Winner Announcement

**Strict Embargo: Friday, May 14, 2010, 11:00 a.m. PST**

**Do Not Release Until This Time**

Intel ISEF 2010 Grand Awards Ceremony

Intel International Science and Engineering Fair, a program of Society for Science & the Public

San Jose, California, USA – Society for Science & the Public, in partnership with the Intel Foundation, this morning announced awards at the Intel ISEF 2010 Grand Awards Ceremony. Student winners are ninth through twelfth graders who earned the right to compete by winning top prize at a local, regional, state or national science fairs.

The Intel International Science and Engineering Fair has been administered by Society for Science & the Public (SSP) since its inception in 1950. SSP is a nonprofit membership organization dedicated to the public engagement in scientific research and education. Our vision is to promote the understanding and appreciation of science and the vital role it plays in human advancement: to inform, educate, inspire.

This information will be posted on the SSP website at www.societyforscience.org immediately following the ceremony.

The Gordon E. Moore Award

The Moore Award recognizes the Best of the Best among the outstanding students from around the world who participate in the Intel ISEF. The winner is selected on the basis of their innovative research, as well as on the potential impact of their work - in their field and on the world stage.

Gordon E. Moore Award $75,000

CH007

Lights, Quantum Dots, Action!

Amy Cindy Chyao, 15, Williams High School, Plano, Texas
Intel Foundation Young Scientist Award
The winners of this award were selected for their commitment to innovation in tackling challenging scientific questions, using authentic research practices, and creating solutions to the problems of tomorrow. Each of these top award winners receive a $50,000 award from the Intel Foundation.

Young Scientist Award of $50,000

CS043  Automatic Parallelization through Dynamic Analysis
Kevin Michael Ellis, 18, The Catlin Gabel School, Portland, Oregon

PH018  Adiabatic Quantum Evolution for NP-Complete and Physical Problems
Yale Wang Fan, 18, The Catlin Gabel School, Portland, Oregon

The award is disbursed in four equal installments to students enrolled at any accredited degree-granting institution of higher education, following their successful completion of high school. Students must provide proof of registration and good academic standing from the school's registrar each semester.

Seaborg SIYSS Award
All expense-paid trip awarded to senior finalists to attend the Stockholm International Youth Science Seminar during the Nobel Prize Ceremonies in December.

The SIYSS is a multi-disciplinary seminar highlighting some of the most remarkable achievements by young scientists from around the world. The students have the opportunity to visit scientific institutes, attend the Nobel lectures and press conferences, learn more about Sweden and experience the extravagance of the Nobel festivities. Valid passport required for travel.

EE078  CookerSmart
James Sinclair Popper, 18, Marlborough College, Marlborough, Wiltshire, United Kingdom

MA023  Super Kahler-Ricci Flow
Joshua William Pfeffer, 17, North Shore Hebrew Academy High School, Great Neck, New York

ME041  Novel Identification/Subjugation of Prostate Cancer Cells' Intrinsic Resistance Mechanism to Cisplatin
Jong Hyuck Won, 17, Langley High School, McLean, Virginia

The SIYSS will be held in Stockholm, Sweden in December. Students must meet the 18-year age requirement to be considered. The history of SIYSS began as early as 1976 when the first seminar was organized by the Swedish Federation of Young Scientists together with the Nobel Foundation, with inspiration from Society for Science & the Public. This award is named for the late Glenn T. Seaborg, Nobel Laureate in chemistry and Society for Science trustee.
European Union Contest for Young Scientists
For a top team project, an all-expense paid trip to attend the European Union Contest for Young Scientists this September.

Trip to the EU Contest
CS303 The Classification and Recognition of Emotions in Prerecorded Speech
Akash Krishnan, 15, Oregon Episcopal School, Portland, Oregon
Matthew Fernandez, 16, Oregon Episcopal School, Portland, Oregon

The EU Contest for Young Scientists was developed to promote the ideals of co-operation and interchange between young scientists. The Contest is the annual showcase of the best of European student scientific achievement. The team project must pass the EU Contest jury review prior to attending, and must be first time participants in the EU Contest. Valid passport required.

