

# Intel International Science and Engineering Fair 2011



## Winner Announcement Intel ISEF 2011 Special Awards Ceremony

**May 11, 2011, Los Angeles, California** – Society for Science & the Public, in partnership with the Intel Foundation, announced special awards of the Intel ISEF 2011 Special Awards Ceremony. Student winners are ninth through twelfth graders who earned the right to compete at the Intel ISEF 2011 by winning top prize at a local, regional, state or national science fairs.

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

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

EE071      **Acoustic Imaging Using Optimized Beamforming Techniques**  
Andrew Beekman Feldman, 16, Manalapan High School, Englishtown, New Jersey

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

EN029      **Critical Point of View: A System for *in vivo* Monitoring of Lung Sounds in Critical Care Patients**  
Kelles Diane Gordge, 16, Great Mills High School, Great Mills, Maryland

### **Certificate of Honorable Mention**

CS048      **Note to Self: A Transcriptional Study of Audio Files Using Fourier Transformation and New Applications**  
Ryan Kyong-Doc Chung, 14, Terre Haute South Vigo High School, Terre Haute, Indiana

CS310      **Sound Wave Propagation: 3D Premises Model**  
Konstantin Slavnov, 17, Lyceum of Information Technologies #1533, Moscow, Russia  
Ilya S. Shoshin, 18, Lyceum of Information Technologies #1533, Moscow, Russia

EE009      **Precision Location of Acoustic Sources**  
Alexander Nathan Finney, 16, Covenant Christian Academy, Huntsville, Alabama

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

# 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 a 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.

Barjinder Sabherwal, Evergreen Valley High School, San Jose, California

Liu Liuzhongio, Guangdong Experimental Middle School, Guangzhou, China

Kang Hao Cheong, National University of Singapore High School of Mathematics and Science, Singapore, Singapore

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

- |       |  |
|-------|--|
| BI042 | <b>The Effects of the Human Diet on Omega Fatty Acid Levels</b><br>Hannah Kim, 15, Parkland High School, Allentown, Pennsylvania   |
| CH015 | <b>Investigation of Ideal Conditions to Retain Ascorbic Acid in Common Cooking Methods</b><br>Alexander Scott Powers, 16, Bellarmine College Preparatory, San Jose, California |
| CS056 | <b>SEOR: Simulated Environment for Object Reconstruction</b><br>Elliott Suk Chung, 18, Gwinnett School of Mathematics, Science, and Technology, Lawrenceville, Georgia         |

**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.**

- |       |   |
|-------|---|
| EE014 | <b>Robotic Spider</b><br>Thomas Ladyman, 18, Sutton Grammar School for Boys, Sutton, Surrey, United Kingdom   |
| ET031 | <b>Synthesis of Complex Nanostructures for Solar Cells: Analysis Using Novel D-SCOPEn</b><br>Shyamal Buch, 15, Vista del Lago High School, Folsom, California |

## 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**

BI032      **Inhibition of the ATPase Activity of the Hepatitis C Virus NS3 Protein by Human Lactoferrin**  
Sabrina Bouchard, 17, Seminaire de Sherbrooke, Sherbrooke, Quebec, Canada

### **Second Award of \$1,000**

ME001      **Effects of Nanoparticles and NSAIDs on Sp Protein and Survivin Expression after Radiation in Head and Neck Cancer**  
Shannon Somer Stockton, 17, Lake Highland Preparatory School, Orlando, Florida

### **Third Award of \$500**

CB006      **Genetic Targets in HPV-Induced Cancers**  
Arun Brendan Dutta, 17, Western Albemarle High School, Crozet, Virginia

## AVASC-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**

CB017      **Genes on Steroids: RNA Activation-Mediated Gene Upregulation in *C. elegans***  
Brian Tshao Do, 16, Silver Creek High School, San Jose, California

EN014      **EGFR-Targeted Gold Nanoparticle Constructs for Cancer Nanomedicine**  
Trent Kaveh Navran, 17, Solon High School, Solon, Ohio

### **Second Award of \$500 U.S. savings bond**

AS307      **Acmella oleracea: A Naturally Growing Weed as Effective Pest Controller**  
Akansha Verma, 16, Maharaja Agarsain Public School, Delhi, Delhi, India  
Abhishek Khanna, 17, Maharaja Agarsain Public School, Delhi, Delhi, India

BE048      **Mosquitoes Be Gone!**  
Ruchi Jayesh Shah, 17, Sachem High School North, Lake Ronkonkoma, New York

CS012      **An Efficient, Real-time Computer-aided Stereoscopic Parallax Prediction Solution and Its Implementation**  
Sheng Zhu, 18, No.2 Secondary School Attached to East China Normal University, Shanghai, Shanghai, China

EE060      **Developing More Efficient Models of Titanium Dioxide Dye-Sensitized Solar Cells**  
Shawn S. Tuteja, 18, The Altamont School, Birmingham, Alabama

- EN021      **Nanoscale Patterned Coating of PLLA for Use with Soft Tissue Implants**  
Joshua David Bocarsly, 18, The Lawrenceville School, Lawrenceville, New Jersey
- ET031      **Synthesis of Complex Nanostructures for Solar Cells: Analysis Using Novel D-SCOPEn**  
Shyamal Buch, 15, Vista del Lago High School, Folsom, California
- MA045      **Effects of Cell Compressibility, Motility, and Contact Inhibition on the Growth of Tumor Cell Clusters**  
Jonathan F Li, 18, St. Margaret's Episcopal School, San Juan Capistrano, California
- ME063      ***In silico* Exploration of Aberrant Methylation**  
Achutha Narayana Raman, 18, Dover-Sherborn Regional High School, Dover, Massachusetts

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

## 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.

### Second Award of \$1,500

- AS052      **The Territorial Roaming Patterns of *Felis catus* (The Domestic Cat)**  
Savannah Joy Tobin, 16, West Salem High School, Salem, Oregon
- BE011      **An Analysis of Listener Perception and Visual Replication of Sonifications: A Third Year Study**  
Neel Sanjay Patel, 16, Oviedo High School, Oviedo, Florida
- BI046      **Audio Perception: Plotting the Pathway of the BK Channel**  
Sophia Paulina Mae Sokolowski, 16, Academy at the Lakes, Land O' Lakes, Florida
- CB043      **Is Mitochondria-targeted Antioxidant SS31 a Potential Therapeutic Target to Treat Alzheimer's Disease?**  
Tejaswini Parlapalle Reddy, 17, Merlo Station High School-School of Science and Technology, Beaverton, Oregon
- CH022      **Constructing a Novel Cage Molecule for Use in a Dye-Sensitized Solar Cell**  
Kerry Nicole Betz, 17, Fairview High School, Boulder, Colorado
- CS039      **The CM Equine Facial Evaluation System: A Computational Approach to Equine Temperament Analysis**  
Catherine Grace McVey, 18, North Carolina School of Science & Mathematics, Durham, North Carolina
- EA013      **Earth's Magnetosphere as a Complex Network**  
Julia Rose Kahn Cline, 17, Walt Whitman High School, Bethesda, Maryland

- EE067      **Stability Analysis of Control Algorithms**  
Keegan Robert Mann, 18, San Pasqual High, Escondido, California
- EM040      **A Comparison of *Thelypteris kunthii*, *Bambusa multiplex*, and *Microstegium vimineum* on the Voltage Produced by a Plant Microbial Fuel Cell**  
Reid William D'Amico, 18, Hilton Head Preparatory, Hilton Head, South Carolina
- EN035      **Creating Porous TiO<sub>2</sub> Nanoparticles to Improve the Charge Carrier Efficiency of Photoelectrochemical Cells**  
Ayush Gupta, 17, Oregon Episcopal School, Portland, Oregon
- ET017      **Maximizing Hybrid Rocket Motor Efficiency for Evaluating Recyclable and Renewable Fuels**  
Megan Lynn Perkins, 16, DuPont Manual Magnet High School, Louisville, Kentucky
- EV037      **Using Aquatic Plants to Remove Water Contaminants**  
Mikayla Lynn Messing, 18, Lakeview High School, Columbus, Nebraska
- MA027      **Developing a Cipher Based on Variation between Non-Base 10 Number Systems**  
Caroline Knight Snowden, 15, Ponte Vedra High School, Ponte Vedra, Florida
- ME013      **Chemical Sterilization of Medical Catheters Using an Autoclave with a Hydrogen Peroxide Solution, Year Seven of an Ongoing Study**  
Aubrey Ward Craig II, 18, The Collegiate High School at Northwest Florida State College, Niceville, Florida
- MI040      **Plant Symbiotic Microfungi as Novel Forms of Cellulase and Ligninase Enzymes for Biofuel Production, a Two-Year Study**  
Francisco Xavier Orozco, 18, Tucson Magnet High School, Tucson, Arizona
- PH025      **New Mathematical Model for Holography: No Lasers!**  
Daniel Nathan Liss, 16, Charles E. Smith Jewish Day School, Rockville, Maryland
- PS002      **Efficacy of Chlorine on *Salmonella* Typhimurium LT2 in Irrigation Water on Produce Items**  
Kelly Nicole Howard, 18, The Villages Charter High School, The Villages, Florida

**Second Team Award of \$1,000 for each member**

- CB303      **Second Life: Novel and Interspecies Reprogramming of Induced Pluripotent Stem Cells**  
Won Ik Lee, 18, Academy for the Advancement of Science and Technology, Hackensack, New Jersey  
Hong Joon Park, 16, Academy for the Advancement of Science and Technology, Hackensack, New Jersey

**First Award of \$3,000**

- AS041      **The Effects of Cage Naturality on the Scientific Viability of Mouse Models in Relation to Stress and Cognition**  
Casey Jacob Acklin, 15, The Davidson Academy of Nevada, Reno, Nevada
- BE024      **A Study of the Cognitive Neuroscience of Arithmetic Combinatorial Processing Using Magnetoencephalography (MEG)**  
Liza Joely Strauss, 18, Mamaroneck High School, Mamaroneck, New York

BI016	<b>A Quest for a Stronger Homemade Bioplastic: The Effect of Natural Additives on the Tensile Strength of Homemade Bioplastics</b> Erica Budina, 15, Medford High School, Medford, Massachusetts
CB013	<b>CD24 Induced Muscular Regeneration: Unraveling the Mystery behind Satellite Cell Differentiation</b> Evan M Chen, 17, Wayzata High School, Plymouth, Minnesota
CH036	<b>Synthesis and Manipulation of Silver and Gold Nano-Mirrors</b> Michael Leonard Janner, 15, Redlands East Valley High School, Redlands, California
CS031	<b>Tornado App</b> Harihar Ganeshan Subramanyam, 17, Wachusett Regional High School, Holden, Massachusetts
EA005	<b>Astronomical Image Processing: Eliminating Random Atmospheric Noise and Enhancing Low Resolution Images, Year III</b> Amy Charlotte Robinson, 18, Keystone School, San Antonio, Texas
EE050	<b>Ornithopter Design: Optimizing Turning Radius</b> Kristin Anne Goehl, 17, Wachusett Regional High School, Holden, Massachusetts
EM038	<b>Improving Pure Water Availability: Optimizing Flux in Reverse Osmosis Membranes</b> Matthew Jaebol Kim, 17, Commack High School, Commack, New York
EN046	<b>Engineering <i>E. coli</i> for Biosynthesis of Hydrocarbons</b> Suman Gunasekaran, 16, James Madison Memorial Senior High School, Madison, Wisconsin
ET042	<b>The Effect of Washout Designs in Swept and Tapered Wings on the Location of Flow Separation during Stall</b> Stacey A Huang, 17, Evergreen Valley High School, San Jose, California
EV001	<b>The Assessment of Silver Nanoparticles in the Environment on Gene Expression in <i>C. elegans</i></b> Alexander Michael Cecil, 17, E.E. Waddell High School, Charlotte, North Carolina
MA017	<b>Linearly Many Faults in (n,k)-star Graphs</b> Allen Yuan, 17, Detroit Country Day School, Beverly Hills, Michigan
ME101	<b>Evaluation of Transdermally Delivered Aspirin</b> Purnima Malik, 18, Central York High School, York, Pennsylvania
MI027	<b>Analysis of the Bacterial Heat Shock Response to Photodynamic Therapy-Mediated Oxidative Stress</b> Tyler Gordon St. Denis, 17, John Jay High School, Cross River, New York
PH062	<b>Better Images, Fewer Samples: Optimizing Sample Distribution for Compressed Sensing in Radio Interferometry</b> Clara Louisa Fannjiang, 17, Davis Senior High School, Davis, California
PS013	<b>The Use of Algae in Reducing the Impact of Eutrophication in Waste Water, in Addition to Producing Sufficient Amounts of Algae for the Use of Biofuel Productions</b> Kaylee Shandale Glenn, 16, Weber High School, Pleasant View, Utah

**First Team Award of \$1,500 for each member**

**ET305      Manufacturing an Improved Polymer Photovoltaic Cell Using Graphene and Graphene Oxide**  
Nathan Akhavan, 18, Rambam Mesivta, Lawrence, New York  
Benjamin Joseph Goldman, 18, Rambam Mesivta, Lawrence, New York

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

## **Albert Langdon Swank Experimental Physics Award**

This award is in memory of two very gifted, patient and giving teachers, Mr. Albert L. Swank, Senior and Dr. Glen Seaborg who constantly gave and influenced many students throughout their lives. At the ISEF 1968, Dr. Seaborg presented Mr. Swank, Jr. the Atomic Energy Commission Award. Mr. Swank hopes that the recipient of this award continues to strive and gain knowledge in their chosen profession, life, and dream of Nobel Prize.

