a global research university recognized for world-class programs, collaboration across disciplines and innovative leadership in education. The Leonard Gelfand Center for Service Learning & Outreach supports activities that make use of the energy and expertise of Carnegie Mellon students, faculty, and staff to improve the quality of life or solve problems in the community. Working together with individuals, school districts and organizations in Pennsylvania and beyond, we assist with the design and implementation of programs and service learning course activities. Representatives of the Carnegie Mellon Center for Climate and Energy Decision Making will select the winning projects for this sponsored award. Addressing the climate change issue to mitigate potential environmental, economic and social impacts from climate change will require a massive transformation of energy systems. Climate and Energy Decision Making Awards are for works proposing economical, environmentally benign and socially equitable technologies, strategies and approaches to transform, carry and use energy.

First Award of $2,500

EE310 **Solar Heater for Rural Use for Unheated Homes Off the Grid**
Arne Joi Nipales, 16, Baboquivari High School, Sells, Arizona
Jacquel Rivers, 15, Baboquivari High School, Sells, Arizona

Second Award of $1,500

EE034 **Design and Creation of Small Wind-Power Engines for Low Wind Speeds Based on Magnus Effect**
Assiya Kussainova, 16, Specialized School for Gifted Children Daryn, Karagandy, Kazakhstan

Third Award of $1,000

PS013 **Electric Algae Proliferation**
Wayne Walter Vigil Jr, 17, Grants High School, Grants, New Mexico

China Association for Science and Technology (CAST)

China Association for Science and Technology (CAST) is the largest organization of scientists and technologists of China. One of its missions is to promote public understanding of science. Having developed science education programs, CAST supports youth and adolescents in becoming citizens with high scientific literacy. CAST Awards are given to the projects that best reflect the originality and innovation of the students' work in all scientific disciplines.

Award of $3,000

BI027 **Novel Strategies for the PET Imaging of Colorectal Cancer Using the A33 Antibody**
Priya Mohindra, 17, Yorktown High School, Yorktown Heights, New York

CB023 **Elucidating Pathways in Cancer Pathogenesis**
Nithin Reddy Tumma, 17, Port Huron Northern High School, Port Huron, Michigan

CS021 **A Method for Self-Duplicating Data Storage Using Magnetic Bacteria**
Or Sagy, 16, Ben Gurion Regional School, Emek Hefer, Israel

CS069 **Human Computer Interface: Using Artificial Intelligence to Help Blind People to See with Their Tongue**
Ionut Alexandru Budisteanu, 18, Grup Scolar Oltchim, Ramnicu Valcea, Valcea, Romania

ME307 **Going Antiviral: An Evaluation of PI3 Kinase Inhibitor LY294002 as a Novel Class of Antiviral Drug**
David He Chen, 16, Little Rock Central High School, Little Rock, Arkansas
Alexander Zhang, 15, Little Rock Central High School, Little Rock, Arkansas

Each winner will also receive a certificate. Award will be shared by team members.

Coalition for Plasma Science (CPS)

CPS is a group of institutions, organizations, and companies joining forces to increase awareness and understanding of plasma science and its many applications and benefits for society. CPS will present this award to the best project in the broad area of plasmas. Plasma-related topics include, but are not limited to, lighting, display, materials processing, space physics, terrestrial phenomena (lighting, aurora, etc.), fusion, and basic plasma science.

First Award of $1,500

PH038 **The Novel Determination of the Stopping Power and Other Characteristics of Quark Gluon Plasma Based on Several Jet Modification Measurements**
Shannon Phelan Wetzler, 18, Kings Park High School, Kings Park, New York

Consortium for Ocean Leadership

A Washington, D.C. based nonprofit organization that represents 99 of the leading public and private ocean research educational institutions, aquaria and industry; working to advance research, education, and sound ocean policy. The Organization also manages ocean research and education programs in scientific ocean drilling, ocean observing, ocean exploration and ocean partnerships. Awards will be given to the best projects in the area of ocean sciences with an emphasis on marine geosciences.

First Award of $3,000

EV306 **Mussels, a Natural Approach to Water Quality Improvement: Assessing the Impact of Environmental Factors on *P. americanus* and *G. demissa* Status in Long Island Bays and Applying *G. demissa* as Biofilters**
Arianne Elizabeth Papa, 18, Long Beach Senior High School, Lido Beach, New York
Jane Elizabeth Smyth, 18, Long Beach Senior High School, Lido Beach, New York

Second Award of $2,000

EM302 **The DOCTORs: A Fusion of Engineering and Biological Analysis**
Erin Lynn Main, 17, 'Iolani School, Honolulu, Hawaii
Logan Keahi Davis, 17, 'Iolani School, Honolulu, Hawaii
Kyle Randolph Miki Flores, 17, 'Iolani School, Honolulu, Hawaii

Certificate of Honorable Mention

EA010 **Morphological Disparity during the Ammonoid Recovery after the Permian Mass Extinction**
Rose Landis Leopold, 18, Pacific Collegiate School, Santa Cruz, California

EM011 **Pop Goes the Diesel: A Linoleic Acid/*R. rhodochrous* Mixture as a Bioremediation Agent of Diesel Contaminants in Contaminants in Saltwater and Freshwater Environments**
Morgan Walker Sinko, 17, John Jay Science and Engineering Academy, San Antonio, Texas

EV046 **Got Metals? In Your Seafood! Extraction of Metals from Seafood for Induced Coupled Plasma Mass Spectrometry Determination**
Shane Michel Flanagan, 15, Castle High School, Newburgh, Indiana

EV303 **Assessing Oil Spill Cleanup: The Ecological Ramifications of Chemical Treatments**
Andrea Elise Green, 16, H-B Woodlawn Secondary Program, Arlington, Virginia
Catherine Rose Mitchell, 17, H-B Woodlawn Secondary Program, Arlington, Virginia

EV313 **Regenerating Coral Fragments on Bamboo Artificial Reefs**
Julian Paolo Talamera Biyo, 17, Philippine Science High School - Western Visayas Campus, Iloilo, Philippines
Paul Caesar Mason Flores, 16, Philippine Science High School- Western Visayas Campus, Iloilo, Philippines
Hazel Anne Jurado Hernandez, 16, Philippine Science High School - Western Visayas Campus, Iloilo, Philippines

Drexel University

Drexel University in Philadelphia, Pennsylvania is awarding full tuition scholarships for projects in the categories of Computer Science, Engineering, Environmental Sciences, Medicine and Health, and Physics or projects aligned with Drexel's curriculum.

Full tuition scholarship

AS006 **Investigation Rhacodactylus gecko Adhesion Using Computer Image Analysis**
Holly Jeanne Flann, 17, InTech Collegiate High School, North Logan, Utah

AS022 **We Come in Peace! *Orconectes rusticus* Displays Minimally Aggressive Behaviors When Competing with Appalachian Crayfish in Mesocosms**
Vincent Jacob O'Leary, 16, Wheeling Central Catholic High School, Wheeling, West Virginia

AS049 **The Ability of Trained Bees to Detect Volatile Substances**
Nicolena Teal Stiles, 16, Roanoke Valley Governor's School, Roanoke, Virginia

EV013 **Non-Point vs. Point-Source Pollution: Water Quality Assessment of the Vermilion River with Various Climate Conditions**
Gina Gabrielle Biddick, 16, Ovey Comeaux High School, Lafayette, Louisiana

EV028 **Record Flood Impacts on Biodiversity in Upper Green River, Kentucky**
Aimee Michelle Turner, 17, Ballard High School, Louisville, Kentucky

EV045 **Modeling Salinity to Evaluate Saltwater Intrusion: A Case Study of the Loxahatchee River**
Christopher X. Wan, 16, Alexander Dreyfoos School of the Arts, West Palm Beach, Florida

EV056 **Electrical Conductivity as a Simple Cost-Effective Indicator of Heavy Metal Water Pollution**
Conrado Andres Asenjo, 17, Academia del Perpetuo Socorro, San Juan, Puerto Rico

PS011 **Phytoremediation: A Comparative Study of Selenium Metabolism in Conjunction with ATP Sulfurylase Activity in Organic and Transgenic Crops Year III**
Michelle Man-Si Chin, 16, West Shore Junior/Senior High School, Melbourne, Florida

Scholarships are renewable for up to 5 years pending maintenance of a 3.0 GPA and full-time status. Each scholarship is valued at $150,000. Scholarships will go into effect upon admission to the University.

Duquesne University Bayer School of Natural and Environmental Sciences

The Bayer School of Natural and Environmental Sciences at Duquesne University offers comprehensive undergraduate and graduate programs in the basic sciences, in addition to innovative integrated curricula in environmental science, forensic science and law, and biotechnology. The mission of the Bayer School emphasizes a high quality science education that promotes the synergy between teaching and research, in turn benefiting society by advancing scientific knowledge. The Bayer School and Duquesne University are proud to be partners of the thriving scientific educational and research community of Pittsburgh, and are pleased to be able to recognize today's outstanding science students who will become tomorrow's exceptional scientific leaders. The Bayer School is presenting two $2,500 awards to recognize Intel ISEF finalists whose projects exemplify scientific creativity and excellence in experimental design and project performance.

First Award of $2,500

CH039 **Determining the Quantum Limit of Palladium and Gold Nanometallic Supercatalyst by Kinetic Method**
Mai-Anh Nguyen Vu, 16, McNeil High School, Austin, Texas

EV006 **An Experimental Study of the Impact of Target Volatile Organic Compound (VOC) Emissions on Lung Health PLUS a Novel Risk Assessment Model to Predict Their Effect on the Peak Expiratory Flow Rate (PEFR); and the Development of a New VOC Adsorption Filter**
Naomi Chetan Shah, 16, Sunset High School, Portland, Oregon

Florida Institute of Technology

Florida Institute of Technology is the only private technological university in the southeastern United States. Florida Tech, located on the Space Coast near Kennedy Space Center, offers full undergraduate and graduate programs in engineering, science, psychology, business, and aeronautics.