MIT Lincoln Laboratory
The Massachusetts Institute of Technology’s Lincoln Laboratory has partnered with Society for Science & the Public (SSP) to promote science education through a program called the Ceres Connection. This program seeks to name minor planets after students through SSP competitions, including the Intel ISEF. First and second place category award winner names will be sent to the International Astronomical Union (IAU) for naming rights of a near earth asteroid. Notification will be sent to the Finalists when the name has been accepted and confirmed.

All Intel ISEF first place and second place category winners will receive a minor planet.

All minor planets named in the Ceres Connection program have been discovered by the Lincoln Near Earth Asteroid Research (LINEAR) program, operated by Lincoln Laboratory.

Animal Sciences
Intel will present Best of Category Winners with a $5,000 award. Additionally, a $1,000 grant will be given to their school and the Intel ISEF Affiliated Fair they represent.

Intel ISEF Best of Category Award of $5,000 for Top First Place Winner
AS044 Use of Regression Analyses to Build Ecological Models of Poison Dart Frogs in Their Native Habitats
Gabriel Thailand Joachim, 16, Cibola High School, Albuquerque, New Mexico

First Award of $3,000
AS044 Use of Regression Analyses to Build Ecological Models of Poison Dart Frogs in Their Native Habitats
Gabriel Thailand Joachim, 16, Cibola High School, Albuquerque, New Mexico

Second Award of $1,500
AS007 Study on Biological Control of Panonychus citri by Using Fungal Bio-Control Agents
Qijin Wu, 17, Fuzhou No. 1 Middle School, Fuzhou, Fujian, China

AS015 Relay Landscape Learning: A New Mode of Learning in Honeybees, Apis mellifera
Neil Kondamuri, 17, Munster High School, Munster, Indiana
AS021  Effects of Starvation on Wild Type and Adipose60 Mutant *Drosophila melanogaster*  
Alyssa Chelsea Ehrlich, 17, South Side High School, Rockville Centre, New York

**Third Award of $1,000**

AS004  The Effect of Plumage Coloration on Extra-Pair Paternity in the Indigo Bunting  
Eugenia Pushkarskaya, 18, Paul Laurence Dunbar High School, Lexington, Kentucky

AS013  Why Spiderman Cannot Do without His Silk? Effects of Dragline Silk on Jumping Performance of Jumping Spider (*Hasarius adansonii*)  
Yung-Kang Chen, 16, National Taichung First Senior High School, Taichung City, Taiwan, Chinese Taipei

AS024  Quantifying the Relative Abundance of Juvenile Atlantic Sturgeon in the Hudson River  
Sean Patrick Maiorano, 18, Ossining High School, Ossining, New York

AS051  The Answer Is in the Solution  
Emily Ann Schnoor, 18, Sargent High School, Monte Vista, Colorado

**Fourth Award of $500**

AS011  Birds of Quail Hollow Ranch: A Study of Avian Diversity  
Alexander M. Rinkert, 17, San Lorenzo Valley High School, Felton, California

AS017  Iron Concentration of Quagga Mussel Glue and Its Effect on Shipwrecks  
Amanda Grace Savagian, 17, Divine Savior Holy Angels High School, Milwaukee, Wisconsin

AS032  The Influence of Antiparasitics on Parasite Burden and Immune Response to Viral Vaccination  
Nathan Sven Wilen, 18, Belle Fourche High School, Belle Fourche, South Dakota

AS033  The Effects of Food Deprivation in Agonistic Contests between Male Juvenile House Crickets, *Acheta domesticus*  
Robert Keith Pak, 17, Valley High School, West Des Moines, Iowa

AS049  The Effect of Honey Hydrogen Peroxide (H202) and Antioxidants on Small Hive Beetle (*Aethina tumida*) Reproduction and Survival  
Lydia Louise McCormick, 17, Jefferson County International Baccalaureate, Birmingham, Alabama
Behavioral and Social Sciences

Intel will present Best of Category Winners with a $5,000. Additionally, a $1,000 grant will be given to their school and the Intel ISEF Affiliated Fair they represent.