**Albert Langdon Swank Experimental Physics Award**

**PH026      The Construction of a Small Dense Plasma Focus Using a Novel Experimental Setup**  
Adam Joseph Bowman, 15, Montgomery Bell Academy, Nashville, Tennessee

Langdon Engineers & Scientific services are located in Alaska and Washington states and perform engineering and scientific design of experimental physics apparatus and accelerators. The firm specializes in cyclotrons, liquid helium cryogenics, nuclear medicine, PET imaging, targetry and nuclear isotope production systems. The firm has manufacturing facilities, laboratories and owns and operates cyclotrons and accelerators for the production of medical imaging isotopes. The firm's clients include the United States DOD laboratories, foreign governments nuclear physics research facilities and many medical institutions.

## **American Association for Clinical Chemistry**

For the projects that best demonstrate the use of chemistry to diagnose diseases and to treat patients.

**First Award of \$1,500**

**ME308      3-Dimensional Bio-imprinting of Proteins and Viruses**  
Kelsey Skyler McKenna, 17, South Side High School, Rockville Centre, New York  
Alan Eyal Czemerinski, 18, The Wheatley School, Old Westbury, New York  
Tom Jie Wang, 16, The Wheatley School, Old Westbury, New York

**Second Award of \$1000**

**CH002      A New Way in Diagnostics of Bronchial Asthma**  
Erika Gedeonova, 19, Sportovni Gymnazium Kladno, Kladno, Czech Republic

**Third Award of \$500**

**BI031      Regulation of Nitric Oxide Expression as a Form of Neurotransmitter Plasticity**  
Vaishnavi Lakshminarasimha Rao, 15, Canyon Crest Academy, San Diego, California

**Fourth Award of \$250**

**ME045      RT-PCR Genotypic Analysis of Four Mex Efflux Pumps in Pan-resistant *P. aeruginosa* and Development of Novel Phenotypic Detection Method by MIC with Efflux Pump Inhibitors**  
Kevin Z. Xin, 16, Shanghai American School, Shanghai, China

**ME075      KLF4 and KLF4- $\alpha$ : Working Together to Fight Pancreatic Cancer**  
Jiawen Wei, 18, Bellaire Senior High School, Bellaire, Texas

## 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**

ME054      **New Smart Weapons: Theranostics-- A Novel NanoMedicine Approach to Combat Cancer**  
Angela Zhang, 16, Monta Vista High School, Cupertino, California

### **Second Award of \$1,000**

AS046      **Analysis and Characterization of the Bioactive Antimicrobial Natural Products from Marine Sponges**  
Bernadette Ann Hritz, 18, Villa Joseph Marie High School, Holland, Pennsylvania

### **Third Award of \$500**

CH033      **Asymmetric Total Synthesis of GlaxoSmithKline's Potent Phosphodiesterase Inhibitor**  
Yaroslav Dmitrievich Boyko, 17, Moscow Chemical Lyceum 1303, Moscow, Russia

### **Fourth Award of \$125**

BE051      **Effect of Methylphenidate Doses Regulation by Molecular Diagnosis in Executive Functions of ADHD Patients**  
Sebastian Patino Valenzuela, 17, Tecnológico de Monterrey Campus Guadalajara, Zapopan, Jalisco, Mexico

CH016      **Polyfunctionalized Single-Walled Carbon Nanotubes as Novel Scaffolds for Multimodal Tumor-Targeted Therapy and Biological Imaging**  
Neil Pathak, 18, Herricks Senior High School, New Hyde Park, New York

ME086      **Trinovopan: Pre-Clinical Development of a Novel Anti-Cancer Combinational Therapy**  
Lingjie (Linda) Wei, 16, Sir Winston Churchill Secondary School, Vancouver, British Columbia, Canada

MI035      ***In vitro* Evaluation of the Potential for Resistance Development in Caragenin CSA-13**  
Justin Daniel See, 17, Karl G. Maeser Preparatory Academy, Lindon, Utah

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

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 *The Physics Teacher* journal and other APS journals.

### **First Award of \$1,200**

PH010      **The Flow Feature around Insects and Bionic Wing Based on Wind Tunnel Test**  
Yimeng Shi, 18, The High School Affiliated to Renmin University of China, Beijing, Beijing, China



**Second Award of \$800**

ET001      **The Engineering of a Novel Magnetic Levitation Train Propulsion System through the Application of a Coil Current Gradient**  
Christopher Joseph Davlantes, 18, Bishop Kenny High School, Jacksonville, Florida

**Third Award of \$500**

PH045      **Detection of Radioactive Isotopes in the Radon Decay Chain Using a Homemade Ion Chamber**  
Lois Therese Gagnon, 16, Gagnon Family Homeschool, Goodrich, Michigan

**Certificate of Honorable Mention**

PH022      **Determining "Hot Spots" through Correlations of CMEs and Solar Flares**  
Travis Le, 16, Punahou School, Honolulu, Hawaii

PH039      **The Close Binary Fraction: A Bayesian Analysis of SDSS M Dwarf Spectra**  
Benjamin Mathias Clark, 15, Penn Manor High School, Millersville, Pennsylvania

PH302      **The Desk Model of a Multilayer Magnetic Nanoparticle**  
Lev Yurovskiy, 16, Lyceym #40, Nizhniy Novgorod, Nizhegorodskaya, Russia  
Grigory Astretsov, 17, Lyceum # 40, Nizhny Novgorod, Nizhegorodskaya, Russia

Each sponsoring teacher of a student who receives an AAPT and APS award also will receive a certificate.

## 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**

AS046      **Analysis and Characterization of the Bioactive Antimicrobial Natural Products from Marine Sponges**  
Bernadette Ann Hritz, 18, Villa Joseph Marie High School, Holland, Pennsylvania

**Second Award of \$3,000**

BI014      **Computational Analysis of Specific Missense Mutations in the SMN Tudor Domain**  
Dianna Hu, 18, Half Hollow Hills High School West, Dix Hills, New York

**Third Award of \$2,000**

CH036      **Synthesis and Manipulation of Silver and Gold Nano-Mirrors**  
Michael Leonard Janner, 15, Redlands East Valley High School, Redlands, California

**Fourth Award of \$1,000.00**

CH301      **Kinetic Analysis of Nanometallic Catalyst in Reduction of Nitrophenol: Investigation of a New Class of "Super Catalyst"**  
Quoc-Bao Duy Nguyen, 16, Westwood High School and McNeil High School, Austin, Texas  
Mai-Anh N. Vu, 15, Westwood High School and McNeil High School, Austin, Texas

**Certificate of Honorable Mention**

BI022      **Detection and Analysis of Point Mutations of the Oxidative Variety in the K-ras Gene**  
Charles Preston Blakemore, 18, Academy for Math, Engineering and Science, Salt Lake City, Utah

CH010      **Lighting Insulin with Gold Nanodots**  
Yun-Chen Chien, 17, Taipei First Girls' High School, Taipei, Taipei City, Taiwan (R.O.C), Chinese Taipei

- CH016      **Polyfunctionalized Single-Walled Carbon Nanotubes as Novel Scaffolds for Multimodal Tumor-Targeted Therapy and Biological Imaging**  
Neil Pathak, 18, Herricks Senior High School, New Hyde Park, New York
- CH030      **From Dusk to Dawn: Contact Lenses in the Night Tear Proteome**  
Jack Huang, 17, Parkland High School, Allentown, Pennsylvania
- CH039      **Carbon Nanotube Synthesis and Characterization**  
Neerja Aggarwal, 17, L.V. Hightower High School, Missouri City, Texas
- ME051      **Characterization of Tyrphostin AG879 as a Novel Selective Modulator of Amyloid Precursor Protein Gamma-Secretase: Towards Safe Neuroprotective Therapy for Alzheimer's Disease**  
Shaunak Krishan Bakshi, 17, Manhasset High School, Manhasset, New York

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.

- BI037      **Genetic and Genomic Analysis of TOR1 Signaling in Initiation of Cell Quiescence**  
Lev Omelchenko, 18, Stuyvesant High School, New York, New York

Alternate for trip

- BI008      **ICAM-1 Cytoplasmic Tail Regulation of Endothelial Cell Activation in Type I Diabetes**  
Shiqi Joy Shan, 17, Caddo Parish Magnet High School, Shreveport, Louisiana

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

## American Geological 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

- EA018      **Gap in the Deep Sea?: Reconstruction of Sedimentary Environment of the Kurotaki Unconformity, Central Japan Based on Foraminifers**  
Riou Tanaka, 16, Chiba High School, Chiba, Chiba, Japan

Second Award of \$750

- EA019      **Tracking Quaternary Sealevel with Corals and Molluscs: Cosmic Dose Rate Modeling and ESR Dating on San Salvador, Bahamas**  
Aislinn Deely, 17, Francis Lewis High School, Fresh Meadows, New York

Third Award of \$250

- EM026      **Utilization of a Thermophilic Sulfate-Reducing Species for Bioremediation Purposes**  
Kirsten Perry, 17, Elko High School, Elko, Nevada
- EV039      **Red Tide Sensitivity to Ocean Acidification**  
Matthew Philip Goldklang, 17, San Diego Jewish Academy, San Diego, California

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**

- CH036      **Synthesis and Manipulation of Silver and Gold Nano-Mirrors**  
Michael Leonard Janner, 15, Redlands East Valley High School, Redlands, California
- EE003      **Novel Oral Drug Inhaler Design to Optimize Drug Deposition in the Lungs**  
Arnab Dey, 16, Arkansas School for Mathematics, Sciences and the Arts,  
Hot Springs, Arkansas

### **Second Award of \$250**

- CB013      **CD24 Induced Muscular Regeneration: Unraveling the Mystery  
behind Satellite Cell Differentiation**  
Evan M. Chen, 17, Wayzata High School, Plymouth, Minnesota
- EE053      **A Stand-Off Seismo-Acoustic Method for Humanitarian Demining**  
Marian Joan Bechtel, 16, Hempfield High School, Landisville, Pennsylvania

## 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. AMS presents the Karl Menger Award of Excellence

### **First Award of \$1,000**

- MA048      **Integer Partitions and Sequences**  
Manosij G. Dastidar, 18, South Point High School, Kolkata, India

### **Second Award of \$500**

- MA008      **Perfect Tiling of a Rectangle into Rectangles**  
Tzu-Hsuan Su, 16, Taipei Municipal Jianguo High School, Taipei City, Chinese Taipei
- MA035      **On the Verge of Where It Wasn't: A Multiple Model Approach to Estimation  
and Tracking Using Extended Kalman Filtering and Intelligent Selection  
of Integrated Models**  
John Tilla Parish, IV, 18, Home School, Colorado Springs, Colorado

### **Third Award of \$250**

- MA036      **Rational Approximants for Euler-Gompertz Constant**  
Vasily Sergeevich Bolbachan, 17, Advanced Science and Education Center -  
A.N.Kolmogorov School, Moscow, Moscow Region, Russia
- MA039      **Entries of Random Matrices**  
Benjamin Jerome Kraft, 18, Liberty High School, Bethlehem, Pennsylvania
- MA045      **Effects of Cell Compressibility, Motility, and Contact Inhibition on the Growth  
of Tumor Cell Clusters**  
Jonathan F Li, 18, St. Margaret's Episcopal School, San Juan Capistrano, California

MA050      **Lower Bounds for Odd Perfect Numbers**  
Anirudh Prabhu, 16, West Lafayette Junior-Senior High School,  
West Lafayette, Indiana

**Certificate of Honorable Mention**

MA001      **Developing Analytical Approaches to Forecast Wind Farm Production, Phase II**  
Kate Alexandra Geschwind, 16, Mayo High School, Rochester, Minnesota

MA020      **Properties of Hawkins Primes**  
Aaron Lawrence Zweig, 14, Randolph High School, Randolph, New Jersey

MA030      **Modeling Wind Power Generation Using Polynomial Chaos Expansion**  
Ryan Thomas Baker, 17, Hillcrest High School, Midvale, Utah

MA042      **Toward Solution of Soifer-Erdos Problems**  
Georgiy Vladimirovich Kolyshev, 18, Stuyvesant High School, New York, New York

MA052      **Braid Group Representations and Braiding Quantum Gates**  
Rebecca Chen, 16, Park Tudor School, Indianapolis, Indiana

A booklet on Karl Menger will be given to each winner.