Scholarship Award of $15,000 per year, renewable annually

CH007 **The Study of Conjugated Polymer Growth on Graphitic Surfaces and an Analysis of Their Interactions**
Nicholas Anthony Buoniconti, 17, Lake Highland Preparatory School, Orlando, Florida

CH016 **The Electrochemical Effects of Saccharides on the Voltage Output of a Microbial Fuel Cell Using Penicillium chrysogenum**
Jack Erdozain, Jr., 17, Westminster Christian School, Palmetto Bay, Florida

CH041 **A Novel Approach to Treat Dry Eyes Exacerbated by Contact Lens Wear**
Sravya Vishnubhatla, 17, duPont Magnet High School, Louisville, Kentucky

CS032 **PDFClearance: Developing Software to Detect Malicious PDFs**
Eric Sauer, 17, Dougherty Valley High School, San Ramon, California

CS046 **Geolocation of Photographs by Horizon Matching with Digital Elevation Models**
Samuel Wye Pritt, 17, Pritt Home School, Walkersville, Maryland

EA003 **Using Resonance Frequency to Predict and Prevent Structural Failure**
Rohan Thakur, 17, Plano East Senior High School, Plano, Texas

EE011 **Liquid Cooling Taken Literally**
Stephen Burgess Hall, 16, Veterans High School, Kathleen, Georgia

EE033 **Intelligent Self-Assembling Systems Using Robotic Cells**
Holly Catherine Erickson, 16, Los Alamos High School, Los Alamos, New Mexico

EE065 **The Synthesis of Quantum Dots for Application in Solar Cell Efficiency**
McKenna Pearl Duzac, 17, Oak Grove High School, San Jose, California

EM025 **Plastic Recycling: Sink or Swim?**
Nicholas Carl Treuil, 16, Clear Brook High School, Friendswood, Texas

EN017 **Design and Evaluation of a Cell-Phone Compatible Wireless Electrocardiograph**
Catherine Wong, 16, Morristown High School, Morristown, New Jersey

ET009 **On Thin Ice: Controlling, Slowing, and Stopping the Motion of a Car Sliding on an Icy Road and Other Slick Surfaces**
Kyle Scott Saleeby, 17, Niceville High School, Niceville, Florida

EV006 **An Experimental Study of the Impact of Target Volatile Organic Compound (VOC) Emissions on Lung Health PLUS a Novel Risk Assessment Model to Predict Their Effect on the Peak Expiratory Flow Rate (PEFR); and the Development of a New VOC Adsorption Filter**
Naomi Chetan Shah, 16, Sunset High School, Portland, Oregon

EV028 **Record Flood Impacts on Biodiversity in Upper Green River, Kentucky**
Aimee Michelle Turner, 17, Ballard High School, Louisville, Kentucky

MA021 **Aerial Navigation: A Mathematical System of Equations Capable of Navigating an Aerial Device without the Use of Satellites**
Gerald Paul Lawlor, 16, Notre Dame High School, Chattanooga, Tennessee

MA037 **Novel Graph Theory Algorithms for Protein Structure Prediction and Design**
Jonah Milton Kallenbach, 17, Germantown Academy, Fort Washington, Pennsylvania

ME025 **Synthetic Nanoparticle-Based Nanozymes for Pancreatic Cancer Therapy**
David D. Liu, 16, Eastside High School, Gainesville, Florida

ME034 **4-1BBL: A Potent Adjuvant for Therapeutic Cancer Vaccines**
Jenci Lyn Hawthorne, 16, duPont Manual High School, Louisville, Kentucky

ME091 **Exploring Sequence Similarity between Immune-Regulating Genes, Viruses, and miRNAs: Using miR21 as a Model**
Mary Olivia Richardson, 17, duPont Manual High School, Louisville, Kentucky

ME093 **Cellular Pathways of Oxidation and Insulin Production in Type I Diabetic Beta Cells: What Mechanisms Does Rb2 Act through to Enhance Beta Cell Function?**
Wyatt Brody Horan, 17, The Wheeler School, Providence, Rhode Island

Florida Tech is offering tuition scholarships of $60,000 each, to be distributed over four years.

Endocrine Society

The Endocrine Society is the world's oldest, largest, and most active organization devoted to research on hormones and the clinical practice of endocrinology. The Society works to foster a greater understanding of endocrinology amongst the general public and practitioners of complementary medical disciplines and to promote the interests of all endocrinologists at the national scientific research and health policy levels of government.

First Award of $1,000

ME038 **Exogenous Retinoic Acid Supplements as a Novel Approach to Reduce the Negative Phenotypes of Fetal Alcohol Syndrome Using a Zebrafish Model of Development**
Ayana Jamal, 17, Niles North High School, Skokie, Illinois

Second Award of $500

ME002 **QTL Analysis of a Diabetic Mouse Backcross**
Lauren Nicole Reagin, 18, Rockdale Magnet School for Science and Technology, Conyers, Georgia

ME032 **Do Novel Protein Kinase C Isoforms Mediate Lipid-Induced Beta Cell Dysfunction?**
Sachith Gullapalli, 15, Roanoke Valley Governor's School, Roanoke, Virginia

Certificate of Honorable Mention

BI018 **Life Is Short When Sweet: Dietary Fructose Decreases Lifespan and Fertility**
Alexandra Andreevna Sourakov, 16, Eastside High School, Gainesville, Florida

BI024 **A Comparison of the Endocrine Disrupting Potential Exhibited by Environmentally Relevant Doses of Bisphenol A and Bisphenol S *in vitro* in T-47D Breast Cancer Cells**
Sarina Mikayla Farb, 18, Ahimsa Homeschool, Lecompton, Kansas

CB020 **Mitigating the Effects of the Morphine Signaling System: A Novel Treatment for Diabetes**
Cheng Charles Yu, 18, The Wheatley School, Old Westbury, New York

CB301 **Discovery of a Mechanism for the Glucocorticoid Chemotherapy Resistance in Cancer**
Benjamin Tyler Cobb, 18, Chantilly High School, Chantilly, Virginia
John Conor Moran, 18, Chantilly High School, Chantilly, Virginia

All winners will receive a certificate, a book on the endocrine system and a t-shirt.

European Organization for Nuclear Research-CERN

CERN, the European Organization for Nuclear Research, is one of the world's largest and most respected centers for scientific research. It operates the world's largest accelerator together with the most complex scientific instruments, which are used to study the basic constituents of matter-the fundamental particles and the forces that hold them together. These studies, carried out by some 10,000 scientists from all over the world, are expected to shed light on some of the mysteries of our universe. Twelve Intel ISEF finalists will be selected to travel to CERN to meet with researchers, see the experiments, enjoy Geneva and the beauty of Switzerland and France.

All expense paid trip to tour CERN

CS040 **Improving 3D Virtualization and Object Recognition in Real-Time Using Kinect Sensors**
Akash Krishnan, 17, Oregon Episcopal School, Portland, Oregon

CS049 **Apodora: Markov Chain-Inspired Microsearch**
Nicholas Benjamin Schiefer, 17, Holy Trinity School, Richmond Hill, Ontario, Canada

EE020 **RF Properties of Structured Thin Film Layers on Glass: Realization of Innovative Antennas**
Linn Bieske, 18, Goetheschule Ilmenau, Ilmenau, Thuringia, Germany

EE060 **Real-Time Optical Ego-Motion Estimation through Robust Planar Tracking**
Christopher Stephen Nielsen, 18, Home School, Calgary, Alberta, Canada

MA026 **A Novel Variant of the Newton-Raphson Method, A Quadratic Convergence Criterion, and Computer Graphics**
Mingu Kim, 16, David H. Hickman High School, Columbia, Missouri

PH011 **New Ideas in Physics: The Mass Ratio of Elementary Particles from Torus Geometry**
Viola Mocz, 16, Mililani High School, Mililani, Hawaii

PH018 **A Generalized Holographic Model of Cosmic Accelerated Expansion**
Henry Wanjune Lin, 16, Caddo Parish Magnet High School, Shreveport, Louisiana

PH029 **PT-Symmetric Boundary Conditions in Quantum Mechanics**
Anirudh Dasarathy, 17, Hawken School, Gates Mills, Ohio

PH045 **Shining Like the Sun: A Novel Quantum Mechanical Approach to Property Analysis and Energy Efficiency Algorithm for White-Light LEDs**
Valerie S. Ding, 15, The Catlin Gabel School, Portland, Oregon

PH062 **Unidirectionalization of Particulate Distributions in Isotropic D+D -> He3+n Reactions Utilizing Differential Ion Velocities**
Benjamin Craig Bartlett, 17, Lexington High School, Lexington, South Carolina

PH063 **A Novel Universal Photon and Radioactive Beta Particle Detector: Multifunctionality Enabled by Wavefunction Engineering, Photomodulated Electron Tunneling, and Quantum Confinement of Charge Carrier Motion in Nanowires**
Saumil Bandyopadhyay, 17, Maggie L. Walker Governor's School for Government and International Relations, Richmond, Virginia

PH064 **Using the Temperature Dependence of the Speed of Sound to Detect Volatile Organic Compounds in Air**
Connor Everett Tom, 15, John W. North High School, Riverside, California

This award is made possible by cooperative grants from Intel and CERN, which collaborates with Intel in the framework of CERN openlab. Finalists must be available for travel on June 16/17-22, meet eligibility requirements for travel, and return documentation promptly to be considered. A valid passport is required for travel.