Intel ISEF Best of Category Award of $5,000 for Top First Place Winner
BE010 Gemara and Gematria: A Case Study on the Effects of the Use of Sociocultural Contextualizing for the Learning of Mathematics
Tamara Gedankien, 17, Escola Brasileira Israelita Chaim Nachman Bialik, Sao Paulo, SP, Brasil

First Award of $3,000
BE010 Gemara and Gematria: A Case Study on the Effects of the Use of Sociocultural Contextualizing for the Learning of Mathematics
Tamara Gedankien, 17, Escola Brasileira Israelita Chaim Nachman Bialik, Sao Paulo, SP, Brasil

Second Award of $1,500
BE004 Ability to Suppress the Expression of Fear in Human ApoE Mice
Matthew Samuel Agam, 16, Beaverton High School, Beaverton, Oregon
BE029 Game Power: A Game Environment for Measuring ICT-enhanced Skills of Young Students
Abdulaziz Khalid AlGhunaim, 18, Asrary School, Riydah, Central, Saudi Arabia
BE043 Slow It Down to Speed It Up: Breaking through the Window of Autism
Adelina Corina Cozma, 14, Bayview Secondary School, Richmond Hill, Ontario, Canada

Third Award of $1,000
BE002 The Effects of Borderline Hypothyroidism on Quality of Life and Daytime Drowsiness
Michael Andrew Fairchild Harding, 17, Lake Highland Preparatory School, Orlando, Florida
BE008 A Comparative Study of Comprehension Differences in Struggling Readers Using Phrase and Character Spaced Models, Year Three
Lindsey Brooke Saunders, 16, Union County High School, Lake Butler, Florida
BE023 Understanding the Psychosocial Factors Related to Low Mammography Adherence amongst Low-Income, Urban African Americans
Kevin Young Xu, 18, Roslyn High School, Roslyn Heights, New York
BE027 The Investigation of Latin Americanization in the United States: An Interracial Socialization Study of American and Brazilian Pre-Adolescents
Camila Sorese Linneman, 18, Ossining High School, Ossining, New York

Fourth Award of $500
BE005 The Impact of a Set of Training Programs on the Serotonin Hormone in a Sample of (8-9) Year-Old Students with Learning Disabilities and Its Correlation to Their Achievement and Behavior (An Experimental Study)
Mohammad Mesbah Al-Refai, 16, Modern Systems Schools, Amman, Jordan
BE022  The Effects of Issue-Based and Character-Based Attack Ads on Intent to Vote and Perceptions of Candidates
Aaron Michael Levine, 17, Roslyn High School, Roslyn Heights, New York

BE025  Obesity and Depression: Differential Responses to Environmental Stress
Sarah Averi Albala, 17, John Jay Senior High School, Cross River, New York

BE034  Pharmaceutical Safety: Risk Perception and Drug Adherence
Michael Joseph Vredenburgh, 18, Carlsbad High School, Carlsbad, California

BE045  Voting Systems: An Outcome Analysis, Phase Two
Vikash Evans Hypio, 16, Hotchkiss High School, Hotchkiss, Colorado

Biochemistry
Intel will present Best of Category Winners with a $5,000 award. Additionally a $1,000 grant will be given to their school and the Intel ISEF Affiliated Fair they represent.