## 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.

**First Award of \$2,000**

EA025      **Washington, DC Severe Thunderstorm Wind Events: An Analysis of Correlated Thermodynamic Convective Parameters and Doppler Radar Signatures**  
Christopher Aaron Manning Gerlach, 16, T. C. Williams High School,  
Alexandria, Virginia

**Second Award of \$1000**

EA011      **Investigating Climate Change: A Comparative Analysis of Colonial and Modern Weather Data**  
Marni Jordyn Wasserman, 18, Commack High School, Commack, New York

**Third Award of \$500**

EA028      **The Effects of Ocean Temperature on Aerosol Particle Absorption**  
Kyra Holister Grantz, 17, The York School, Monterey, California

**Certificate of Honorable Mention**

CS015      **Computer Modeling IV: A Particulate Dispersion Model Employing Real-Time Wind Calculations**  
Jessica Marie Constant, 16, Poudre High School, Fort Collins, Colorado

EA304      **Characterization of Volcanic Lightning and Modeling How Volcanic Lightning Occurs at Sakurajima Volcano in Kagoshima, Japan**  
Nobutada Kawazoe, 17, Kagoshima Prefectural Kinkowan Senior High School,  
Kagoshima, Kagoshima, Japan  
Taiki Maehata, 17, Kagoshima Prefectural Kinkowan Senior High School, Kagoshima,  
Kagoshima, Japan  
Rushia Kanai, 17, Kagoshima Prefectural Kinkowan Senior High School, Kagoshima,  
Kagoshima, Japan

PH008

**Stratosphere - Ionosphere Coupling: The Effects of Sudden Stratospheric Warming on the Ionosphere**

Cayley Erin Dymond, 15, North Point High School for Science, Technology, and Industry, Waldorf, Maryland

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.

## American Physiological Society

For the best projects in the physiological sciences which include cellular physiology, animal physiology, and neurophysiology.

**First Award of \$1,500**

AS056

**Glial Contributions to Circadian Timekeeping in the *Drosophila* Brain**

Chengzhen Li Dai, 17, Detroit Country Day School, Beverly Hills, Michigan

**Second Award of \$1,000**

ME054

**New Smart Weapons: Theranostics-- A Novel NanoMedicine Approach to Combat Cancer**

Angela Zhang, 16, Monta Vista High School, Cupertino, California

**Third Award of \$500**

BI031

**Regulation of Nitric Oxide Expression as a Form of Neurotransmitter Plasticity**

Vaishnavi Lakshminarasimha Rao, 15, Canyon Crest Academy, San Diego, California

**APS Exceptional Science Award for \$500**

ME052

**Effects of Exercises on a Diabetes Mellitus Type 1**

Haylee Elizabeth Jones, 17, SUCCESS Academy, St. George, Utah

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. The APA is awarding the best Intel ISEF projects representing psychological science.

**First Award of \$1,250**

BE024

**A Study of the Cognitive Neuroscience of Arithmetic Combinatorial Processing Using Magnetoencephalography (MEG)**

Liza Joely Strauss, 18, Mamaroneck High School, Mamaroneck, New York

BE050

**Growing Up 'In Sync': Connecting a Bridge to an Autistic Mind's World**

Adelina Corina Cozma, 15, Bayview Secondary School, Richmond Hill, Ontario, Canada

**Third Award of \$500**

AS008

**Behavioral Evidence for Cerebral Asymmetry in Green Anoles**

Rachel Emily Reon, 17, The Governor's School for Science and Technology, Hampton, Virginia

BE011

**An Analysis of Listener Perception and Visual Replication of Sonifications: A Third Year Study**

Neel Sanjay Patel, 16, Oviedo High School, Oviedo, Florida

- BE016      **Problematizing Pedagogy as a Nutritional Education Strategy:  
A Social Constructivist Approach**  
Heitor Geraldo da Cruz Santos, 16, Colegio GGE, Recife, Pernambuco, Brasil
- BE029      **Strategies Utilized by People with Autism and Neuro-Typical Individuals to  
Determine Emotion in Faces**  
Samantha Michelle Phillips, 18, William A. Shine Great Neck South High School, Great Neck, New York
- ME037      **Brain Plasticity: The Effect of Age (A Two Year Study)**  
Olivia A. Dure, 16, The Altamont School, Birmingham, Alabama

## American Society for Horticultural Science

ASHS is the corner stone of research and education in horticulture and an agent for active promotion of horticulture science.

### First Award of \$1,000

- PS001      **Improving Environmental Stress Tolerance: The Genetic Engineering of the *Oryza sativa* Plant Carrying the *Escherichia coli* Genes Producing Trehalose (Year Two)**  
Andrew Michael Joseph, 16, Episcopal High School of Jacksonville, Jacksonville, Florida

### Second Award of \$500

- PS022      **Triflorine Sensitivity in Lettuce**  
Aradhana Sinha, 14, Salinas High School, Salinas, California

### Third Award of \$250

- PS006      **Identification of the Source of Indeterminate DNA in Fluorescence Assays of Sterile Seed Corn (*Zea mays*)**  
Kaitlin Elizabeth Larkin, 18, Wentzville Holt High School, Wentzville, Missouri

Each awardee and his/her school will receive a one-year subscription to ASHS *HortScience* and *Hort Technology*, plus a mounted certificate.

## 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 honors the most outstanding microbiology projects.

### First Award of \$2,000

- MI061      **Microbial Explorations of a New Window into the Death Valley  
Deep Hydrological Flow System**  
Alexandra Elane Wheatley, 18, Northwest Career and Technical Academy, Las Vegas, Nevada

### Second Award of \$1,250

- MI050      **Functional Characterization of Green Tea-responsive Proteins in *Escherichia coli***  
Peter Yin, 17, Ames High School, Ames, Iowa

### Third Award of \$750

- MI041      **The Protective Effects of the Violacein Pigment against UV-C Irradiation in *Chromobacterium violaceum***  
Andrew Nickolas Abboud, 18, Tiptecanoe High School, Tipp City, Ohio

#### Fourth Award of \$500

- MI040 **Plant Symbiotic Microfungi as Novel Forms of Cellulase and Ligninase Enzymes for Biofuel Production, a Two-Year Study**  
Francisco Xavier Orozco, 18, Tucson Magnet High School, Tucson, Arizona

#### Fifth Award of \$250

- MI008 **Weaving Health: The Weaving of Antimicrobial Substances from the Ootheca of the Banana Spider II**  
Leonardo de Oliveira Bodo, 17, Dante Alighieri, Sao Paulo, Brasil
- MI021 **FIGHTING BAC!!, Phase IV: The Isolation of Anti-proliferative Phytochemicals from Cranberries to Eradicate *Escherichia coli***  
Jordan Mark Grainger, 18, Rio Rancho High School, Rio Rancho, New Mexico
- MI024 **Evaluating the Role of the HOG1 and ESCRT Pathways in Host/Cell Interaction and Stress Response of *Candida albicans***  
David Kenneth Tang-Quan, 18, Palos Verdes Peninsula High School, Rolling Hills Estates, California
- MI046 **Interrupting Bacterial Conversation with Black Olive (*Bucida buceras*) Extracts**  
Rohan Batra, 16, American Heritage School, Plantation, Florida
- MI060 **An Eco-friendly Antifungal Agent: Leaf extract of *Girardinia diversifolia***  
Diksha Gupta, 17, Maharaja Agarsain Public School, Delhi, India
- MI304 **Assessment of Various Organic Electron Donors for Electrical Production by *Geobacter grbiciae* in a Novel H-Type Microbial Fuel Cell**  
Jyotishka Biswas, 16, Hume-Fogg Academic High School, Nashville, Tennessee  
Jiahe Gu, 17, The School for Science and Math at Vanderbilt, Nashville, Tennessee

All laureates receive a cash prize and 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.

#### First Award of \$1,500

- EN022 **Accounting for Cross-talk between Signaling Pathways Identifies Novel Model for Early and Late Post-transplant Acute Rejection**  
Andrew Liu, 17, Henry M. Gunn Senior High School, Palo Alto, California

#### Second Award of \$500

- EV033 **An Experimental Study of the Impact of Airborne Pollutants on the Peak Expiratory Flow (PEF) Rate of Asthmatic Subjects PLUS A Novel Risk Assessment Model to Predict the Adverse Effect of PM10 and TVOCs on the PEF Rate**  
Naomi C. Shah, 16, Sunset High School, Portland, Oregon

#### Third Award of \$250

- BE042 **It's All in the Family: Examining the Effect of Living Arrangements and Social Support on Hypertension**  
Sarah Averil Albala, 18, John Jay High School, Cross River, New York

### Certificate of Honorable Mention

- AS026      **Understanding the Evolutionary Trends of Basal Dinosauria with Respect to Body Mass Analyses**  
Brian Patrick Ralph, 17, Smithtown High School West, Smithtown, New York
- ET004      **Power Up!: Experimental Design and Mathematical Optimization of a Dual Rotor Wind Turbine**  
Andrew Samuel Ylitalo, 15, Stillwater Area High School, Stillwater, Minnesota
- MA001      **Developing Analytical Approaches to Forecast Wind Farm Production, Phase II**  
Kate Alexandra Geschwind, 16, Mayo High School, Rochester, Minnesota
- ME071      **Neural Network Diagnostics for Breast Cancer**  
Brittany Michelle Wenger, 16, The Out-of-Door Academy, Sarasota, Florida
- ME312      **A Search for Reliable Molecular Cytogenetic Markers of Prostate Cancer Prognosis**  
Alison Nicole Tradonsky, 17, San Diego Jewish Academy, San Diego, California  
Tammy Yetta Rubin, 18, San Diego Jewish Academy, San Diego, California
- PH062      **Better Images, Fewer Samples: Optimizing Sample Distribution for Compressed Sensing in Radio Interferometry**  
Clara Louisa Fannjiang, 17, Davis Senior High School, Davis, California

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.

## 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

- AS008      **Behavioral Evidence for Cerebral Asymmetry in Green Anoles**  
Rachel Emily Reon, 17, The Governor's School for Science and Technology, Hampton, Virginia
- AS014      **Seeing What You Want to See: Visual Experience and Top-down Processing in Honeybee**  
Kevin Sean Chen, 17, The Affiliated Senior High School of National Kaohsiung Normal University, Kaohsiung, Chinese Taipei
- AS022      **Biological Control of Ticks to Prevent Lyme Disease Using Entomopathogenic Nematodes**  
Ryan Daniel Kerr, 16, Danbury High School, Danbury, Connecticut
- AS030      **The Global Impact of Ethanol Exposure on Somitogenesis and Craniofacial Development in Zebrafish as a Model of Fetal Alcohol Syndrome**  
Ayana Jamal, 16, Niles North High School, Skokie, Illinois
- CS039      **The CM Equine Facial Evaluation System: A Computational Approach to Equine Temperament Analysis**  
Catherine Grace McVey, 18, North Carolina School of Science & Mathematics, Durham, North Carolina

All winners will also receive a plaque.