Fondazione Bruno Kessler

The Bruno Kessler Foundation (FBK) is a leading research center located in Trento, Italy. WebValley, started in 2001, is the FBK Summer School program for interdisciplinary scientific research. A team of enthusiastic and motivated high school students and FBK researchers accept a project challenge proposed by a scientist. This year's project will study a new type of interface to big data and on-line spatial data analysis in 2D/3D cell environments. It is planned to extend the use of open source GIS and WebGIS solutions to micro/nano scales. The project shall enable the sharing between scientists of multi-scale studies, the overlay of cell models and real data, and user interaction based on Kinect and Android interfaces. FBKs Board of Directors will award Intel ISEF finalists full fellowships, including travel to Italy, to be part of the WebValley team from June 17- July 7, 2012.

Award to Travel to Trento, Italy to participate in "Web Valley" summer school

CB021 **Human Mutations Associated with Heart and Pancreatic Disease Cause Adipogenesis Defects in Mice and in a Cell Culture Model**
Edgar Ferrer-Lorenzo, 17, East Chapel Hill High School, Chapel Hill, North Carolina

CS052 **Navigation for the Visually Impaired**
Natalie Janet Nash, 17, Vincentian High School, Pittsburgh, Pennsylvania

EE309 **Ocular Computer Interface: Electrooculographic Eye Tracking with 6DOF Head Position Compensation**
David Alexandre Joseph Campeau, 16, Mayo High School, Rochester, Minnesota

EN310 **MyInsulin: Decision Support for Inpatient Physicians Managing Hyperglycemia**
Alexander Eskil Harding, 17, Cleveland High School, Portland, Oregon

Franklin & Marshall College

Franklin & Marshall College is a residential college dedicated to excellence in undergraduate liberal education. Its aims are to inspire in young people of high promise and diverse backgrounds a genuine and enduring love for learning, to teach them to read, write, and think critically, to instill in them the capacity for both independent and collaborative action, and to educate them to explore and understand the natural, social and cultural worlds in which they live. In so doing, the College expects students to see connections, to discover community, and to understand the centrality of service to the human endeavor. In the spirit of their founder, and in keeping with their mission of fostering educated, sustainable communities (whether defined by geography, ethnicity, culture, interest, or need), Franklin & Marshall College will present three awards to

projects that employ community-based or community-engaged research or product development, the results of which will be shared with the involved community and may have an immediate positive impact on that community - particularly on an excluded or marginalized one.

First Award of $3,000

EE310 **Solar Heater for Rural Use for Unheated Homes Off the Grid**
Arne Joi Nipales, 16, Baboquivari High School, Sells, Arizona
Jacquel Rivers, 15, Baboquivari High School, Sells, Arizona

Second Award of $1,000

BE043 **An Innovative Method for the Comprehensive Textual Reading Ability of the Visually Impaired**
Abdullah Abdulfatah Mashat, 17, Ain Jalout Secondary School, Makkah, Saudi Arabia

MA001 **Mathematical Time-Models of Networks in the World**
Heeyoon Kim, 17, Rockdale Magnet School for Science and Technology, Conyers, Georgia

Google

Google recognizes that a good science and math education is vital to creating products and ideas that change the world. As committed supporters of students in the pursuit of science, technology, engineering and math, Google is thrilled to be part of inspiring the next generation to continue discovering, collaborating, innovating and making an impact. Google is offering three major awards to recognize Intel ISEF finalists whose projects have great potential for positive impact.

For the project that addresses a large and seemingly-impossible problem, finding an elegant solution with broad impact; Google Thinking Big Award of $10,000

ME028 **A Novel Paper Sensor for the Detection of Pancreatic Cancer**
Jack Thomas Andraka, 15, North County High School, Glen Burnie, Maryland

For the project that makes outstanding contributions to the field of computer science; Google CS Innovation Award of $10,000

CS049 **Apodora: Markov Chain-Inspired Microsearch**
Nicholas Benjamin Schiefer, 17, Holy Trinity School, Richmond Hill, Ontario, Canada

For the project that applies computer science to further inquiry in a field other than computer science; Google CS Connect Award of $ 10,000

ET005 **Proton Exchange Membrane Fuel Cell Stack Configuration Optimization Using a New Algorithm**
Uttara Chakraborty, 16, Chakraborty Homeschool, Chesterfield, Missouri

IEEE Foundation

Sponsored by the IEEE Foundation, the Presidents' Scholarship is awarded by the IEEE, the world's largest professional association dedicated to advancing technological innovation and excellence for the benefit of humanity. Given for outstanding achievement in the field of engineering, it includes a $10,000 scholarship payable over four years for undergraduate study in engineering or a related field.

The IEEE Foundation Presidents' Scholarship Award of $10,000

CS069 **Human Computer Interface: Using Artificial Intelligence to Help Blind People to See with Their Tongue**
Ionut Alexandru Budisteanu, 18, Grup Scolar Oltchim, Ramnicu Valcea, Valcea, Romania

The winner also receives a plaque, framed certificate and free membership to the IEEE for the duration of the scholarship.

IEEE Computer Society

First Award of $1,000

CS069 **Human Computer Interface: Using Artificial Intelligence to Help Blind People to See with Their Tongue**
Ionut Alexandru Budisteanu, 18, Grup Scolar Oltchim, Ramnicu Valcea, Valcea, Romania

Second Award of $500

CS013 **OpenCL Program that Utilises the Full Potential of Multiple Processors**
Henrik Bruesecke, 19, St. Columba's Comprehensive School, Glenties, Co. Donegal, Ireland

Third Award of $350

CS056 **Evolving Chess Engines**
David L. Pan, 16, Canterbury School, Fort Wayne, Indiana

Team First Award of $500 for each team member

CS302 **Effective Prevention of Memory Error Exploitations through the Use of Memory Address Randomization**
Bailey Liao, 16, Half Hollow Hills High School West, Dix Hills, New York
Azaria Lev Zornberg, 16, Half Hollow Hills High School West, Dix Hills, New York

Team Second Award of $400 for each team member

CS310 **NP System Computer Program for Blind and Visually Impaired People**
Liyanadura Nipun Kavishka Silva, 13, De Mazenod College, Kandana, Western, Sri Lanka
Liyanadura Pipunika Vimanthi Silva, 17, De Mazenod College, Kandana, Western, Sri Lanka

Winners will receive a framed certificate, and a one-year free subscription to the CS magazine of their choice. A winners group photo will also be published in an issue of "Computer" magazine.

International Association of Innovative Science and Technology (IAIST)

International Association of Innovative Science and Technology (IAIST) is a world-wide organization dedicated to promote science and technology among science and engineering societies.

First Award of $3,000

EN301 **A Developed Cleaning System for Circuit Printing Polluted Water**
Yixin Li, 17, Zhengzhou Foreign Lauguage School, Zhengzhou, Henan, China
Haozhi Ma, 18, The No. 7 Middle School of Zhengzhou, Zhengzhou, Henan, China
Yichen Yuan, 17, Zhengzhou Foreign Language School, Zhengzhou, Henan, China

Second Award of $500

BI003 **Smart Conotoxin Detection Kit Based on Novel Single-Chain Fragment Variable Antibody**
Shengxing Yu, 17, Fuzhou No.1 Middle School, Fuzhou, Fujian, China

CS038 **Global Neural Network Cloud Service for Breast Cancer**
Brittany Michelle Wenger, 17, The Out-of-Door Academy, Sarasota, Florida

ME028 **A Novel Paper Sensor for the Detection of Pancreatic Cancer**
Jack Thomas Andraka, 15, North County High School, Glen Burnie, Maryland

ME045 **Beta-catenin and E-cadherin: Novel Protein Biomarkers for Improved Diagnosis of Precancerous Lesions of the Cervix**
Ruchi Jayesh Shah, 17, Sachem High School North, Lake Ronkonkoma, New York

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. INCOSE will award the best interdisciplinary project that can produce technologically appropriate solutions that meet societal needs.

First Award of $1,500 and up to $1,500 in travel expense to attend the INCOSE International Symposium in Philadelphia 2013

EE042 **Direction Detection: A Novel Device for Detecting the Approach of Emergency Vehicles**
Kelles Diane Gordge, 17, Great Mills High School, Great Mills, Maryland

Second Award of $500

EN011 **The Use of an Inertial Electrostatic Confinement Fusion Reactor in Medical Treatment and Imaging**
William Wellborn Jack, 17, Hudson High School, Hudson, Ohio

Certificate of Honorable Mention

CS018 **Digital Mat: An Adaptive User Interface with Real-Time Neurological Feedback to Enhance Attention among ADHD Individuals, Phase II**
Noor Rejah Muhyi, 17, Las Cruces High School, Las Cruces, New Mexico

EE013 **Fine Motor Skills Using EEG Technology and Biomechanical Prosthesis**
Easton James LaChappelle, 16, Mancos High School, Mancos, Colorado

EE017 **The Silk Spider Returns: Design of a Control System for Robotic Leg Motion**
David Christopher Lofts, 16, Covenant Christian Academy, Huntsville, Alabama

EE054 **Subterranean Autonomous Search and Rescue Robot**
Ashley Micheala Painter, 18, Home School, Verona, Missouri

EE060 **Real-Time Optical Ego-Motion Estimation through Robust Planar Tracking**
Christopher Stephen Nielsen, 18, Home School, Calgary, Alberta, Canada

EE064 **The Z-Engine: My Internal Combustion Rotary Engine with Only Four Moving Parts**
David Andrew Zarrin, 17, Saratoga High School, Saratoga, California