Intel ISEF Best of Category Award of $5,000 for Top First Place Winner
BI017  Ethanol Production Yield Improvement by Sterilization of the Sugar Cane Juice (Garapa) via Microwave
Alejandro Mariano Scaffa, 17, Escola Americana de Campinas, Campinas, Sao Paulo, Brasil

First Award of $3,000
BI017  Ethanol Production Yield Improvement by Sterilization of the Sugar Cane Juice (Garapa) via Microwave
Alejandro Mariano Scaffa, 17, Escola Americana de Campinas, Campinas, Sao Paulo, Brasil

Second Award of $1,500
BI015  Modification of Fibrinogen Clotting in the Absence of Thrombin: A Novel Surface Chemistry Approach with Biomedical Applications
Pooja Rambhia, 17, Jericho High School, Jericho, New York

BI021  Computational Analysis of Cyclin-Dependent Kinase Substrates in Saccharomyces cerevisiae Leads to a Novel Computational Identification Mechanism
Manjinder Singh Kandola, 17, Queens High School for the Sciences at York College, Jamaica, New York

Third Award of $1,000
BI004  Weaving Health: The Weaving of Antimicrobial Substances from the Ootheca of the Spider, Phoneutria nigriventer
Leonardo de Oliveira Bodo, 15, Dante Alighieri, Sao Paulo, Brasil

BI006  Bioinformatic and Synthetic Approaches to Studying Advanced Glycation End-products in Eukaryotes
Jason A. Gandelman, 17, Staples High School, Westport, Connecticut
BI022  Protein Assay Alternatives
Philippe Alexandre Chlenski, 15, Lincoln Park High School, Chicago, Illinois

BI043  The Effects of Increased Gravitational Forces on the Crystallization of the Amino Acid Glycine, Year Three
Kirk John Henf, 18, Sebastian River High School, Sebastian, Florida

Fourth Award of $500
BI002  Antifreeze Protein vs. Artificial Polymer
Taylor Christian Velarde, 15, Cornerstone Christian School, San Angelo, Texas

BI019  Brain Leucine Sensing Modulates the Rate of Hepatic Triglyceride Secretion in vivo
Florence Xavia Kuhl, 18, Ossining High School, Ossining, New York

BI029  Aldehyde Dehydrogenase 7a1 and Its Relationship to Pyridoxine Dependent Epilepsy
Conor David Freeland, 17, Minerva High School, Minerva, Ohio

BI032  Heat Stress Reveals Hexose Transport Rates in Saccharomyces cerevisiae
Stanley Palasek, 15, Sonoran Science Academy, Tucson, Arizona

Cellular and Molecular Biology
Intel will present Best of Category Winners with a $5,000 award. Additionally, a $1,000 grant will be given to their school and the Intel ISEF Affiliated Fair they represent.

Intel ISEF Best of Category Award of $5,000 for Top First Place Winner
CB010  Gene Dosage and Expression in Human Lymphoblastoid Cell Lines
Nolan Mint Kiyoshi Kamitaki, 17, Waiakea High School, Hilo, Hawaii

First Award of $3,000
CB010  Gene Dosage and Expression in Human Lymphoblastoid Cell Lines
Nolan Mint Kiyoshi Kamitaki, 17, Waiakea High School, Hilo, Hawaii

CB033  In vitro Analysis of a Synthetic Protein: A Model for Enzyme Replacement Therapy
Carolyn Sinow, 18, Palos Verdes Peninsula High School, Rolling Hills Estates, California

Second Award of $1,500
CB004  EGCG Mitigates Parkinson’s Disease-associated Mutant LRRK2-induced Neurotoxicity via Protein Translation Modulation
Jingjie Cheng, 16, Raffles Girls’ School (Secondary), Singapore, Singapore

CB034  UVA1 Skin Irradiation Modulates the Migration of Dendritic Cells: A Novel Mechanism for the Potential Beneficial Effects of Phototherapy on Systemic Disease

CB048  Cancer Immunotherapy Research Vaccine: Mannose Glycoprotein Encapsulated PLGA Fluorescent Nanoparticles Biotinylated for
Conjugation with CpG Oligodeoxynucleotide for Breast Cancer Research
Riley C Ennis, 16, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia

**Third Award of $1,000**

**CB009** Identification of a New Link in Gene Silencing: Acetylation of the Methyl Binding Protein MeCP2
Stephanie Michelle Axelson, 18, Airline High School, Bossier City, Louisiana