## 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**

CS042      **Optimizing Keyboards for People with Disabilities**  
Natalie Janet Nash, 16, Vincentian Academy, Pittsburgh, Pennsylvania

### **Second Award of \$500**

CS009      **Composing Frusta to Fold Polyhedral Origami**  
Herng Yi Cheng, 18, NUS High School of Mathematics and Science, Singapore, Singapore

### **Third Award of \$300**

CS027      **The Design and Implementation of a Dialect of Scheme for Parallel Processing on the GPU**  
Gregory Louis Manis, 18, John F. Kennedy High School, Bellmore, New York

### **Fourth Award of \$200**

CS018      **Cedar: When Prolog Meets Flash**  
Erez Urbach, 18, The Israel Arts and Science Academy, Jerusalem, Israel

CS307      **Position and Vector Detection of Blind Spot Motion with Horn-Schunck Optical Flow**  
Mike Wu, 16, Torrey Pines High School, San Diego, California  
Stephen Sia Yu, 17, Torrey Pines High School, San Diego, California

CS309      **The Multimodal Real-Time Recognition of Emotion in Human Speech**  
Akash Krishnan, 16, Oregon Episcopal School, Portland, Oregon  
Matthew Philip Fernandez, 17, Oregon Episcopal School, Portland, Oregon

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 Priscilla and Bart Bok First and Second Awards are given jointly by the Astronomical Society of the Pacific and the American Astronomical Society. The main criterion for selecting the two Bok Awards is scientific merit. Eligible projects include observational, instrumental, theoretical as well as interdisciplinary projects involving physics, mathematics, computer science, and engineering, etc.

### **Priscilla and Bart Bok First Award of \$1,000**

PH039      **The Close Binary Fraction: A Bayesian Analysis of SDSS M Dwarf Spectra**  
Benjamin Mathias Clark, 15, Penn Manor High School, Millersville, Pennsylvania

### **Priscilla and Bart Bok Second Award of \$500**

PH007      **The Effect of Tracking Error on the Measurement Exoplanet Light Curves**  
Brian Ronald Graham, 16, Southridge High School, Beaverton, Oregon

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.

## 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

- |       |   |
|-------|---|
| BE016 | <b>Problematizing Pedagogy as a Nutritional Education Strategy:<br/>A Social Constructivist Approach</b><br>Heitor Geraldo da Cruz Santos, 16, Colegio GGE, Recife, Pernambuco, Brasil  |
| CS309 | <b>The Multimodal Real-Time Recognition of Emotion in Human Speech</b><br>Akash Krishnan, 16, Oregon Episcopal School, Portland, Oregon<br>Matthew Philip Fernandez, 17, Oregon Episcopal School, Portland, Oregon                          |
| EA305 | <b>Opak River Mouth: A Unique Deflection</b><br>Yan Restu Freski, 19, 1st State Yogyakarta High School, Yogyakarta,<br>Yogyakarta, Indonesia<br>Darmadi Darmadi, 20, 6th State Yogyakarta High School, Yogyakarta,<br>Yogyakarta, Indonesia |
| EE006 | <b>Ball Robot - An Instable System in Balance</b><br>Jan Kaeberich, 18, Campe-Gymnasium Holzminden, Holzminden,<br>Niedersachsen, Germany   |
| MA045 | <b>Effects of Cell Compressibility, Motility, and Contact Inhibition on the Growth<br/>of Tumor Cell Clusters</b><br>Jonathan F Li, 18, St. Margaret's Episcopal School, San Juan Capistrano, California                                    |

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 \$1,000

- |       |  |
|-------|--|
| PH017 | <b>D+D Fusion Reactions in an Inertial Electrostatic Confinement Fusion Reactor</b><br>William Wellborn Jack, 16, Hudson High School, Hudson, Ohio |
| PH046 | <b>Finding Harmonics in Plasma</b><br>Dylan Edward Moore, 17, Alameda Community Learning Center, Alameda, California                               |

## Drexel University

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

Full tuition scholarship

- |       |  |
|-------|--|
| CS041 | <b>Prefix-Tree Based Anomaly Detection in Critical Software Systems</b><br>Favyen Bastani, 17, Texas Academy of Mathematics and Science, Denton, Texas |
|-------|--|

- EN016      **Can Recycled Rubber Materials Be Used in Concrete to: Reduce Environmental and Landfill Waste, Reduce Petroleum Usage, and Reduce the Carbon Footprint While Improving the Infrastructure of Bridges, Roads and Buildings?**  
John Charles Boykin, 17, St. Peter Chanel, Bedford, Ohio
- ET010      **Which Ethanol, Consumer Grade Sweet Potato or Commercially Made Corn, in a Gasoline Mixture Will Emit the Least Amount of Noxious Gases, Namely Hydrocarbon (HC), Carbon Monoxide (CO), Carbon Dioxide (CO<sub>2</sub>), and Nitrous Oxide (NO<sub>x</sub>), When Run through a Compatible Four-stroke Engine?**  
Kristin Virginia Walker, 16, Warner Robins High School, Warner Robins, Georgia
- ME054      **New Smart Weapons: Theranostics--A Novel NanoMedicine Approach to Combat Cancer**  
Angela Zhang, 16, Monta Vista High School, Cupertino, California
- ME304      **Scaffolds that Baffle: A Study of *in vitro* Differentiation of Cells via Notch Signaling in a 2D/3D Biomaterial Environment**  
Shantanu Abhishek Banerjee, 17, Westwood High School, Austin, Texas  
Varun Akella Koneru, 17, Westwood High School, Austin, Texas
- PH033      **Particle Motion in Microfluidic Chips**  
Daniel Isao Christe, 17, American Heritage School, Plantation, Florida
- PH046      **Finding Harmonics in Plasma**  
Dylan Edward Moore, 17, Alameda Community Learning Center, Alameda, California

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.

## Endocrine Society

### First Award of \$1,000

- BI011      **Determination of Estrogen as a Trigger of Protandric Colony Formation of *Amphiprion ocellaris***  
Emily Marie Crisp, 18, Loudoun County Academy of Science, Sterling, Virginia

### Second Award of \$500

- ME026      **Obesity**  
Marie Emilie Kaas Ibsen, 20, Naerum Gymnasium, Naerum, Denmark
- ME068      **Effects of Diabetes Mellitus on Vasculogenesis Capacities of Mesenchymal Stem Cells**  
Shubha Srinivas Raghvendra, 17, Saint Francis High School, Mountain View, California

### Certificate of Honorable Mention

- AS012      **Contraceptive Conundrum. A Multigenerational Study of Exposure to Birth Control in *Drosophila melanogaster***  
Hannah Claire Pagels, 15, Grove High School, Grove, Oklahoma
- BI004      **Type 2 Diabetes in the Age of Epigenetics: Diet Takes Over!**  
Sailee Yadav, 15, James W. Martin High School, Arlington, Texas
- BI039      **Expression and Localization of 3beta-Hydroxysteroid Dehydrogenase-1 in Human Breast Cancer Cells**  
Madhuchanda Bose, 15, Eastside High School, Gainesville, Florida

ME004      **Inhibition of Plasminogen Activator Inhibitor-1: A Novel Therapeutic Approach for Diabetic Vascular Disease**  
Samantha Renae Prabakaran, 15, Fort Myers High School, Fort Myers, Florida

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 have been 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

- EE040      **GNut, III: An A.I.R.V.I.S. (Anthropometric Interactive Robot with Vision Intelligence & Speech)**  
Arjun Aggarwal, 16, Lexington High School, Lexington, South Carolina
- EE041      **Brain Computer Interface**  
David Alexandre Joseph Campeau, 16, Mayo High School, Rochester, Minnesota
- EE064      **Electrowetting for Novel Electromechanical Applications**  
Andrey Sushko, 17, Hanford High School, Richland, Washington
- EN025      **Regulatory Signatures of Cancer Cell Lines Inferred from Gene Expression Data**  
Jayanth Krishnan, 17, Mahopac High School, Mahopac, New York
- MA031      **A Novel Implementation of the Elliptic Curve Method, Stage 2: Using Weierstrass and Edwards Elliptic Curves for Faster Factorization**  
Aishwarya Ananda Vardhana, 16, Jesuit High School, Portland, Oregon
- MA032      **Method of Optimizing the Monte Carlo Statistical Algorithm to Increase Computational Efficiency in Multidimensional Integration**  
Pratheek Nagaraj, 17, Marjory Stoneman Douglas High School, Parkland, Florida
- PH007      **The Effect of Tracking Error on the Measurement Exoplanet Light Curves**  
Brian Ronald Graham, 16, Southridge High School, Beaverton, Oregon
- PH014      **The Aurora Accelerator**  
Nicholas James Nothom, 16, Waconia High School, Waconia, Minnesota
- PH016      **Modeling Quench Propagation in a System of Interconnected Superconducting Coils**  
Emil Timergalievich Khabiboulline, 16, Illinois Mathematics and Science Academy, Aurora, Illinois
- PH038      **Characterizing the Spectral and Flow Characteristics of Microhollow Cathode Discharges**  
Kamal Shah, 18, Dr. Ronald E. McNair Academic High School, Jersey City, New Jersey
- PH041      **Isolation and Optimization of the Radial Electric Field for the Proton Electric Dipole Moment Experiment**  
Sahir Raoof, 17, Jericho Senior High School, Jericho, New York

PH048      **Extending the Motional Stark Effect Diagnostic to Low Magnetic Fields:  
Towards Implementing a Laser-induced Fluorescence Technique**  
Nicole Yeechi Tsai, 17, High Technology High School, Lincroft, New Jersey

This award is made possible by cooperative grants from Intel and the CERN IT Department, which collaborates with Intel in the framework of CERN openlab. Finalists **MUST** be available for travel on established date of June 18/19-24, meet eligibility requirements for travel, and return documentation promptly to be considered. A valid passport is required for travel.

## 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

- |       |  |
|-------|--|
| BE011 | <b>An Analysis of Listener Perception and Visual Replication of Sonifications:<br/>A Third Year Study</b><br>Neel Sanjay Patel, 16, Oviedo High School, Oviedo, Florida  |
| BE025 | <b>An Investigation of the Economic, Social, and Consequential Factors<br/>that Affect Moral Decision-Making</b><br>Katherine Michelle Mangialardi, 17, Ossining High School, Ossining   |
| CB021 | <b>Targeting AMP Kinase to Reverse Cisplatin Resistance in Ovarian Cancer</b><br>Shree Bose, 17, Fort Worth Country Day, Fort Worth, Texas   |
| CH019 | <b>Synthesis and Characterization of AuAg Alloy Nanoparticles for GFP Enhancement</b><br>Daniel Ling, 16, East Greenwich High School, East Greenwich, Rhode Island   |
| CS041 | <b>Prefix-Tree Based Anomaly Detection in Critical Software Systems</b><br>Favyen Bastani, 17, Texas Academy of Mathematics and Science, Denton, Texas   |
| CS046 | <b>The Data Stronghold</b><br>Andrue Storm Anderson, 17, Glen Rose High School, Malvern, Arkansas  |
| CS050 | <b>Faster, Cheaper Subject Identification Using Non-semantic Context Free Grammars</b><br>Michael Antonov Tontchev, 16, Baltimore Polytechnic Institute, Baltimore, Maryland   |
| EE063 | <b>Don't Fear, It's Secure: Flexible and Secure RFID System Deployment</b><br>Shayan J. Mohanty, 17, Plano Senior High School, Plano, Texas  |
| EE311 | <b>The Design, Development, and Testing of a Robotic Duct Sterilization System, Year 4</b><br>Spencer Steven Tuttle, 16, Palm Bay High School, Melbourne, Florida<br>Dalton James Stanley, 17, Palm Bay High School, Melbourne, Florida  |
| EM007 | <b>Clean Acres: Simulated <i>in situ</i> Bioremediation of Diesel Contaminated Soil Utilizing<br/>a Linoleic Acid and <i>R. rhodochrous</i> on Soil Type in and Uncontrolled Environment</b><br>Morgan Walker Sinko, 17, John Jay Science and Engineering Academy, San Antonio,<br>Texas |
| EM021 | <b>The Effect of <i>E. crassipes</i> on the Nitrate and Ammonia Levels from Sewage<br/>Treatment Waste Water</b><br>Kelly M. Martins, 17, Langley High School, McLean, Virginia  |

EN004	<b>Harnessing Waste Kinetic Energy through Footwear for Therapeutic Use</b> Tara Sowrirajan, 17, Cherry Creek High School, Greenwood Village, Colorado
EN030	<b>Tying Up Loose Nerves</b> Jacob Cameron Kimmel, 17, Satellite High School, Satellite Beach, Florida
ET017	<b>Maximizing Hybrid Rocket Motor Efficiency for Evaluating Recyclable and Renewable Fuels</b> Megan Lynn Perkins, 16, DuPont Manual Magnet High School, Louisville, Kentucky
ET043	<b>Alternative Energy</b> Joseph Michael Wilder, 17, Academy of Environmental Science, Crystal River, Florida
PH006	<b>Optimization of DBD Plasma Actuator Geometry for Maximum Force Production</b> Kelly Elizabeth Gray, 17, Union County High School, Lake Butler, Florida
PH014	<b>The Aurora Accelerator</b> Nicholas James Nothom, 16, Waconia High School, Waconia, Minnesota
PH016	<b>Modeling Quench Propagation in a System of Interconnected Superconducting Coils</b> Emil Timergalieвич Khabiboulline, 16, Illinois Mathematics and Science Academy, Aurora, Illinois
PH033	<b>Particle Motion in Microfluidic Chips</b> Daniel Isao Christe, 17, American Heritage School, Plantation, Florida

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

## Fondazione Bruno Kessler

The Fondazione Bruno Kessler is a leading research center located in Trento, Italy. WebValley, started in 2001, is the FBK Summer School program for interdisciplinary scientific research. Each year a team of enthusiastic and motivated high school students and FBK researchers accepts a project challenge proposed by an external scientist. The theme of the 2011 challenge is a Web-Kinect-GIS interface to climate change scenarios. Novel ways to interact with maps and complex environmental data will be explored, developing a prototype exhibit for the new Trento Science Museum. Three Intel ISEF Finalists will be selected to travel to Italy to be part of the WebValley team.