EE066 **High-Power, Frictionless Gear Reduction Using Magnetic Repulsion**
Jesse Samuel Martin, 18, Elizabethtown Area High School, Elizabethtown, Pennsylvania

EM016 **Water In, Water Out: Using a Water Balance Model to Estimate Net Consumptive Availability**
Johanna Lynne Phillips, 18, Monte Vista Senior High School, Monte Vista, Colorado

EN002 **Designing and Creating a Modular Concussion Detection and Alert System**
Ashton Rhys Wackym, 18, University School of Milwaukee, Milwaukee, Wisconsin

EN005 **Inflatable Structures for Earth and Space Applications**
Jodie Leigh Tinker, 15, Covenant Christian Academy, Huntsville, Alabama

K. Soumyanath Memorial Award

The K. Soumyanath Memorial Award will be awarded for the best project in Computer Engineering. The prize honors the memory of Krishnamurthy Soumyanath (1957-2010), who held the title of Intel Fellow and Chief Architect, Integrated Platform Research at Intel Labs, USA at the time of his passing. In this role, he was responsible for leading research and development activities at Intel, on circuits and architectures for next-generation transceiver devices. His team's efforts were focused on increasing the abilities of digital processing in wired and wireless communications systems. K. Soumyanath had worked at Intel since 1996, publishing over 50 papers and having more than 30 patents issued. Born in India, he received Bachelors and Masters degrees in Electrical Engineering from prestigious Indian Universities, and a PhD in Computer Science from University of Nebraska, Lincoln. He also held an academic appointment at Tufts University, Boston, prior to beginning his distinguished career at Intel. K. Soumyanath's interests extended beyond technology to art, music, world travel, sports and Tamil literature. He was a loving husband, father, and family man, and was an energetic and adventurous individual. He loved life and people, especially the young. He inspired and encouraged those around him to live life to the fullest, and to work hard to achieve their potential. This prize, presented by his family, honors K. Soumyanath's achievements in Computer Engineering by recognizing young scientists who excel in this field. It aims to inspire them to strive for professional and personal fulfillment in their lives. An award of $3,000 will be made to the winning project, and $1,000 will be awarded to their school.

1st Award of $3,000

EE060 **Real-Time Optical Ego-Motion Estimation through Robust Planar Tracking**
Christopher Stephen Nielsen, 18, Home School, Calgary, Alberta, Canada

K. T. Li Foundation Special Award

Trip to Taiwan to attend the Taiwan International Science Fair in February. This award includes a round trip ticket, most meals, accommodations and activity expenses for the winners.

Trip to attend the Taiwan International Science Fair

PH022 **Building Bridges with Water: The Floating Waterbridge**
Carolin Charlotte Lachner, 18, Hans-Thoma-Gymnasium, Loerrach, Baden-Wurttemberg, Germany

PH040 **Carbon Nanostructures via Dry Ice Exposed to High Temperature**
Kevin Murray Frink, 17, Isaac Bear Early College High School, Wilmington, North Carolina

Valid passport required for travel.

King Abdul-Aziz & his Companions Foundation for Giftedness and Creativity

King Adbul-Aziz & His Companions Foundation for Giftedness and Creativity "MAWHIBA" is a national cultural foundation to help develop a comprehensive environment of creativity in Saudi Arabia to enable gifted citizens from all areas to properly use their talents for prosperity of their country. MAWHIBA is awarding projects which contribute to innovations in Renewable Energy technology.

First Award of $3,000

EE055 **Cooling without Electricity: Engineering a New Refrigerator**
Anish R. Athalye, 17, Massachusetts Academy of Math and Science at WPI, Worcester, Massachusetts

Second Award of $2,500

EE038 **Auto-Tracking Solar Panel**
Brayton Davis Miles, 15, Niceville High School, Niceville, Florida

Third Award of $2,000

EE034 **Design and Creation of Small Wind-Power Engines for Low Wind Speeds Based on Magnus Effect**
Assiya Kussainova, 16, Specialized School for Gifted Children Daryn, Karagandy, Kazakhstan

Fourth Award of $1,500

ET024 **Improving Backyard Wind Turbines with Blade Additions**
Daniel James Dorminy, 17, Sola Fide Home School, McDonough, Georgia

Fifth Award of $1,000

ET036 **Optimization of Nanoscale Morphology of Electron Donor-Acceptor Channels in Organic Photovoltaic Cells**
Eric Mario Metodiev, 17, West Islip High School, West Islip, New York

LANXESS Corporation

LANXESS is a leader in specialty chemicals and operates in all important global markets. Its core business - the development, manufacture and sale of plastics, rubber, specialty chemicals and intermediates is at the very heart of the chemical industry. In all its activities around the world, LANXESS subscribes to the principle of sustainable development. Sustainability is the basis of every action at LANXESS, and we consider environmental compatibility and social responsibility to be of equal importance.

First Award of $3,500

CH034 **Development of a Green Solvent and Catalyst System for Suzuki Coupling Reactions**
Claudia Huang, 15, Carmel High School, Carmel, Indiana

Second Award of $1,000

CH050 **Nano Zero Valent Iron: Solution for Coloured Wastewater Remediation**
Gargi Pare, 15, St. Mary's Convent Senior Secondary School, Ujjain, Madhya Pradesh, India

Third Award of $500

CH016 **The Electrochemical Effects of Saccharides on the Voltage Output of a Microbial Fuel Cell Using Penicillium chrysogenum**
Jack Erdozain, Jr., 17, Westminster Christian School, Palmetto Bay, Florida

London International Youth Science Forum

The London International Youth Science Forum is a two-week program annually for 300 participants from over 50 countries in the world. Participants live together as an international community to exchange their ideas and experiences of the world to fulfill the aim of the Science Forum: to give a greater insight into science and its application for the benefit of all mankind. One finalist will be selected to participate in the program as a representative of Intel ISEF.

Participation in the two week London International Youth Science Forum August 16 - August 30, 2012

ME065 **Extracellular Histones Enhance LPS-Induced Cytokine Production**
Peter Zhou, 17, Jericho High School, Jericho, New York

Trip winner must be available to travel and attend forum from August 16-30, 2012. Date of birth must be between August 16, 1990 and August 30, 1995. Students must have a good understanding of written and spoken English and students must be studying science.

Monsanto Company

Monsanto Award for Innovation in Plant Science

First Award of $2,500

PS046 **Impact of Allelic Diversity of Wx and ALK Genes on the Nutritional Characteristics of Rice and the Evaluation of Rice Starch Biosynthesis in the Hybrid Y58S Male Sterile Breeding Line**
Pavane Lakshmi Gorrepati, 18, Rivermont Collegiate, Bettendorf, Iowa

Second Award of $1,500

PS031 **Mendel's Lentils: Identification and Analysis of the Zero-Tannin Gene in Lentil**
Rui Song, 16, Walter Murray Collegiate Institute, Saskatoon, Saskatchewan, Canada

Third Award of $1,000

PS026 **DNA-Binding Protein in Xcv Bacteria Manipulates Plant bHLH Gene to Promote Pathogen Growth during Infection: A Genetic Study**
Moniyka Sachar, 16, Irvington High School, Fremont, California

The First and Second place winners of the Monsanto Award for Innovation in Plant Science will be flown to visit and present at Monsanto in St. Louis.

Mu Alpha Theta, National High School and Two-Year College Mathematics Honor Society

Formed over 50 years ago to develop strong scholarship in Mathematics and promote the understanding and enjoyment of the subject. The Mu Alpha Theta Award is given to the most challenging, thorough, and creative investigation of a problem involving mathematics accessible to high school students. Components of the investigation may include, but are not limited to, mathematical proof, mathematical modeling, statistical analysis, visualization, simulation, and approximation.

First Award $2,000

MA312 **Optimal Allocation of Global Constrained Resources Using the Hyperbolic Voronoi Diagram**
Caroline Jacquline Shouraboura, 15, Forest Ridge School of the Sacred Heart, Bellevue, Washington
Shanthi Shanmugam, 17, Forest Ridge School of the Sacred Heart, Bellevue, Washington

Second Award of $1,250

MA011 **Small Geometric Progressions Modulo N for Deterministic Polynomial Selection**
Aishwarya A. Vardhana, 17, Jesuit High School, Portland, Oregon

MA012 **Graph Theory and Locality Sensitive Hashing for DICOM Image Analysis**
Markus Robert Woltjer, 17, Wilsonville High School, Wilsonville, Oregon

Winners will receive a certificate and information about joining Mu Alpha Theta.

National Aeronautics and Space Administration

The National Aeronautics and Space Administration (NASA) is the United States government agency responsible for the nation's civilian space program and for aeronautics and aerospace research. Founded in 1958 by President Dwight D. Eisenhower, NASA's mission is to pioneer the future in space exploration, scientific discovery and aeronautics research, answering basic questions like: What's out there in space? How do we get there? What will we find? What can we learn there that will make life better here on Earth? NASA's notable achievements since its founding include developing leading edge flight technology, putting the first man on the moon, putting rovers on Mars, exploring deep space through the eyes of Hubble Space Telescope, launching a fleet of weather and communications satellites, flying the first reusable Space Shuttle to provide regular access to space, providing vital scientific climate research, and assembling an orbiting laboratory of the International Space Station. NASA's vision is to continue to reach for new heights and reveal the unknown so that what we do and learn will benefit all humankind, and they are excited to honor projects that have those same goals.