**CB030** Evaluation of Antibacterial and Anticancer Properties of Capnella imbricata Extracts
Katrina Yue Kay Koon, 17, Stuyvesant High School, New York, New York

**CB036** The Role of CDNB in Understanding the Mechanisms of Action of JS-K, a Promising Anti-Leukemia Compound
Stephen Alexander Lavanier, 17, Governor Thomas Johnson High School, Frederick, Maryland

**CB042** The Effect of Chemotherapeutic Vincristine on Transposon Mobilization-Induced Flanking Sequence Mutation Rates of Drosophila melanogaster
Smita Shukla, 17, Massachusetts Academy of Mathematics and Science at WPI, Worcester, Massachusetts

**CB050** Do NMDA Receptors Affect Early Brain Development?
Claire Louise Edgcumbe, 18, Kitsilano Secondary, Vancouver, Canada

**Fourth Award of $500**

**CB003** Feeding Studies and Immunofluorescent Analysis of Feeding Circuit in Lean Syndecan-3 Null Mice
Diana Basali, 18, Hathaway Brown School, Shaker Heights, Ohio

**CB008** Ceramide-Enriched Domains in Mixed Lipid Bilayers: Unraveling the Mystery Behind Demyelination in Multiple Sclerosis (MS)
Pranali Hemant Dalvi, 17, International Baccalaureate School at Bartow High School, Bartow, Florida

**CB021** A Genetic Investigation of Autism: The Role of Type III Neuregulin-1/ErbB4 Signaling and Contactin4 Expression in Neurodevelopment
Alexis Eleni Tchaconas, 17, Commack High School, Commack, New York

**CB031** Acidification of Digestive Vacuoles Is Regulated by pH of the Ingested Food in Paramecium
Hoko Nakada, 17, Urawa Daiichi Girls High School, Saitama-shi, Saitama, Japan

**CB039** Morphological and Functional Characterization of Lower Female Genital Tract Epithelial Cell Cultures in Different Growth Conditions
Vivian Wingsee Leung, 17, Abbey Park High School, Oakville, Ontario, Canada
Multi-Modal Confocal Mosaicing Microscopy for Non-Melanoma Skin Cancer Detection
Nathaniel Wei-Sen Chen, 16, Merlo Station High School, Beaverton, Oregon

Chemistry
Intel will present Best of Category Winners with a $5,000 award. Additionally, a $1,000 grant will be given to their school and the Intel ISEF Affiliated Fair they represent.

Intel ISEF Best of Category Award of $5,000 for Top First Place Winner
CH007  Lights, Quantum Dots, Action!
Amy Cindy Chyao, 15, Williams High School, Plano, Texas

First Award of $3,000
CH007  Lights, Quantum Dots, Action!
Amy Cindy Chyao, 15, Williams High School, Plano, Texas

CH016  An Investigative Study on Pigmented Gallstones: Is Cu( II-Induced Oxidation of Bilirubin Responsible for Their Formation? 
Shamik Mascharak, 16, Santa Cruz High School, Santa Cruz, California

Second Award $1,500
CH012  Millimeter-Wave and Terahertz Radiation for Standoff Chemical Sensing and Threat Detection, Phase IV
Michael Aaron Gord, 17, Dayton Christian High School, Miamisburg, Ohio

CH014  Optimization of the New Synthesis Method of Stobadine Precursors, Respectively Its Analogues
Marek Buchman, 17, School for Extraordinary Gifted Children, Bratislava, Slovakia

CH033  Development of a User and Eco-friendly Procedure for the Oxidative Cleavage of Alkenes
Prem P. Thottumkara, 17, Macomb High School, Macomb, Illinois

Third Award of $1,000
CH002  Catalytic Decomposition and Oxidation of Propanol Utilizing Size-Selected Platinum Nanoparticles
Elaine Zhou, 17, Lake Highland Preparatory School, Orlando, Florida

CH003  Investigating Insulating Compounds for the Optimization of Dye-Sensitized Solar Cells
Alexander Patrick McCarthy, 18, Liberty High School, Hillsboro, Oregon