Award to travel Trento, Italy to participate in summer school WebValley

CS309	<b>The Multimodal Real-Time Recognition of Emotion in Human Speech</b> Matthew Philip Fernandez, 17, Oregon Episcopal School, Portland, Oregon
ME038	<b>Development and Characterization of a Novel Listeria-Caspase-3 DNA Vaccine to Eradicate Metastatic Breast Cancer</b> Swathi Krishnan, 17, Rye Country Day School- Upper School, Rye, New York
ME310	<b>Neuroscience of Longevity: Effects of Stress and Antioxidant Genes on the Lifespan of Transgenic <i>Drosophila melanogaster</i></b> Tess P. Michaels, 17, Plano West Senior High School, Plano, Texas

## GE Energy

GE Energy is one of the world's leading suppliers of power generation and energy technologies. GE Energy works in all areas of the energy industry including coal, oil, natural gas and nuclear energy; renewable resources such as water, wind, solar and biogas; and other alternative fuels. GE's tradition of innovation began with its founder Thomas Edison and the GE Energy Edison Award will recognize that same passion,

innovation and creativity. The award is presented to projects which best display imaginative, impactful or efficient generation or usage of energy with special consideration of the GE Ecomagination commitment.

**First Award of \$2,500**

ET058      **Reducing the Cut-In Wind Speed of Wind Turbine Blades by Redirecting the Boundary Layer Airflows**  
Lauren Heather Reid, 15, O'Neill Collegiate and Vocational Institute, Oshawa, Ontario, Canada

**Second Award of \$1,500**

MA030      **Modeling Wind Power Generation Using Polynomial Chaos Expansion**  
Ryan Thomas Baker, 17, Hillcrest High School, Midvale, Utah

**Third Award of \$1,000**

EE037      **Increasing the Efficiency of Solar Tracking Systems**  
Michael Anthony Cerabona, 17, Yorktown High School, Yorktown Heights, New York

## Goethe-Institut

The Goethe-Institut promotes the study of German while facilitating and encouraging international exchange and collaboration. Our cultural programming, ranging from musical performances to topic-oriented events in politics and science, showcases Germany's global relevance.

An educational and cultural trip to Bad Muenstereifel, Germany.

EE034      **The Effect of Light Wavelength on Solar Cell Efficiency**  
Jill Grey Ferguson, 16, Staunton River High School/ Roanoke Valley Governor's School, Moneta, Virginia

EN037      **Improving the Heat Capacity of Homemade Solar Ovens**  
Raquel Candace Redshirt, 16, Shiprock High School, Shiprock, New Mexico

High school sophomores and juniors who are interested in physics and engineering can compete for a trip to Bad Muenstereifel. From September 13 until September 21, winners will visit the Max Planck Institut fuer Radioastronomie, the Bayer plant in Leverkusen, the Aachen University's research division and attend the St. Michael-Gymnasium, a renowned technical-sciences high school. Cultural sight-seeing tours will complete the program.

## Google

Google recognizes how vital a good science and math education is to building products that change the world. So as committed supporters of students in the pursuit of science, technology, engineering and math (STEM) fields, Google is thrilled to be the Google's goal is simple: inspire the next generation of scientists to continue discovering, collaborating, innovating and making an impact. Google is offering three major awards to recognize Intel ISEF finalists whose projects have the potential for positive impact.

**CS Connect Award - \$10,000 for applying computer science to further science inquiry field**

PH039      **The Close Binary Fraction: A Bayesian Analysis of SDSS M Dwarf Spectra**  
Benjamin Mathias Clark, 15, Penn Manor High School, Millersville, Pennsylvania

**The Future of Energy Award - \$10,000 for the project that has the potential to shape the future of clean energy.**

ET031      **Synthesis of Complex Nanostructures for Solar Cells: Analysis Using Novel D-SCOPEn**  
Shyamal Buch, 15, Vista del Lago High School, Folsom, California

**Secret Change Agent Award - \$10,000 for the project that could create a positive impact in their neighborhood and in the global society.**

**EN028**

**Simplifying SODIS: Reduction of UV-impeding Turbidity through Macroscopic Filtration**

Sarah Joyce Flaherty, 15, Westdale Secondary School, Hamilton, Ontario, Canada

## **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**

**EE085**

**Autonomous Robotic Vehicle, Saving Lives, Preventing Accidents One at a Time**

Jessica Alexis Richeri, 17, Centennial High School, Corona, California

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**

**EE085**

**Autonomous Robotic Vehicle, Saving Lives, Preventing Accidents One at a Time**

Jessica Alexis Richeri, 17, Centennial High School, Corona, California

**Second Award of \$500**

**CS027**

**The Design and Implementation of a Dialect of Scheme for Parallel Processing on the GPU**

Gregory Louis Manis, 18, John F. Kennedy High School, Bellmore, New York

**Third Award of \$350**

**CS043**

**IrisScribe Eye-Typing Interface**

Matthew Thomas Vernacchia, 17, Upper Saint Clair High School,  
Upper Saint Clair, Pennsylvania

**Team First Award of \$500 for each team member**

**CS305**

**A Genetic Algorithm Approach to Minimizing Beam Loss in High Power Particle Accelerators**

Scotty Allan Chung, 18, Oak Ridge High School, Oak Ridge, Tennessee

Yajit Kumar Jain, 17, Oak Ridge High School, Oak Ridge, Tennessee

Carlos E del-Castillo-Negrete, 17, Oak Ridge High School, Oak Ridge, Tennessee

**Team Second Award of \$400 for each team member**

**CS311**

**Dyadic Interaction Assistant for Tracking Head Gestures and Facial Expressions**

Varun Ramesh, 15, Hamilton High School, Chandler, Arizona

Shantanu Bala, 16, Barry Goldwater High School, Phoenix, Arizona

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.



# IIT College of Psychology

Illinois Institute of Technology is a national, technological, Ph.D. granting research university, with world-renowned programs in engineering, architecture, the sciences, humanities, psychology, business, law, and design. The IIT College of Psychology is proud to offer awards at the Intel ISEF.

## **Renewable Scholarship to the IIT Institute of Psychology \$15,000 per year for up to four years**

- |       |   |
|-------|---|
| BE008 | <b>Improving Productivity in Factories through Music</b><br>Danielle Elizabeth Boer, 17, St. Dominic's Academy Newcastle, Newcastle, Kwa-Zulu Natal, South Africa   |
| BE012 | <b>A Clinical and Epidemiological Approach to the Relationship between Attention Deficit Hyperactivity Disorder (ADHD) and Sleep/Wake Disorders</b><br>Travis Coleman Sigafoos, 17, Champlin Park High School, Champlin, Minnesota      |
| BE015 | <b>The Technologies as a Resource for the Effective Learning of the Adolescents and Bearers of ADHD (Attention Deficit Hyperactivity Disorder)</b><br>Matheus Manuppella, 17, Colegio Hebraico Brasileiro Renascenca, Sao Paulo, Brasil |
| BE018 | <b>Who Pays More for Nationally Branded Products--Educated or Less Enlightened, Old or Young?</b><br>Sara Elisabeth Miller, 14, Nicolet High School, Gendale, Wisconsin   |
| BE028 | <b>Would You Do It for the Kids? Factors Involved in the Prediction of Intergenerational Preferences</b><br>Sarah Susie Pak, 17, Roslyn High School, Roslyn Heights, New York   |
| BE033 | <b>Damaging Effects to Cognitive Ability Due to Long-Term Treatment with a High Fat/High Cholesterol Diet</b><br>Ana Nicole Lanier, 16, Academic Magnet High School, North Charleston, South Carolina                                   |
| BE042 | <b>It's All in the Family: Examining the Effect of Living Arrangements and Social Support on Hypertension</b><br>Sarah Averil Albala, 18, John Jay High School, Cross River, New York   |
| BE055 | <b>A Big Fat Deal, Phase II: Fat Talk, Body Satisfaction, and Perceptions of Media Images</b><br>L. Elisabeth Burton, 15, Rio Rancho High School, Rio Rancho, New Mexico  |
| BE056 | <b>W, Wh, Why Can't I Have the Job? Listeners' Perceptions of People Who Suffer from Speech Impediments</b><br>Rosalyn Jules Langhinrichsen-Rohling, 14, S. S. Murphy High School, Mobile, Alabama                                      |

## **First Award of \$1500 for excellence in Behavioral and Social Science**

- |       |  |
|-------|--|
| BE012 | <b>A Clinical and Epidemiological Approach to the Relationship between Attention Deficit Hyperactivity Disorder (ADHD) and Sleep/Wake Disorders</b><br>Travis Coleman Sigafoos, 17, Champlin Park High School, Champlin, Minnesota |
|-------|--|

## **Second Award of \$1000 for excellence in Behavioral and Social Sciences**

- |       |  |
|-------|--|
| BE050 | <b>Growing Up 'In Sync': Connecting a Bridge to an Autistic Mind's World</b><br>Adelina Corina Cozma, 15, Bayview Secondary School, Richmond Hill, Ontario, Canada |
|-------|--|

**Third Award of \$500 for excellence in Behavioral and Social Sciences.**

**BE033      Damaging Effects to Cognitive Ability Due to Long-Term Treatment with a High Fat/High Cholesterol Diet**  
Ana Nicole Lanier, 16, Academic Magnet High School, North Charleston, South Carolina

**Scholarship award and continuation is conditional upon the student being admitted to Illinois Institute of Technology, maintaining satisfactory academic progress, and remaining a full-time student**

## **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**

**EN029      Critical Point of View: A System for *in vivo* Monitoring of Lung Sounds in Critical Care Patients**  
Kelles Diane Gordge, 16, Great Mills High School, Great Mills, Maryland

**Certificate of Honorable Mention**

**EE025      Electromagnetic Detection of Aquifers**  
Alexander Kent Kendrick, 18, Los Alamos High School, Los Alamos, New Mexico

**EE033      The Design & Construction of an Improved Point-of-Use Antimicrobial Water Purification System**  
Jonathan Charles Fuqua, 18, Nicolet High School, Glendale, Wisconsin

**EE038      A Robotic Assistant for the Visually-Impaired (RAVI): A Novel System Employing Digital Image Processing and Sonar Range Detection**  
Ishwarya Ananthabhotla, 18, Kings Park High School, Kings Park, New York

**EE041      Brain Computer Interface**  
David Alexandre Joseph Campeau, 16, Mayo High School, Rochester, Minnesota

**EE051      Navibot, Phase IV**  
Matthew Joseph Hummel, 17, Florence High School #14-1, Florence, South Dakota

**EE053      A Stand-Off Seismo-Acoustic Method for Humanitarian Demining**  
Marian Joan Bechtel, 16, Hempfield High School, Landisville, Pennsylvania

**EE078      Water for the World: Developing a Portable, Solar Powered Desalination Unit**  
Ryan Christopher Erickson, 17, Los Alamos High School, Los Alamos, New Mexico

**EE085      Autonomous Robotic Vehicle, Saving Lives, Preventing Accidents One at a Time**  
Jessica Alexis Richeri, 17, Centennial High School, Corona, California

**EM042      Thermoprocessing Prototype Plant for the Sugar Cane Bagasse Aiming the Production of Dimethylether**  
Lucas Ribeiro Mata, 17, Instituto Federal de Educacao, Ciencia e Tecnologia Fluminense, Macae, RJ, Brasil

**EN022      Accounting for Cross-talk between Signaling Pathways Identifies Novel Model for Early and Late Post-transplant Acute Rejection**  
Andrew Liu, 17, Henry M. Gunn Senior High School, Palo Alto, California

EN036      **eHeart: ECG Signal Processing System for Automatic Detection of Cardiac Abnormalities**  
Vamsi Chunduru, 17, Capital High School, Olympia, Washington

ET032      **Optimization of a Microbial Fuel Cell to Drive a Bioelectrochemically Assisted Wastewater Treatment Reactor**  
Ryota Ishizuka, 17, Greenwich High School, Greenwich, Connecticut

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

King Abdul-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 potable water technology.