Grand award of $5,000

PH026 **Characterizing the Effects of Asteroid Belt Perturbations on the Orbits of the Inner Planets**
Nikita Michael Bogdanov, 18, Albuquerque Academy, Albuquerque, New Mexico

Second Award of $2,000

CH039 **Determining the Quantum Limit of Palladium and Gold Nanometallic Supercatalyst by Kinetic Method**
Mai-Anh Nguyen Vu, 16, McNeil High School, Austin, Texas

CS007 **Simulating Orbital Dynamics & Planetary Collisions in a Video Game**
Erik Keoni Wessel, 18, Hale Kula Home School, Ewa Beach, Hawaii

PH051 **Neuronal Nonlinear Dynamics: From an Optical Illusion to Parkinson's Disease**
Sara Kornfeld Simpson, 15, Patrick Henry High School, San Diego, California

Third Award of $1,000

AS050 **The Global Invasion and Settlement of the Japanese Oyster, Crassostrea gigas: Assessing the Oyster as a Bio-engineer-and Its Potentially Harmful Influence**
Kei Landin, 19, Kitas Senior High School of Natural Sciences, Gothenburg, Vastra Gotalands lan, Sweden

BE005 **A Psychophysiological Analysis of Sonification Comprehension: A Fourth Year Study**
Neel S. Patel, 17, Oviedo High School, Oviedo, Florida

CH043 **Fabrication and Manipulation of One-Dimensional Photonic Crystals**
Michael Leonard Janner, 16, Redlands East Valley High School, Redlands, California

EE022 **Selfmade Computer Controlled Fiber Winding Machine**
Philipp Peter, 18, Schulzentrum des Sekundarbereichs II Tech. Bildungszentrum, Bremen, Germany

EN024 **Engineering a Novel Hydrogel Matrix for Bone Cell Regeneration**
Sneha Subramaniam, 18, Westborough High School, Westborough, Massachusetts

ET058 **Wind: A New Spin on Things**
Caleb Kyle Meyer, 17, Hope-Page Public School, Hope, North Dakota

EV006 **An Experimental Study of the Impact of Target Volatile Organic Compound (VOC) Emissions on Lung Health PLUS a Novel Risk Assessment Model to Predict Their Effect on the Peak Expiratory Flow Rate (PEFR); and the Development of a New VOC Adsorption Filter**
Naomi Chetan Shah, 16, Sunset High School, Portland, Oregon

PH018 **A Generalized Holographic Model of Cosmic Accelerated Expansion**
Henry Wanjune Lin, 16, Caddo Parish Magnet High School, Shreveport, Louisiana

PH022 **Building Bridges with Water: The Floating Waterbridge**
Carolin Charlotte Lachner, 18, Hans-Thoma-Gymnasium, Loerrach, Baden-Wurttemberg, Germany

PH040 **Carbon Nanostructures via Dry Ice Exposed to High Temperature**
Kevin Murray Frink, 17, Isaac Bear Early College High School, Wilmington, North Carolina

National Anti-Vivisection Society

For the projects that best promote scientific advancement through methods that do not harm animals, that work to replace live animals with non-animal methodologies, or for animal-based research that benefits animals using non-invasive techniques, or in an observational setting.

First Award of $5,000

ME025 **Synthetic Nanoparticle-Based Nanozymes for Pancreatic Cancer Therapy**
David D. Liu, 16, Eastside High School, Gainesville, Florida

Second Award of $2,000

CB001 **Towards the Cure: Abnormal Protein Interactions between Amyloid Beta and Tau as a Therapeutic Target for Alzheimer's Disease**
Raghav Tripathi, 16, Westview High School, Portland, Oregon

Third Award of $1,000

EN022 **A New Frontier in Biomedical Engineering: Ex-situ Bioengineering of Hepato- & Neuro- Celloidosomes**
Samantha Marie Marquez, 16, Maggie L. Walker Governor's School for International Studies, Richmond, Virginia

For more information on the specific guidelines for this award, visit the National Anti-Vivisection Society's website.

National Institute on Drug Abuse, National Institutes of Health & the Friends of NIDA

As a component of the National Institutes of Health, NIDA supports most of the world's research on drug abuse and addiction. NIDA will identify Intel ISEF projects that focus on better understanding of the mechanisms of drug abuse and addiction. Awards are sponsored by the Friends of NIDA, a group that supports NIDA's mission, and educates health professionals about advances related to drug abuse.

First Award of $2,500

BE023 **Optogenetic Interrogation of Prefrontal Cortex Dopamine D1 Receptor-Containing Neurons as a Technique to Restore Timing: A Novel Approach to Treat Prefrontal Disorders**
John Edward Solder, 18, Staples High School, Westport, Connecticut

Second Award $1,500

BE021 **OMG: Look Who Joined Facebook! The Relationship between Parenting and Adolescent Risk Behaviors**
Benjamin Jake Kornick, 17, Roslyn High School, Roslyn Heights, New York

Third Award of $1,000

BE047 **A Big Fat Deal, Phase III: Attributions of Body Talk, Risk Assessments of Steroid/Dietary Supplement Use, Perceptions of Media Images, and Self-Esteem**
L. Elisabeth Burton, 16, Rio Rancho High School, Rio Rancho, New Mexico

The Addiction Science Award is sponsored by the National Institute on Drug Abuse, National Institutes of Health and Friends of NIDA.

National Oceanic and Atmospheric Administration - NOAA

"The Pulse of the Planet" award will be given to the student whose project best relates to the National Oceanic and Atmospheric Administration's (NOAA) mission goals. This student will receive a fully paid internship at a NOAA research lab or vessel. The winner also receives a plaque and a certificate signed by the Under Secretary of Commerce for Oceans and Atmosphere.

A fully paid summer internship at a NOAA research lab, plus a $500 cash award

EE057 **Navibot: Phase V O.R.C.A.**
Matthew Joseph Hummel, 18, Florence High School, Florence, South Dakota

Second Award of $500

EV010 **Mycoremediation: Using Pleurotus ostreatus Mycelium to Remove Petroleum Hydrocarbons from Freshwater and Saltwater Environments**
Devon M. Enke, 16, La Veta Junior-Senior High School, La Veta, Colorado

The Winner also receives an NOAA ALL Hazards Weather Radio.

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

Tuition Scholarship Award in the amount of $8,000

AS024 **Jumping Galls: A Novel Mechanism for Motility**
Saige Jessica Manier, 16, Harbor High School, Santa Cruz, California

BE005 **A Psychophysiological Analysis of Sonification Comprehension: A Fourth Year Study**
Neel S. Patel, 17, Oviedo High School, Oviedo, Florida

BI027 **Novel Strategies for the PET Imaging of Colorectal Cancer Using the A33 Antibody**
Priya Mohindra, 17, Yorktown High School, Yorktown Heights, New York

CB045 **The Insufficiency of Biomarkers in the Identification of Breast Cancer Stem Cells: Hybrid Spheroids as an Alternative Assay**
Talal Syed, 17, The Bronx High School of Science, Bronx, New York

CH035 **Predicting Bandgap of Semiconductors to Synthesize the Most Efficient Solar Cell**
Jennifer Lam, 18, Stuyvesant High School, New York, New York

CS011 **High-Speed Cryptography: FPGAs versus CPUs**
William Yager, 16, Keystone School, San Antonio, Texas

EA004 **Characterization, Detection, and Toxicity of the Oil Dispersant Corexit 9500**
Mariah Sturdivant Coughlin, 18, Fort Myers High School, Fort Myers, Florida

EE064 **The Z-Engine: My Internal Combustion Rotary Engine with Only Four Moving Parts**
David Andrew Zarrin, 17, Saratoga High School, Saratoga, California

EM046 **Modeling and Environmental Analysis of Hydraulic Fracturing in Upstate New York**
Kunal Ashok Sangani, 17, Fayetteville-Manlius High School, Manlius, New York

EN011 **The Use of an Inertial Electrostatic Confinement Fusion Reactor in Medical Treatment and Imaging**
William Wellborn Jack, 17, Hudson High School, Hudson, Ohio

ET045 **Beyond the Nanostructure in Solar Cells**
Shyamal Buch, 16, Vista del Lago High School, Folsom, California

EV026 **Enhanced Adsorption of Arsenic on Aquifer Solids and Soil, Phase II: Oxidative Treatment and Feasibility Assessment**
Jenna Reed Huling, 18, Ada High School, Ada, Oklahoma

MA033 **A Unitary Group Relaxation of the Traveling Salesman Problem and Its Applications**
Anirudh Prabhu, 17, West Lafayette Junior/Senior High School, West Lafayette, Indiana

ME045 **Beta-catenin and E-cadherin: Novel Protein Biomarkers for Improved Diagnosis of Precancerous Lesions of the Cervix**
Ruchi Jayesh Shah, 17, Sachem High School North, Lake Ronkonkoma, New York

MI041 **Creation of Alginate Microparticles as a Novel Drug Delivery Vehicle**
Melissa Rachel Fagan, 17, San Diego Jewish Academy, San Diego, California

PH037 **The Development of Low Voltage, Solid-State Plasma Focus Devices for Portable Radiation Sources**
Adam Joseph Bowman, 16, Montgomery Bell Academy, Nashville, Tennessee

PS001 **The Effects of Trifolitoxin on the Elimination of Citrus Greening**
Alex Keeler, 17, South Sumter High School, Bushnell, Florida

Tuition Scholarship Award of $4,000 for original research in an important Naval-relevant scientific area and a trip to attend the London International Youth Forum

ET049 **Effect of Chemical Induction on the Direct Conversion of Cellulose to Aviation Biofuels by Fungi Gliocladium Species**
Sathvik Ramanan, 15, Hanford High School, Richland, Washington

ME088 **Utility of the Spatial Peaks QRS-T Angle in Distinguishing Left Ventricular Hypertrophy from Athletic Heart Syndrome**
Kevin K. Lee, 15, University High School, Irvine, California

PH034 **Inferring Shape and/or Attitude from Non-resolved Photometric Measurements of Geosynchronous Satellites**
Travis Crockett, 18, V. Sue Cleveland High School, Rio Rancho, New Mexico

Team Tuition Scholarship Award in the amount of $4,000 to be equally divided among the team members and a trip to attend the London International Youth Forum

AS308 **Investigating the Decline of the Juvenile Anguilla rostrata Populations in the Hudson River**
Pamela Hope Brigleb, 16, Ossining High School, Ossining, New York
Amanda Harris Bernstein, 16, Ossining High School, Ossining, New York

Scholarships are payable at $2,000 a year for four years. Recipients also receive a certificate signed by the Chief of Naval Research and a U.S. Navy memento. Team award winners receive $500 a year for four years.

Oregon Institute of Technology

Oregon Institute of Technology (OIT), Oregon's polytechnic university and top-ten baccalaureate university in the western U.S., provides degree programs and educational opportunities in the applied sciences and technologies, especially in engineering and allied-health fields. OIT and the Oregon Tech Foundation (OTF) will award a $5,000 scholarship for tuition at OIT to the most meritorious project in the research area of interest and expertise at OIT.

Award scholarship of $5,000

BE313 **The Relationship between Sleep Hygiene and Attention Deficit Disorder**
Anne Kathryn Gilbert, 17, Wilsonville High School, Wilsonville, Oregon

MA012 **Graph Theory and Locality Sensitive Hashing for DICOM Image Analysis**
Markus Robert Woltjer, 17, Wilsonville High School, Wilsonville, Oregon

Patent and Trademark Office Society

Promotes the U.S. Patent and Trademark system's growth and well-being, and fosters a true appreciation of these systems, recalls our rich heritage of innovation and commerce, and cultivates the highest standards of professional ethics among patent practitioners. The PTO extends this mission to the scientists and engineers of tomorrow. These awards encourage young inventors to develop new and useful products, and to pursue careers in science and technology.

Grand Award of $500, an American flag and a framed copy of the first patent granted in the United States of America

EE064 **The Z-Engine: My Internal Combustion Rotary Engine with Only Four Moving Parts**
David Andrew Zarrin, 17, Saratoga High School, Saratoga, California

First Award of $250

BI037 **Use of Titanium Dioxide Nanoparticles as a Novel, Inexpensive Alternative to Current Therapies for Leishmania Infection**
Brian Patrick Lei, 17, Arlington High School, LaGrangeville, New York

CB021 **Human Mutations Associated with Heart and Pancreatic Disease Cause Adipogenesis Defects in Mice and in a Cell Culture Model**
Edgar Ferrer-Lorenzo, 17, East Chapel Hill High School, Chapel Hill, North Carolina

CH032 **Computer-Aided Drug Discovery: Structure-Based Design and Evaluation of Small Molecule Botulinum Neurotoxin Inhibitors**
Sarah Rebecca Chapin, 17, Herricks High School, New Hyde Park, New York

CS033 **Classification-Based Music Recognition Using Learned Feature Representations**
Hyunjoon Song, 17, Novi Senior High School, Novi, Michigan

EN021 **The Fabrication and Characterization of a High Permeability Iron- Nickel Thin Film Alloy for Giant Magneto Impedance Applications**
Harsha Sudarsan Uppili, 15, Oregon Episcopal School, Portland, Oregon

ET026 **Polyvinylidene Fluoride (PVDF) Piezoelectric Generator: A Novel Approach to Harvesting Vibrations from Human Respiration to Power Biological Implant Devices**
Bridget Mary Oei, 16, East Catholic High School, Manchester, Connecticut

ME028 **A Novel Paper Sensor for the Detection of Pancreatic Cancer**
Jack Thomas Andraka, 15, North County High School, Glen Burnie, Maryland

MI032 **Does Epstein-Barr Virus Play a Role in the Epidemic of Human Papilloma Virus Associated Head and Neck Cancers?**
Sean Jeffrey Nathan, 17, Caddo Parish Magnet High School, Shreveport, Louisiana

PH031 **The Role of Reynolds Number in Liquid-Liquid Drop Experiments**
Alison Nicole Logia, 17, Sequoia High School, Redwood City, California

Second Award of $150

BI035 **Stabilizing Phosphotriesterase Using PyRosetta for Neurotoxin Degradation**
Michelle Zhang, 18, Stuyvesant High School, New York, New York

CB029 **Novel Recombinant Pioneer Oral Bacteria as an HIV Vaccine Vector**
Emily C. Xie, 17, Boston Latin School, Boston, Massachusetts

CH041 **A Novel Approach to Treat Dry Eyes Exacerbated by Contact Lens Wear**
Sravya Vishnubhatla, 17, duPont Magnet High School, Louisville, Kentucky

CS002 **Author Confirmation through Text Mining and Machine Learning, Year Two**
Daniel A. Hammack, 17, Oviedo High School, Oviedo, Florida

EE050 **Design of a Prototype Braille Printing System that Allows Re-use of a Template Sheet and Development of a Mobile Braille Keyboard with Internal Memory**
Jose Miguel Gonzalez-Arias, 18, Colegio Tecnico Don Bosco, San Jose, Costa Rica

EN047 **Protection of Wooden Materials against UV Radiation Using Environmentally Friendly Sesame and Jojoba Oils**
Yunus Ibrahim Alayli, 17, Private Fatih High School, Istanbul, Marmara, Turkey

ET039 **Reducing Risks from the Left-Turning Tendency by Computing and Measuring P-Factor Torque, and by Flight Control Testing to Invent the Auto-Compensator**
Sehyun Hwang, 18, Posung High School, Seoul, South Korea

ME092 **Why Organic? Organic vs. Non Organic Fruit's Effect upon *Drosophila melanogaster* Flies Reproduction with Implications on Human Health**
Arwa Akram, 18, Rutherford High School, Panama City, Florida

MI008 **The Effect of UV-C Light on *E. coli***
Emily Lynn Schnepp, 15, Gresham High School, Gresham, Oregon

PH064 **Using the Temperature Dependence of the Speed of Sound to Detect Volatile Organic Compounds in Air**
Connor Everett Tom, 15, John W. North High School, Riverside, California

ProConn Power, Inc.

Founded in 1987, ProConn Power, Inc. provides engineering services to the nation's electric utility and renewable energy companies. ProConn Power, Inc. is presenting an award for the project deemed to make the most significant contribution to sustainable electrical energy.

Award of $1,500

ET030 **The Effect of Electric Fields on Solar Power: Exploring a New Mechanism for Solar Cells**
Kinga Janina Malkinska, 16, Benjamin Franklin High School, New Orleans, Louisiana

Psi Chi, The International Honor Society in Psychology

Psi Chi was founded in 1929, for the purposes of encouraging, stimulating, and maintaining excellence in scholarship and advancing the science of psychology. Membership is open to graduate and undergraduate students who are making the study of psychology one of their major interests, and who meet the minimum qualifications.

First Award of $1,000

BE014 **The Effect of Coffee Extract & Caffeine on the Locomotory Rate and Basal Slowing Response of a LRRK2 Transgenic *Caenorhabditis elegans* (G2019S Mutation) Model of Parkinson's Disease**
Megan Smith, 17, Shawnee Mission West High School, Overland Park, Kansas

Second Award of $350

BE015 **Compilation of Social Media Political Conversations, Linguistic Twitter Profile Analysis, and Media Bias to Accurately Reflect Regional Political Climates**
Shawn David Meacham, 18, West Salem High School, Salem, Oregon

Third Award of $150

BE046 **Characterizing the Behavior and Genetics of Headplugging in *C. elegans***
Mimi Yen, 17, Stuyvesant High School, New York, New York

All winners will receive a Psi Chi Certificate of Recognition.

Ricoh Americas Corporation

Ricoh Americas Corporation is a leading provider of advanced office technology and innovative document imaging products, services and software. Ricoh's fully integrated hardware and customizable services and software help businesses share information efficiently and effectively by enabling customers to control the input, management and output of documents. Ricoh has a long standing environmental mission and commitment to sustainability, bringing corporate, social and environmental responsibilities into balance. This year, for the 7th consecutive year, Ricoh was named to the Global 100 Most Sustainable Corporations in the World! The Ricoh Sustainable Development Award is awarded to two entries, selected from among all award categories, whose principles and technical innovations offer the greatest potential for increasing our ability to grow environmentally friendly and socially responsible businesses.

Ricoh Sustainable Development Award of $12,500

EE028 **Imbricated Compression Solar-Air Stirling Engine**
Cory Nicholson Owan, 17, Catalina Foothills High School, Tucson, Arizona

EE073 **Far-Field Wireless Power Transmission: A Novel Energy Efficient Method for Producing Spatially Dynamic Coherent Radiation in Real-Time**
Austin Kingsley Russell, 17, Saint Margaret's Episcopal School, San Juan Capistrano, California

Sigma Xi, The Scientific Research 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.

First Award of $2,500

MA312 **Optimal Allocation of Global Constrained Resources Using the Hyperbolic Voronoi Diagram**
Caroline Jacquline Shouraboura, 15, Forest Ridge School of the Sacred Heart, Bellevue, Washington
Shanthi Shanmugam, 17, Forest Ridge School of the Sacred Heart, Bellevue, Washington

Second Award of $1,500

CH301 **The Development of Novel Sutures that Store and Deliver Nitric Oxide for Wound Healing**
Kevin Anh Nguyen, 17, Plano East Senior High School, Plano, Texas
Punya Chittajallu, 16, Plano East Senior High School, Plano, Texas

Third Award of $1,000

ME303 **Novel Bioactivities and Mechanistic Insights of the Medicinal Fungus *Antrodia cinnamomea* against Human Breast Cancer Cells**
Tzu-Hsuan Su, 17, Taipei Municipal Chien-Kuo High School, Taipei City, Chinese Taipei
Kuang-Ming Shang, 17, Taipei Municipal Chien-Kuo High School, Taipei City, Chinese Taipei

Society for Experimental Mechanics, Inc.