### **First Award of \$5,000**

EV309      **Mussels, a Natural Approach to Sewage Treatment: Evaluating *Geukensia demissa* as Biofilters of Local Bay Pollution**  
Arianne Elizabeth Papa, 17, Long Beach High School, Lido Beach, New York  
Jane Elizabeth Smyth, 17, Long Beach High School, Lido Beach, New York

### **Second Award of \$3,000**

EV323      **Mimicking Wetting Behavior of Spider Silk: Studies on Water-Harvesting Efficiency According to the Fabrication of the Pattern of Wettability Gradient**  
Jinyoung Seo, 18, Korea Science Academy of KAIST, Busan, Busan, South Korea  
Dongju Shin, 18, Korea Science Academy of KAIST, Busan, Busan, South Korea

### **Third Award of \$2,000**

EM044      **The Optimization of Bioremediation**  
Riya Patel, 15, South Burlington High School, South Burlington, Vermont

## Medprin Biotech, LLC

Medprin Biotech is a biomedical device company, focused on improving people's lives through timely innovations in regenerative medicine and biomaterials. Medprin integrates advanced technologies and designs into people-centric solutions to address complex medical problems and is especially dedicated to the development and fabrication of implantable medical devices such as the regenerative dural maters, skin grafts, bone scaffolds, and nerve tubes. Medprin is awarding projects that contribute to scientific research related to biomaterials, biochemistry, regenerative medicine, and other life science fields.

### **First Award of \$3,000**

BI301      **Research on Functional Dietary Fibre of Wheat Bran**  
Fubin Li, 17, Zhengzhou No.11 Middle School, Zhengzhou, Henan, China  
Yakang Li, 18, Zhengzhou No.2 Middle School, Zhengzhou, Henan, China  
Zhongning Hao, 15, Henan Experimental High School, Zhengzhou, Henan, China

### **Second Award of \$1,000**

EN015      **Improving the Efficacy of Orthotics for Neuropathic Foot Ulcerations**  
Isabelle Cicely Gill, 15, Nicolet High School, Glendale, Wisconsin

### **Third Award of \$500**

BI010      **How Silica Nanoparticles Damage Fungi?**  
Diana Galautdinova, 17, Gymnasium 7, Kazan, Russian Federation, Kazan, Russia

BI035

**Pepper Species of *Capsicum annum* as a Biological Control for *Hypothenemus hampei* (Coffee Broca)**

Veronica Burgos Villodas, 18, Petra Mercado Bougart High School, Humacao, Puerto Rico

## 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 of \$1,000**

**MA002 Reformulating the Newton Direction Computation as a Linear Least Squares Problem for Smoothed Overdetermined L1 Functionals**

Matthew Russel Bauerle, 17, Bauerle Homeschool, Fenton, Michigan

**MA031 A Novel Implementation of the Elliptic Curve Method, Stage 2: Using Weierstrass and Edwards Elliptic Curves for Faster Factorization**

Aishwarya Ananda Vardhana, 16, Jesuit High School, Portland, Oregon

**MA035 On the Verge of Where It Wasn't: A Multiple Model Approach to Estimation and Tracking Using Extended Kalman Filtering and Intelligent Selection of Integrated Models**

John Tilla Parish IV, 18, Home School, Colorado Springs, Colorado

Each winner will receive a certificate.

## 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**

**EN025 Regulatory Signatures of Cancer Cell Lines Inferred from Gene Expression Data**

Jayanth Krishnan, 17, Mahopac High School, Mahopac, New York

### **Second Award of \$2,000**

**CB306 The Effects of Gold and Platinum Nanoparticles on Dental Pulp Stem Cell Growth and Differentiation**

Abraham Delanor Killanin, 18, Lawrence High School, Cedarhurst, New York

Evan Glenn Schneider, 16, Roslyn High School, Roslyn Heights, New York

### **Third Award of \$1,000**

**CH016 Polyfunctionalized Single-Walled Carbon Nanotubes as Novel Scaffolds for Multimodal Tumor-Targeted Therapy and Biological Imaging**

Neil Pathak, 18, Herricks Senior High School, New Hyde Park, New York

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

# National Collegiate Inventors and Innovators Alliance/ The Lemelson Foundation

The National Collegiate Inventors and Innovators Alliance will award prizes in 11 different categories, which recognize innovation and invention that addresses critical basic human needs. An additional six prizes will be awarded to one project in each of the following areas: Engineering, Chemistry, Microbiology, Medicine & Health and Computer Science. Awards are given for creativity, technological innovation and commercial promise.

## Award of \$1,000

CH303	<b>An Expanded Polystyrene-based Ion-exchange Resin and Analysis of Its Retention of Heavy-metal Ions</b> Amanda De La Rocque Rodrigues, 20, Escola Tecnica Getulio Vargas, Sao Paulo, Brasil Carlos Henrique Leite da Silva, 19, Escola Tecnica Getulio Vargas, Sao Paulo, Brasil Paolo Damas Pulcini, 19, Escola Tecnica Estadual Getulio Vargas, Sao Paulo, Brasil
CS031	<b>Tornado App</b> Harihar Ganeshan Subramanyam, 17, Wachusett Regional High School, Holden, Massachusetts
EE307	<b>Fabrication and Impact Optimization of Angular and Hydrostatic Body Armor</b> Atif Javed, 18, Fairfax High School, Fairfax, Virginia Steven Donald Gillen, 17, Fairfax High School, Fairfax, Virginia
EM015	<b>A Comparison of the Efficiencies of Active Radon Gas Mitigation Systems</b> Rachel A. Hodge, 16, Jasper High School, Plano, Texas
EN029	<b>Critical Point of View: A System for <i>in vivo</i> Monitoring of Lung Sounds in Critical Care Patients</b> Kelles Diane Gordge, 16, Great Mills High School, Great Mills, Maryland
ET005	<b>The Creation and Testing of a Fully Submersible Geared Water Turbine for Alternative Energy Production</b> Gavin Grant Ovsak, 17, Eden Prairie High School, Hopkins, Minnesota
EV307	<b>HD Converter</b> Doha Raaouf Sokarieh, 17, Canadian High School, Beirut, South, Lebanon Hayat Mousa Itani, 17, Canadian High School, White, South, Lebanon
ME098	<b>Development of a Novel Model for Assessing Biomechanical Properties and Failure Mechanisms of Various Suture Techniques: Implications for Wound Dehiscence</b> Arslan Arshad, 17, The Mississippi School for Mathematics and Science, Columbus, Mississippi
MI027	<b>Analysis of the Bacterial Heat Shock Response to Photodynamic Therapy-Mediated Oxidative Stress</b> Tyler Gordon St. Denis, 17, John Jay High School, Cross River, New York
PH052	<b>Positrons: Element of Dark Matter</b> Michael Anthony Labbe, 16, Notre Dame High School, Chattanooga, Tennessee

## National Institute on Drug Abuse, Friends of NIDA, National Institutes of Health

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**

BE028

#### **Would You Do It for the Kids? Factors Involved in the Prediction of Intergenerational Preferences**

Sarah Susie Pak, 17, Roslyn High School, Roslyn Heights, New York

### **Second Award \$1,500**

ME093

#### **Making Heartbeats Go LOKO**

Darby Kathryn Schumacher, 15, Girls Preparatory School, Chattanooga, Tennessee

### **Third Award of \$1,000**

BI028

#### **From Models to Medications: Identification of Medication Leads for Treating Methamphetamine Addiction**

Yamini T. Naidu, 16, Valley Catholic High School, Beaverton, Oregon

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.

CS031

#### **Tornado App**

Harihar Ganeshan Subramanyam, 17, Wachusett Regional High School, Holden, Massachusetts

## National Taiwan Science Education Center

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.

CS043

#### **IrisScribe Eye-Typing Interface**

Matthew Thomas Vernacchia, 17, Upper Saint Clair High School, Upper Saint Clair, Pennsylvania

CS062

#### **Do SAT Problems Have Boiling Points?**

Soumya Chakrabarti Kambhampati, 14, McClintock High School, Tempe, Arizona

Valid passport required for travel

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

The Office of Naval Research coordinates, executes and promotes the science and technology programs of the United States Navy and Marine Corps. They will give seventeen Tuition Scholarship Awards in the amount of \$8,000. There will also be four Tuition Scholarship Awards of \$4,000 for original research in an important Naval-relevant scientific area that also include trips to the London International Youth Forum. 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.

## **Tuition Scholarship Award in the amount of \$8,000**

- |       |   |
|-------|---|
| AS005 | <b>The Effects of Nicotinic Acid, Resveratrol, and Rapamycin on the Life Span, Reproduction, and Ability to Cope with Temperature Stress of <i>Drosophila melanogaster</i></b><br>Aaron Samuel Greenfield, 17, Keystone School, San Antonio, Texas  |
| BE002 | <b>Determining the Effect of Distractions Behind the Wheel on Teenagers through the Use of Driving Simulation</b><br>Callie Marie Johnson, 15, St. Joseph's Academy, Baton Rouge, Louisiana   |
| BI031 | <b>Regulation of Nitric Oxide Expression as a Form of Neurotransmitter Plasticity</b><br>Vaishnavi Lakshminarasimha Rao, 15, Canyon Crest Academy, San Diego, California  |
| CB024 | <b>Development of a Low Cost Electroporator for High School and Developing World Applications</b><br>Timothy D. Trippel, 18, Marian High School, Mishawaka, Indiana   |
| CH022 | <b>Constructing a Novel Cage Molecule for Use in a Dye-Sensitized Solar Cell</b><br>Kerry Nicole Betz, 17, Fairview High School, Boulder, Colorado  |
| CS038 | <b>Developing an Adaptive Disaster Evacuation Simulation</b><br>Francis Xinghang Chen, 17, Penn High School, Mishawaka, Indiana   |
| EA004 | <b>The Coronae Paradox: The Use of Visual Basic to Determine Circular Low Formation Based upon Maps Created Using Magellan Radar Data in order to Determine the Process(es) of Coronae Formation and the Overall Geologic History of Circular Lows on Venus, Phase IV</b><br>Courtney Catherine Jackson, 18, Cloquet Senior High School, Cloquet, Minnesota |
| EE085 | <b>Autonomous Robotic Vehicle, Saving Lives, Preventing Accidents One at a Time</b><br>Jessica Alexis Richeri, 17, Centennial High School, Corona, California   |
| EM049 | <b>Monitoring the Disturbance of Soil Micro-Ecosystems in Dormant Topsoil Using Nematodes and Studying the Methods to Rehabilitate Soil for Effective Site Restoration</b><br>Laura Bernadette Lane, 17, Aztec High School, Aztec, New Mexico   |
| EN043 | <b>Exploiting Osmosis for Blood Cell Sorting with Microfluidic Devices</b><br>Vinay Ashok Raj, 17, duPont Manual High School, Louisville, Kentucky  |
| ET001 | <b>The Engineering of a Novel Magnetic Levitation Train Propulsion System through the Application of a Coil Current Gradient</b><br>Christopher Joseph Davlantes, 18, Bishop Kenny High School, Jacksonville, Florida   |