The Society for Experimental Mechanics is an international network of engineers and scientists dedicated to the development and application of experimental methods to better understand the behavior of materials, mechanical structures and systems. Founded in 1943, the Society provides various opportunities for education and the exchange of knowledge in all areas of experimental mechanics. We are pleased to offer awards for projects which demonstrate excellence in the experimental study of materials and mechanical structures.

First Award of $2,500

EN015 **An Organic Thin Film Transistor and Elastic Organic Solar Cell Based Electronic Skin for Biochemical and Tactile Sensing**
Ryota Ishizuka, 18, Greenwich High School, Greenwich, Connecticut

Second Award of $1,500

EN013 **Get Your Head in the Game Again with ALARMS!**
Sara Bea Moore, 15, Great Mills High School, Great Mills, Maryland

Third Award of $1000

EE080 **Intelligent Self-Sensing Composite Structures**
Abhishek C. Rajadas, 16, McClintock High School, Tempe, Arizona

Society for Freshwater Science

An international scientific organization whose purpose is to promote better understanding of the biotic communities of lake and stream bottoms and their role in aquatic ecosystems. The Society for Freshwater Science is awarding projects which contribute to scientific research in these habitats.

First Award of $600

EV020 **Macroinvertebrate and Nutrient Response to Stream Water Quality after a Wildfire in Medano Creek, Great Sand Dunes National Park & Preserve**
Tayler Ann Rocha, 16, Monte Vista High School, Monte Vista, Colorado

Second Award of $350

EV002 **The Use of Fluorescein and Rhodamine Dyes to Look at Photodegradation in Streams and Photodegradation Rates of Caffeine, a Potential Wastewater Marker**
Bethany Judith Rosemore, 18, Cloquet Senior High School, Cloquet, Minnesota

Third Award of $250

AS308 **Investigating the Decline of the Juvenile Anguilla rostrata Populations in the Hudson River**
Pamela Hope Brigleb, 16, Ossining High School, Ossining, New York
Amanda Harris Bernstein, 16, Ossining High School, Ossining, New York

All winners receive a one-year membership in the Society and a subscription to the "Journal of the North American Benthological Society."

Society of Experimental Test Pilots

Founded in 1955, the Society of Experimental Test Pilots is an international organization of flight test pilots and astronauts promoting air safety and education in the design and flight test of aerospace vehicles. SETP's membership extends across 30 countries worldwide, comprised of over 2,400 active and retired test pilots representing all types of aerospace vehicles, military and civilian.

First Award of $1,000

ET037 **The Revolution of Supersonic Technology: Implementing Dihedral Winglets for Performance Optimization in Supersonic Flow**
Sumukh S. Bharadwaj, 16, Capital High School, Olympia, Washington

Second Award of $500

EE053 **The Effects of Dimpling on the Lift, Drag, and Reynolds Number of Airfoils due to Early Transition of the Boundary Layer from Laminar to Turbulent**
Bayley Meichner, 18, Somers High School, Lincolndale, New York

Third Award of $300

ET053 **A Study of the Practical Application of Non-equilibrium Plasma in Gas Turbine Engines to Enhance Combustion**
Felipe Gomez del Campo, 18, Cypress Bay High School, Weston, Florida

Certificate of Honorable Mention

ET024 **Improving Backyard Wind Turbines with Blade Additions**
Daniel James Dorminy, 17, Sola Fide Home School, McDonough, Georgia

ET039 **Reducing Risks from the Left-Turning Tendency by Computing and Measuring P-Factor Torque, and by Flight Control Testing to Invent the Auto-Compensator**
Sehyun Hwang, 18, Posung High School, Seoul, South Korea

ET058 **Wind: A New Spin on Things**
Caleb Kyle Meyer, 17, Hope-Page Public School, Hope, North Dakota

All honorees receive a certificate of recognition, book and guest invitation to the annual Symposium.

Society of Exploration Geophysicists

The Society of Exploration Geophysicists is a not-for-profit organization that promotes the science of applied geophysics and the education of geophysicists. Awards at the Intel ISEF are a Distinguished Achievement Award and a trip to the SEG International Exposition and Annual Meeting.

Distinguished Achievement Award and a trip to the SEG International Exposition and Annual Meeting

PH036 **Nano-Tesla Magnetic Field Sensors for an Early Warning System for Earthquakes**
Ananya Mukundan, 17, International Academy East, Troy, Michigan

Award of Merit of $1,000

EE042 **Direction Detection: A Novel Device for Detecting the Approach of Emergency Vehicles**
Kelles Diane Gordge, 17, Great Mills High School, Great Mills, Maryland

EV009 **Determination of Rayleigh Scattering Measurements for Global Warming Counteracting Atmospheric Aerosols R-14, HFC-125, HFC-216, HFC-227ea and Halocarbon C-318**
Serena Zadoo, 18, L.C. Anderson High School, Austin, Texas

Award of Merit of $500

CS046 **Geolocation of Photographs by Horizon Matching with Digital Elevation Models**
Samuel Wye Pritt, 17, Pritt Home School, Walkersville, Maryland

EV028 **Record Flood Impacts on Biodiversity in Upper Green River, Kentucky**
Aimee Michelle Turner, 17, Ballard High School, Louisville, Kentucky

PH064 **Using the Temperature Dependence of the Speed of Sound to Detect Volatile Organic Compounds in Air**
Connor Everett Tom, 15, John W. North High School, Riverside, California

PH068 **The Effect of Water Location on Salinity Based Upon Index of Refraction**
Jessica Lee Williams, 16, Ocean Springs High School, Ocean Springs, Mississippi

Team award of $1,000 to be divided equally among team members.

Certificate of Honorable Mention

EN304 **New Approach in Oil Industry: Development of Nanosystems to Increase Efficiency of Production**
Orkhan Elshan Mammadov, 15, School named after Academician Zarifa Aliyeva, Baku, Azerbaijan
Elkhan Elshan Mammadov, 15, School named after Academician Zarifa Aliyeva, Baku, Azerbaijan

EN324 **Setting Up a Measuring Protocol of the Reverberation Time of a Room to Improve Its Soundscape Quality**
Nofoume Ben Ahmed Aly, 17, Lycee Isaac Newton, Clichy, France
Alban Teytaud, 16, Lycee Isaac Newton, Clichy, France
Paul Chassagne, 18, Lycee Isaac Newton, Clichy, France

SPIDER-MAN Turn Off the Dark

SPIDER-MAN Turn Off the Dark, the most daring and innovative show on Broadway, is partnering with the Intel International Science and Engineering Fair to honor a deserving student who embodies the spirit of the show's everyday hero Peter Parker. This student must demonstrate boldness, creativity, and a passion for science, while also striving to maintain social responsibility and a commitment to the belief that with great power comes great responsibility. The chosen student will be awarded a $2,000 scholarship, a two-day trip to New York City for them and a guest including airfare and hotel accommodations, tickets to "SPIDER-MAN Turn off the Dark" on Broadway, and a chance to meet actors from the cast and explore the backstage world of "SPIDER-MAN."

Award of $2,000, a trip to NYC for the weekend including airfare, two nights' hotel accommodations, and two tickets to 'SPIDER-MAN Turn Off the Dark'!

BE031 **The Effects of Mindful Decision Making on Post Decision Regret**
Emily Katherine Hu, 16, Lexington High School, Lexington, Massachusetts

SPIE-The International Society for Optical Engineering

SPIE, the international society for optics and photonics, was founded in 1955 to advance light-based technologies. Serving more than 225,600 constituents from approximately 150 countries, the Society advanced emerging technologies through interdisciplinary information exchange, continuing education, publications, patent precedent, and career and professional growth. In 2011, the Society provided more than $2.5 million in support of scholarships, grants, and other education programs around the world. This ambitious effort reflects the Society's commitment to education and to the next generation of optical scientists and engineers.

First Award of $2,500

PH063 **A Novel Universal Photon and Radioactive Beta Particle Detector: Multifunctionality Enabled by Wavefunction Engineering, Photomodulated Electron Tunneling, and Quantum Confinement of Charge Carrier Motion in Nanowires**
Saumil Bandyopadhyay, 17, Maggie L. Walker Governor's School for Government and International Relations, Richmond, Virginia

Second Award of $1,500

ET045 **Beyond the Nanostructure in Solar Cells**
Shyamal Buch, 16, Vista del Lago High School, Folsom, California

Third Award of $1,000

EE015 **An Alternative Optical Analyzer II**
Nicholas Andrew McCoy, 17, Academy of Science and Technology, The Woodlands, Texas

United States Army

Award of $1,500, a certificate of achievement, and a gold medallion.