EV033      **An Experimental Study of the Impact of Airborne Pollutants on the Peak Expiratory Flow (PEF) Rate of Asthmatic Subjects PLUS A Novel Risk Assessment Model to Predict the Adverse Effect of PM10 and TVOCs on the PEF Rate**  
Naomi C Shah, 16, Sunset High School, Portland, Oregon

MA019      **On the Second Eigenvalue and Expansion of Bipartite Regular Graphs**  
Wenyu Cao, 18, Phillips Academy, Andover, Massachusetts

ME030      **Monocytic Gene Cell Therapy: Potential Treatment for Alzheimer's Disease**  
Jasmine Samaiya Roberts, 18, Paul R. Wharton High School, Tampa, Florida

MI029      **Identification of the Target of the Antibiotic Salinamide A**  
Katherine Yon Ebright, 17, North Brunswick Township High School,  
North Brunswick, New Jersey

PH031      **Correlation between Peel Speed and Intensity of Triboluminescence in Adhesive Tape**  
Elizabeth Caldwell Schroder, 18, North Carolina School of Science and Mathematics,  
Durham, North Carolina

PS024      **Nature's Nurture**  
Warner A. Ward, 16, Moore Haven Junior/Senior High School, Moore Haven, Florida

**Tuition Scholarship Award of \$4,000 for original research in an important Naval-relevant scientific area.  
Trip to attend the London International Youth Forum**

EE071      **Acoustic Imaging Using Optimized Beamforming Techniques**  
Andrew Beekman Feldman, 16, Manalapan High School, Englishtown, New Jersey

EV038      **Long-wavelength Light as a Catalyst for MS2 Photoinactivation by Cationic Porphyrins**  
Marc Herman Webb, 18, Josephine Dobbs Clement Early College High School,  
Durham, North Carolina

MI028      **A Solution to the Worldwide Malaria Epidemic: *T. gondii* Mitochondria-Associated Proteins as Potential Drug Targets of Tomorrow**  
Matthew Karmen McIntyre, 18, Yorktown High School, Yorktown Heights, New York

**Team Tuition Scholarship Award in the amount of \$4000 to be equally divided among the team members.  
Trip to attend the London International Youth Forum**

EE307      **Fabrication and Impact Optimization of Angular and Hydrostatic Body Armor**  
Atif Javed, 18, Fairfax High School, Fairfax, Virginia  
Steven Donald Gillen, 17, Fairfax High School, Fairfax, Virginia

**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 US, 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

- EV033      **An Experimental Study of the Impact of Airborne Pollutants on the Peak Expiratory Flow (PEF) Rate of Asthmatic Subjects PLUS A Novel Risk Assessment Model to Predict the Adverse Effect of PM10 and TVOCs on the PEF Rate**  
Naomi C Shah, 16, Sunset High School, Portland, Oregon
- PH007      **The Effect of Tracking Error on the Measurement Exoplanet Light Curves**  
Brian Ronald Graham, 16, Southridge High School, Beaverton, Oregon

## U.S. Patent and Trademark Office Society

Promotes the US 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. Theses award encourage young inventors to develop new and useful products, and to pursue careers in science and technology.

Grand Award of \$1,000, an American flag, and a framed copy of the first patent granted in the United States of America.

- EN017      **Determining if *Magnetospirillum magnetotacticum* Can Be Used to Kill *Tetrahymena pyriformis* via Magnetically-Induced Hyperthermia as a Basis for Alternative Cancer Treatment**  
Anurag Narain Mathur, 17, Academy of Science, Sterling, Virginia

### First Award of \$200

- BI041      **The Effect of Heavy Metals on Porphyrin Ring Compounds Part Three: Leached Mercury into the Base of the Food Chain near Coal Combustion Waste Disposal Sites**  
Arina Ghosh, 17, Alabama School of Fine Arts, Birmingham, Alabama
- CB010      **A Novel Perfusion-Based Protocol for Decellularization of Adipose Tissue on a Bioreactor**  
Revanth Sai Kosaraju, 17, The Harker School, San Jose, California
- CS057      **Novel Foundational Algorithms for Automatic Music Analysis with Wide Applicability in Signal Processing**  
Vighnesh Leonardo Shiv, 17, Catlin Gabel School, Portland, Oregon
- EA016      **Green Energy from the Deep Blue: Using Kites to Generate Electrical Energy from Ocean Currents**  
Rohan Thakur, 16, Clark High School, Plano, Texas
- EM036      **Will EMF Stunt Your Growth?**  
Janelle van Leeuwen, 14, Hillfield Strathallan College, Hamilton, Ontario, Canada
- ME101      **Evaluation of Transdermally Delivered Aspirin**  
Purnima Malik, 18, Central York High School, York, Pennsylvania

PH010      **The Flow Feature around Insects and Bionic Wing Based on Wind Tunnel Test**  
Yimeng Shi, 18, The High School Affiliated to Renmin University of China, Beijing,  
Beijing, China

**Second Award of \$150**

CH025      **Optimization and Mechanistic Investigation of a User and Eco-Friendly Protocol  
for Oxidative Cleavage of Alkenes**  
Prem P. Thottumkara, 18, Macomb High School, Macomb, Illinois

CS009      **Composing Frusta to Fold Polyhedral Origami**  
Herng Yi Cheng, 18, NUS High School of Mathematics and Science, Singapore, Singapore

EE003      **Novel Oral Drug Inhaler Design to Optimize Drug Deposition in the Lungs**  
Arnab Dey, 16, Arkansas School for Mathematics, Sciences and the Arts,  
Hot Springs, Arkansas

ET001      **The Engineering of a Novel Magnetic Levitation Train Propulsion System  
through the Application of a Coil Current Gradient**  
Christopher Joseph Davlantes, 18, Bishop Kenny High School, Jacksonville, Florida

EV003      **The Use of *Sarcocornia quinqueflora* as a Bioindicator of Soil Salinity in Wetlands**  
Tanvi Srinivasan, 17, The Queensland Academy for Health Sciences,  
Gold Coast, Australia

ME061      **Dental Sealant Deterioration**  
Azad Sunil Dhingra, 16, Springfield High School, Springfield, Ohio

MI027      **Analysis of the Bacterial Heat Shock Response to Photodynamic Therapy-Mediated  
Oxidative Stress**  
Tyler Gordon St. Denis, 17, John Jay High School, Cross River, New York

PH055      **Applications of Stroboscope in Music Acoustics**  
Yulim Kim, 14, Sungduk Middle School, Daejeon, Daejeon, South Korea

## **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**

ET019      **New Concept to Improve the Photovoltaic Conversion Efficiency**  
Bowen Zhu, 18, High School Affiliated to Shanghai Jiao Tong University, Shanghai, China

The award is sponsored by ProConn Power, Inc.

## **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. Psi Chi is awarding the best projects in psychological science.

**First Award of \$1,000**

BE007      **Epidemiology of Sugar Dependence Amongst Adolescents**  
Alessio Pio Giuricich, 16, Bishops Diocesan College, Cape Town, South Africa

#### **Second Award of \$350**

**BE010      The Influence of Phrase-Spaced Text on Reading Comprehension of Stroke Patients**  
Lindsey Brooke Saunders, 17, Union County High School, Lake Butler, Florida

#### **Third Award of \$150**

**BE041      Audio-Visual HIV/AIDS Education in a Tanzanian Adolescent Population**  
Lori Kim, 18, West High School, Salt Lake City, Utah

**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**

**ET024      Generating Clean Electrical Tidal Power, Year Three of an Ongoing Study**  
Kyle Scott Saleeby, 16, Niceville High School, Niceville, Florida

**ET027      Solar Energy for All: Low-Cost Residential Concentrator Photovoltaic System Design**  
Yinshuo Zhang, 16, Mankato West High School, Mankato, Minnesota

## **SPIE-The International Society for Optical Engineering**

Advancing the science and application of light, SPIE is the largest international not-for-profit society in optics, photonics, and imaging. SPIE also supports Intel ISEF-affiliated science fairs to help inform students about the educational and career possibilities in the exciting and growing field of optical engineering. SPIE presents these awards for the best projects in the area of Optics and Photonics Engineering.

#### **First Award of \$2,500**

**CS002      Creation and Navigation of a 3D Environment with Stereo Vision, a Continuation**  
Dylan Cooper Dalrymple, 16, Pensacola High School, Pensacola, Florida

#### **Second Award of \$1,500**

**EE073      Indoor Ground Manifold Tracking through Low-Cost Stereoscopy**  
Christopher Stephen Nielsen, 17, Homeschool, Calgary, Alberta, Canada

#### **Third Award of \$1,000**

**EE058      Passive Solar Tracking**  
Anthony Vladimir Sarganov, 17, Albert Grannis Lane Technical College Preparatory High School, Chicago, Illinois

**SPIE has distributed nearly \$3 million in individual scholarships and institutional grants. This ambitious effort reflects the Society's commitment to education and to the next generation of optical scientists and engineers.**

## 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**

EV309

#### **Mussels, a Natural Approach to Sewage Treatment: Evaluating *Geukensia demissa* as Biofilters of Local Bay Pollution**

Arianne Elizabeth Papa, 17, Long Beach High School, Lido Beach, New York  
Jane Elizabeth Smyth, 17, Long Beach High School, Lido Beach, New York

### **Second Award of \$1,500**

CS307

#### **Position and Vector Detection of Blind Spot Motion with Horn-Schunck Optical Flow**

Mike Wu, 16, Torrey Pines High School, San Diego, California  
Stephen Sia Yu, 17, Torrey Pines High School, San Diego, California

### **Third Award of \$1,000**

ME310

#### **Neuroscience of Longevity: Effects of Stress and Antioxidant Genes on the Lifespan of Transgenic *Drosophila melanogaster***

Lisa P. Michaels, 15, Shepton High School, Plano, Texas  
Tess P. Michaels, 17, Plano West Senior High School, Plano, Texas

Award to be split between team members

## 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 \$1,500**

EN026

#### **Micro-Magnetic Rotor Pump for Controlled Fluid Transport**

Manjari Randeria, 16, Upper Arlington High School, Columbus, Ohio

### **Second Award of \$500**

PH304

#### **Studies of Cell Elasticity by Nonlinear Damping**

Janet Yun-Chen Sung, 18, Taipei First Girls High School, Taipei City, Chinese Taipei  
Nai-Wen Hu, 16, Taipei First Girls High School, Taipei City, Chinese Taipei

### **Third Award of \$250**

EN302

#### **Study of Steels Suitable for Reactor Pressure Vessels**

Marek Kovar, 19, Gymnazium Karla Sladkovskeho, Prague, Czech Republic  
Tomas Petak, 19, Gymnazium Karla Sladkovskeho, Prague, Czech Republic

## 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. The Society's Intel ISEF awards recognize outstanding achievement in the engineering sciences to inspire youth to careers in aerospace and to the flight test profession.

### **First Award of \$1,000**

ET058      **Reducing the Cut-In Wind Speed of Wind Turbine Blades by Redirecting the Boundary Layer Airflows**  
Lauren Heather Reid, 15, O'Neill Collegiate and Vocational Institute, Oshawa, Ontario, Canada

### **Second Award of \$500**

ET017      **Maximizing Hybrid Rocket Motor Efficiency for Evaluating Recyclable and Renewable Fuels**  
Megan Lynn Perkins, 16, DuPont Manual Magnet High School, Louisville, Kentucky

### **Third Award of \$300**

EE050      **Ornithopter Design: Optimizing Turning Radius**  
Kristin Anne Goehl, 17, Wachusett Regional High School, Holden, Massachusetts

### **Certificate of Honorable Mention**

ET047      **The Effect of Winglet Angle on the Induced Drag of an Airplane**  
Taylor Mason Hose, 16, Hedgesville High School, Hedgesville, West Virginia

ET057      **Natural Selection**  
Caleb Kyle Meyer, 16, Hope-Page Public School, Hope, North Dakota

MA035      **On the Verge of Where It Wasn't: A Multiple Model Approach to Estimation and Tracking Using Extended Kalman Filtering and Intelligent Selection of Integrated Models**  
John Tilla Parish IV, 18, Home School, Colorado Springs, Colorado

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

## Society of Exploration Geophysicists

For projects that display excellence related to the geophysical sciences.

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

EE071      **Acoustic Imaging Using Optimized Beamforming Techniques**  
Andrew Beekman Feldman, 16, Manalapan High School, Englishtown, New Jersey

### **Award of Merit of \$1,000**

EA011      **Investigating Climate Change: A Comparative Analysis of Colonial and Modern Weather Data**  
Marni Jordyn Wasserman, 18, Commack High School, Commack, New York

PH062      **Better Images, Fewer Samples: Optimizing Sample Distribution for Compressed Sensing in Radio Interferometry**  
Clara Louisa Fannjiang, 17, Davis Senior High School, Davis, California

#### **Award of Merit of \$500**

- EA005      **Astronomical Image Processing: Eliminating Random Atmospheric Noise and Enhancing Low Resolution Images, Year III**  
Amy Charlotte Robinson, 18, Keystone School, San Antonio, Texas
- EE025      **Electromagnetic Detection of Aquifers**  
Alexander Kent Kendrick, 18, Los Alamos High School, Los Alamos, New Mexico
- EE053      **A Stand-Off Seismo-Acoustic Method for Humanitarian Demining**  
Marian Joan Bechtel, 16, Hempfield High School, Landisville, Pennsylvania

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

#### **Certificate of Honorable Mention**

- EE009      **Precision Location of Acoustic Sources**  
Alexander Nathan Finney, 16, Covenant Christian Academy, Huntsville, Alabama
- EM306      **Detecting Oil Spills Using Synthetic Aperture Radar**  
Calvin Ling, 16, The Liberal Arts and Science Academy High School, Austin, Texas  
Mark Sands, 17, The Liberal Arts and Science Academy High School, Austin, Texas
- EN317      **Bamboo-based Composites for Earthquake-Resistant Building Materials**  
Andrey Irawan Halim, 18, Santa Laurensia High School, Tangerang Selatan, Banten, Indonesia  
Reyner Jong, 17, Santa Laurensia High School, Tangerang Selatan, Banten, Indonesia
- EV006      **Enhanced Adsorption of Arsenic on Aquifer Solids: Impact of Oxidative Treatment of Aquifer Solids**  
Jenna Reed Huling, 17, Ada High School, Ada, Oklahoma

## **States United for Biomedical Research (SUBR)**

**SUBR is a network of nonprofit associations who have joined forces to promote health through science and education, to promote public understanding and increase appreciation of the values of biomedical research, including humane care and use of research animals, and provide access to accurate information about biomedical research and its benefits.**

#### **First Award of \$2,000**

- ME030      **Monocytic Gene Cell Therapy: Potential Treatment for Alzheimer's Disease**  
Jasmine Samaiya Roberts, 18, Paul R. Wharton High School, Tampa, Florida

#### **Second Award of \$1,000**

- AS041      **The Effects of Cage Naturality on the Scientific Viability of Mouse Models in Relation to Stress and Cognition**  
Casey Jacob Acklin, 15, The Davidson Academy of Nevada, Reno, Nevada
- ME015      **The Effects of Zinc Gluconate and Two Other Divalent Cationic Compounds on Olfactory Function**  
Christopher Anthony Duncan-Lewis, 18, Winter Springs High School, Winter Springs, Florida

**Third Award of \$500**

AS025

**A Novel Approach to the Analysis of Circadian Biology Using Scale Invariance of Multiple Coupled Oscillations**

Daniel Jacobs Kramer, 17, Lynbrook Senior High School, Lynbrook, New York

In addition, a \$1,000 grant is awarded to the teacher of the SUBR first place award winner.

## Synaptics, Inc.

Synaptics is a leading worldwide developer of user interface solutions for consumer electronics. Our mission is to enrich the interaction between users and intelligent devices. Synaptics products emphasize ease of use, low power consumption, advanced functionality, and reliability, making them applicable to notebook computers, PC peripherals, mobile phones, and portable devices. Synaptics is awarding projects which contribute to scientifically sound research relevant to human interface technology.

**First Award of \$1,500**

CS055

**Active Noise Cancellation in Human-Robot Speech Interaction**

Jao-ke Chin-Lee, 16, Stuyvesant High School, New York, New York

**Second Award of \$750**

CS043

**IrisScribe Eye-Typing Interface**

Matthew Thomas Vernacchia, 17, Upper Saint Clair High School,  
Upper Saint Clair, Pennsylvania

**Third Award of \$250**

CS010

**DragTop**

Alessandro Abati, 20, Liceo Scientifico Niccolo Copernico, Prato, Prato, Italy

## United States Army

The Department of the Army is proud of its more than 30 year history of sponsorship of the International Science and Engineering Fair Program. We congratulate the Society for Science & the Public and its continued commitment to sponsor programs such as this for the young budding scientists who will lead us into the future. The Army will be giving seventeen Awards of three \$1,000 U.S. Savings Bonds, a certificate of achievement and a gold medallion and one Award of three \$1,000 U.S. Savings Bonds, to be shared equally by team members, and certificates of achievement and gold medallions.

**Award of three \$1,000 U.S. Savings Bonds, a certificate of achievement and a gold medallion.**

AS034

**Ways to Enhance Cell Regeneration**

Christina Ren, 15, Monte Vista High School, Danville, California

BE010

**The Influence of Phrase-Spaced Text on Reading Comprehension of Stroke Patients**

Lindsey Brooke Saunders, 17, Union County High School, Lake Butler, Florida

BI046

**Audio Perception: Plotting the Pathway of the BK Channel**

Sophia Paulina Mae Sokolowski, 16, Academy at the Lakes, Land O' Lakes, Florida

CB024

**Development of a Low Cost Electroporator for High School and Developing World Applications**

Timothy D. Trippel, 18, Marian High School, Mishawaka, Indiana

CH016

**Polyfunctionalized Single-Walled Carbon Nanotubes as Novel Scaffolds for Multimodal Tumor-Targeted Therapy and Biological Imaging**

Neil Pathak, 18, Herricks Senior High School, New Hyde Park, New York

CS065	<b>Quadrocopter Aerial Monocular Vision for Improved Autonomous Robot Navigation</b> Kenny Zane Lei, 16, Walnut High School, Walnut, California
EA028	<b>The Effects of Ocean Temperature on Aerosol Particle Absorption</b> Kyra Holister Grantz, 17, The York School, Monterey, California
EE053	<b>A Stand-Off Seismo-Acoustic Method for Humanitarian Demining</b> Marian Joan Bechtel, 16, Hempfield High School, Landisville, Pennsylvania
EM039	<b>Biochar Carbon Sequestration: The Effects of Feedstock and Temperature of Pyrolysis on Chemical and Physical Stability of Biochar</b> Meghana Vijay Rao, 15, Jesuit High School, Portland, Oregon
EN029	<b>Critical Point of View: A System for in vivo Monitoring of Lung Sounds in Critical Care Patients</b> Kelles Diane Gordge, 16, Great Mills High School, Great Mills, Maryland
ET021	<b>Enhancing Algae Biofuels, Phase II: Stress Analysis of ACCase, an Enzymatic Factor of Lipid Production</b> Sara Ellen Volz, 15, Cheyenne Mountain High School, Colorado Springs, Colorado
EV024	<b>Ground and Stand Level Factors in a Northeast North American Forest with Beech Bark Disease</b> Zachary Taylor Wood, 17, Burnt Hills - Ballston Lake Senior High School, Burnt Hills, New York
MA017	<b>Linearly Many Faults in (n,k)-star Graphs</b> Allen Yuan, 17, Detroit Country Day School, Beverly Hills, Michigan
ME008	<b>CNS Binding Human Monoclonal Autoantibodies Do Not Exacerbate Clinical Symptoms in a Mouse Model of Multiple Sclerosis</b> Spencer Kelly Gladis, 18, Chatfield High School, Chatfield, Minnesota
MI024	<b>Evaluating the Role of the HOG1 and ESCRT Pathways in Host/Cell Interaction and Stress Response of <i>Candida albicans</i></b> David Kenneth Tang-Quan, 18, Palos Verdes Peninsula High School, Rolling Hills Estates, California
PH031	<b>Correlation between Peel Speed and Intensity of Triboluminescence in Adhesive Tape</b> Elizabeth Caldwell Schroder, 18, North Carolina School of Science and Mathematics, Durham, North Carolina
PS004	<b>Rubus Endophytes: Application and Implication for Biological Control</b> Ann C. Bernert, 18, West Linn High School, West Linn, Oregon

**Award of three \$1,000 U.S. Savings Bonds, to be shared equally by team members, and certificates of achievement and gold medallions.**

CH301	<b>Kinetic Analysis of Nanometallic Catalyst in Reduction of Nitrophenol: Investigation of a New Class of "Super Catalyst"</b> Quoc-Bao Duy Nguyen, 16, Westwood High School and McNeil High School, Austin, Texas Mai-Anh N. Vu, 15, Westwood High School and McNeil High School, Austin, Texas
-------	--



# United States Environmental Protection Agency

One 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**

EN032      **The Algae-Mobile 3: Bioactive Energy and Carbon Dioxide Filtration in the Exhaust of a Car**  
Param Jaggi, 17, Plano East Senior High School, Plano, Texas

# United Technologies Corporation

United Technologies Corporation, based in Hartford, Conn., is a diversified company providing high technology products and services to the global aerospace and building industries. UTCs products include Pratt & Whitney aircraft engines, Sikorsky helicopters, Carrier heating and air conditioning, Hamilton Sundstrand aerospace systems and industrial products, Otis elevators and escalators, UTC Fire & Security systems and UTC Power fuel cells. In addition, the corporation operates a research center, UTRC, 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 \$2,000 in shares of UTC common stock.

CS044      **A Novel Framework for Quasi-Dynamic Task Scheduling on Parallel Computers**  
Jonathan Abraham Goldman, 17, Plainview-Old Bethpage John F. Kennedy High School, Plainview, New York

EE067      **Stability Analysis of Control Algorithms**  
Keegan Robert Mann, 18, San Pasqual High, Escondido, California

EE078      **Water for the World: Developing a Portable, Solar Powered Desalination Unit**  
Ryan Christopher Erickson, 17, Los Alamos High School, Los Alamos, New Mexico

EE088      **An Adsorption Chiller Prototype for Obtaining Green Refrigeration from Solar Heating**  
Robert Huntington Verkuil, 16, Roy C. Ketcham High School, Wappingers Falls, New York

EE325      **PAWT (Polygonal Airfoil Wind Turbine), the Greener Future: An Innovative Approach to Engineering a Bladeless Wind Turbine**  
Shawnalyn Wing Chun Sunagawa, 18, Saint Andrew's Priory School, Honolulu, Hawaii  
Sara Elisabeth Middendorf, 18, Saint Andrew's Priory School, Honolulu, Hawaii

MA017      **Linearly Many Faults in (n,k)-star Graphs**  
Allen Yuan, 17, Detroit Country Day School, Beverly Hills, Michigan

PH010      **The Flow Feature around Insects and Bionic Wing Based on Wind Tunnel Test**  
Yimeng Shi, 18, The High School Affiliated to Renmin University of China, Beijing, Beijing, China

PH047      **Testing a Nonlinear-Oscillator Neuron Model with Optical Illusions**  
Sara Kornfeld Simpson, 14, Patrick Henry High School, San Diego, California

Each winner will also receive a plaque, digital camera, pen,backpack 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 two (2) \$10,000 scholarships to selected finalists from the following categories: Biochemistry, Cellular and Molecular Biology, Chemistry, Computer Science, Environmental Science, Medicine & Health, or Microbiology.

**Tuition Scholarship of \$10,000 per year for four years.**

- |       |  |
|-------|--|
| BI030 | <b>Activating Pro-Caspase-3 as an Anti-Cancer Strategy</b><br>Avery Thorpe Young, 17, William G. Enloe High School, Raleigh, North Carolina                                    |
| ME003 | <b>The Effects of Pepper Juice vs. Vancomycin and Colloidal Silver on MRSA Inhibition and Cell Degradation</b><br>Alex Keeler, 17, South Sumter High School, Bushnell, Florida |

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 \$1,000**

- |       |   |
|-------|---|
| PH041 | <b>Isolation and Optimization of the Radial Electric Field for the Proton Electric Dipole Moment Experiment</b><br>Sahir Raoof, 17, Jericho Senior High School, Jericho, New York |
|-------|---|

**Second Award of \$500**

- |       |  |
|-------|--|
| PH046 | <b>Finding Harmonics in Plasma</b><br>Dylan Edward Moore, 17, Alameda Community Learning Center, Alameda, California |
|-------|--|

## 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 with their own copy of Mathematica for Students. 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.