AS010 **Evidence for a Role of Genetics and Foaling Date in Equine Wobbler Syndrome**
Miranda Nickole Richardson, 17, Paul Laurence Dunbar High School, Lexington, Kentucky

BE015 **Compilation of Social Media Political Conversations, Linguistic Twitter Profile Analysis, and Media Bias to Accurately Reflect Regional Political Climates**
Shawn David Meacham, 18, West Salem High School, Salem, Oregon

BI027 **Novel Strategies for the PET Imaging of Colorectal Cancer Using the A33 Antibody**
Priya Mohindra, 17, Yorktown High School, Yorktown Heights, New York

CB026 **Sweet Poison: A Second Year Study**
Samantha Elizabeth Grace Curran, 17, Southmoore High School, Moore, Oklahoma

CH039 **Determining the Quantum Limit of Palladium and Gold Nanometallic Supercatalyst by Kinetic Method**
Mai-Anh Nguyen Vu, 16, McNeil High School, Austin, Texas

CS018 **Digital Mat: An Adaptive User Interface with Real-Time Neurological Feedback to Enhance Attention among ADHD Individuals Phase II**
Noor Rejah Muhyi, 17, Las Cruces High School, Las Cruces, New Mexico

EA001 **Evaporation vs. Evapotransporation**
Breanne Williams, 17, South Sumter High School, Bushnell, Florida

EE015 **An Alternative Optical Analyzer II**
Nicholas Andrew McCoy, 17, Academy of Science and Technology, The Woodlands, Texas

EM031 **A Novel Apparatus for Catalytic Oxidation of Glycerol Produced during Biodiesel Synthesis**
Yohan Alexander Sumathipala, 17, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia

EN024 **Engineering a Novel Hydrogel Matrix for Bone Cell Regeneration**
Sneha Subramaniam, 18, Westborough High School, Westborough, Massachusetts

ET026 **Polyvinylidene Fluoride (PVDF) Piezoelectric Generator: A Novel Approach to Harvesting Vibrations from Human Respiration to Power Biological Implant Devices**
Bridget Mary Oei, 16, East Catholic High School, Manchester, Connecticut

EV006 **An Experimental Study of the Impact of Target Volatile Organic Compound (VOC) Emissions on Lung Health PLUS a Novel Risk Assessment Model to Predict Their Effect on the Peak Expiratory Flow Rate (PEFR); and the Development of a New VOC Adsorption Filter**
Naomi Chetan Shah, 16, Sunset High School, Portland, Oregon

MA010 **Integrals of Rational Functions**
Magda Lee Hlavacek, 17, Saginaw Arts and Sciences Academy, Saginaw, Michigan

ME028 **A Novel Paper Sensor for the Detection of Pancreatic Cancer**
Jack Thomas Andraka, 15, North County High School, Glen Burnie, Maryland

MI019 **Quantitative Polymerase Chain Reaction of Temporal Expression of Glucose Oxidase in *Apis mellifera***
Corinne Marie Demler, 17, Pecatonica Area High School, Blanchardville, Wisconsin

PH051 **Neuronal Nonlinear Dynamics: From an Optical Illusion to Parkinson's Disease**
Sara Kornfeld Simpson, 15, Patrick Henry High School, San Diego, California

PS007 **Interactions between *Piriformospora indica* and *Glomus intraradices* on Maize**
Michael Allen Mann, 18, Westwood High School, Austin, Texas

Award of $1,500, to be shared equally by team members, and certificates of achievement and gold medallions

EE322 **Reinventing the Wheel: The Omnidirectional Track System**
Andrew Kenneth Messing, 17, Hardin Valley Academy, Knoxville, Tennessee
Philip Christian Keller, 17, Hardin Valley Academy, Knoxville, Tennessee

United States Environmental Protection Agency

One Intel ISEF finalist will be selected to receive the EPA Patrick Hurd Sustainability Award which is an all expense paid trip for two to Washington, D.C. for the P3: People, Prosperity and the Planet Design Competition for Sustainability. While there, the student will be able to display their award-winning project on the National Mall and have the chance to interact with University level students, EPA scientists and researchers.

EPA Patrick Hurd Sustainability Award

EV050 **Home-Based Arsenic Bio-sand Water Filter Using Nanotechnology**
Thabit Farrukh Pulak, 16, Richardson High School, Richardson, Texas

United Technologies Corporation

United Technologies Corporation (UTC), based in Hartford, Conn., provides innovative, high-technology products and services to the aerospace and building systems industries worldwide. UTCs industry-leading businesses include Otis elevators and escalators; UTC Climate, Controls & Security, which includes Carrier heating, air-conditioning and refrigeration systems, and a broad range of fire safety and security solutions from leading brands such as Kidde and Chubb; Sikorsky aircraft; and UTC Propulsion & Aerospace Systems, which includes Pratt & Whitney aircraft engines and Hamilton Sundstrand aerospace and industrial products. In addition, the corporation operates United Technologies Research Center, which delivers advanced technologies and innovative research to UTC businesses and external customers. UTC is proud to recognize 8 projects for excellence in science and engineering.

Each winning project will receive $3,000 in shares of UTC common stock.

CH043 **Fabrication and Manipulation of One-Dimensional Photonic Crystals**
Michael Leonard Janner, 16, Redlands East Valley High School, Redlands, California

CS049 **Apodora: Markov Chain-Inspired Microsearch**
Nicholas Benjamin Schiefer, 17, Holy Trinity School, Richmond Hill, Ontario, Canada

EE060 **Real-Time Optical Ego-Motion Estimation through Robust Planar Tracking**
Christopher Stephen Nielsen, 18, Home School, Calgary, Alberta, Canada

EN322 **Improving Piezoelectric Properties of Materials by Gamma Radiation Exposure**
Muzaffer Arda Buyuksan, 17, Leyla Turgut High School, Yenimahalle, Ankara, Turkey
Ugurcan Onduc, 17, Leyla Turgut High School, Yenimahalle, Ankara, Turkey

ET026 **Polyvinylidene Fluoride (PVDF) Piezoelectric Generator: A Novel Approach to Harvesting Vibrations from Human Respiration to Power Biological Implant Devices**
Bridget Mary Oei, 16, East Catholic High School, Manchester, Connecticut

ET308 **Au- and Pd-Nanoparticle Catalysts in Novel Nafion Composites for PEM Fuel Cell Power Enhancement**
Matthew Rudin, 17, Half Hollow Hills High School West, Dix Hills, New York
Hansen Qian, 17, Saratoga High School, Saratoga, California
Yon Kyu Jang, 19, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia

MA033 **A Unitary Group Relaxation of the Traveling Salesman Problem and Its Applications**
Anirudh Prabhu, 17, West Lafayette Junior/Senior High School, West Lafayette, Indiana

PH022 **Building Bridges with Water: The Floating Waterbridge**
Carolin Charlotte Lachner, 18, Hans-Thoma-Gymnasium, Loerrach, Baden-Wurttemberg, Germany

Each winner will also receive a plaque, backpack, book and the UTC Annual Report. Common stock award to be divided among team members.

University of the Sciences in Philadelphia

University of the Sciences will award five $15,000 scholarships to selected finalists from the following categories: Biochemistry, Cellular and Molecular Biology, Chemistry, Computer Science, Environmental Science, Medicine & Health, or Microbiology. Scholarships are to be allocated toward tuition only and become effective upon enrollment in the incoming class of fall 2013 in any undergraduate or first-professional program offered at University of the Sciences. Each scholarship is renewable for up to four years provided the recipient is enrolled as a full time undergraduate or first-professional student in good academic standing with the University.

Tuition Scholarship of $15,000 per year for four years.

BI022 **Antigen-Binding Efficiency in Bovine CD1b3: Computational Ligand Docking of *Plasmodium falciparum* Glycosylphosphatidylinositol for Malarial Intervention**
Rosalie Shinwei Doerksen, 16, Oxford High School, Oxford, Mississippi

ME082 **The Effects of Diferuloylmethane on Auto-immune Diseases: The Effect of Curcumin on Type 1 Diabetes**
Dishant Yogendra Chhabra, 16, duPont Manual High School, Louisville, Kentucky

MI016 **The Effect of Saline Solutions on Evidence of *Pseudomonas aeruginosa* and *Pseudomonas fluorescens* Biofilms on Glass Slides and Stainless Steel**
Jeffery Reaves Seals, 16, Central Virginia Governor's School for Science and Technology, Lynchburg, Virginia

MI032 **Does Epstein-Barr Virus Play a Role in the Epidemic of Human Papilloma Virus Associated Head and Neck Cancers?**
Sean Jeffrey Nathan, 17, Caddo Parish Magnet High School, Shreveport, Louisiana

MI055 **A Unique Approach in DNA Based Identification of Airborne Fungal Population in the Sacramento Area**
Ryan Hsu, 17, Davis Senior High School, Davis, California

Scholarships are to be allocated toward tuition only and become effective upon enrollment in any undergraduate or first-professional program offered at University of the Sciences. Each scholarship is renewable for up to four years provided the recipient is enrolled as a full time undergraduate or first-professional student in good academic standing with the University.

Vacuum Technology Division of the American Vacuum Society

AVS is a not-for-profit professional society that promotes communication between academia, government laboratories and industry for the purpose of sharing research and development findings over a broad range of technologically relevant topics.

First Award of $1000

EE043 **Solar Wind: Its Effect on Radio Transmissions**
Andrew Kenneth Noonan, 15, International Baccalaureate School at Bartow High School, Bartow, Florida

Second Award of $500

PH037 **The Development of Low Voltage, Solid-State Plasma Focus Devices for Portable Radiation Sources**
Adam Joseph Bowman, 16, Montgomery Bell Academy, Nashville, Tennessee

Wolfram Research, Inc.

Through innovation and progressive growth, Wolfram Research continues to thrive as the world's leading technical software company. Wolfram Research products maintain a reputation for innovation, power, quality, and elegance. Wolfram Research is pleased to support the Intel International Science and Engineering Fair by presenting all finalists and observers with their own copy of *Mathematica for Students 8.0*. *Mathematica* integrates a numeric and symbolic computational engine, graphics system, programming language, documentation system, and advanced connectivity to other applications. It is this range of capabilities that makes *Mathematica* uniquely capable as a "one stop shop" for technical computing.

For more information, please go to http://www.societyforscience.org/isef/specialawards.