CH004  Synthesis of Silica Aerogels
Meredith Grace Marks, 17, University School of Milwaukee, Milwaukee, Wisconsin
Investigating the Growth and Nucleation Process of C60 Fullerene Nanowhiskers via Formation Structures
Nicholas Mark Worth Sharp, 18, Dominion High School, Sterling, Virginia

Investigating Photo-Induced Proton Transfer in Associated Solutions
Kaj Andrew Hansen, 16, Carrollton High School, Carrollton, Georgia

Fourth Award of $500
Extraction of Zinc through Phytoremediation Using Brassica juncea
Haleigh Rae Hitzing, 15, Island Coast High School, Cape Coral, Florida

Lichens, Limestone, and Trees: Using X-ray Fluorescence Analysis to Quantify Elements
Kristen Paige Kirkland, 18, Eastern High School, Pekin, Indiana

Mimicking the Lotus Leaf: Employing Natural Processes of Micro- and Nano-texturing to Convert a Hydrophilic Surface into Hydrophobic Based on Cassie-Baxter Wetting
Saumil Bandyopadhyay, 14, Maggie L. Walker Governor's School for Government and International Studies, Richmond, Virginia

The Effect of Curcumin on the Oxidation of N-acetyl-tyrosine in an in vitro Cu(II)/H2O2 Model of Alzheimer's Disease
Chelsea Lynn Massaro, 16, Christian Home & Bible School, Mount Dora, Florida

Extraction of Natural Carbonaceous Nanomaterials from Soil Sources: Exploration of Properties and Applications
Aritra Chowdhury, 17, South Point High School, Kolkata, West Bengal, India

Species Selective Acetylcholinesterase Inhibitors as Insecticides
Samantha Sapumalee Nanayakkara, 16, Mississippi School for Mathematics and Science, Columbus, Mississippi

Computer Science
Intel will present Best of Category Winners with a $5,000 award. Additionally, a $1,000 grant will be given to their school and the Intel ISEF Affiliated Fair they represent.

Intel ISEF Best of Category Award of $5,000 for Top First Place Winner
Automatic Parallelization through Dynamic Analysis
Kevin Michael Ellis, 18, The Catlin Gabel School, Portland, Oregon

First Award of $3,000
Novel Computer Controlling Wireless Device for Handicapped People
Ganindu Nanayakkara, 20, Ananda College, Colombo - 10, Western, Sri Lanka

Automatic Parallelization through Dynamic Analysis
Kevin Michael Ellis, 18, The Catlin Gabel School, Portland, Oregon
Second Award of $1,500

CS001 Robust Video Tracking through Multiple Occlusions
Thomas Frederick Wilkason, 17, Mount de Sales Academy, Macon, Georgia

CS019 A Parallel Computational Framework for Solving Quadratic Assignment Problems Exactly
Michael Christopher Yurko, 16, Detroit Catholic Central High School, Novi, Michigan

CS034 Accurate Prediction and Tracking of Lung Cancer
Vedant S. Kumar, 16, duPont Manual High School, Louisville, Kentucky

Third Award of $1,000

CS003 Off-line Character Recognition Using Vector Trained Artificial Neural Networks
Matthew Joseph Chang, 17, Chang Home School, Austin, Texas

CS010 Matrix Based Discrete Logarithms Public Key System (MBDL) and Its Application in SecurID
Yang Gao, 18, Northeast Yucai School, Shenyang, Liaoning, China

CS022 New Morphological Features for Automated Classification of Galaxy Images Obtained in Deep Space Surveys
Andrei V. Nagornyi, 18, Stuyvesant High School, New York, New York

CS024 Detection of Prostate Cancer Using Image Analysis
Saad Syed Nasser, 18, Northside College Preparatory High School, Chicago, Illinois

CS035 Does Practice Make Perfect? The Role of Training Neural Networks
Brittany Michelle Wenger, 15, The Out-Of-Door Academy, Sarasota, Florida

Fourth Award of $500

CS011 X-Finder: The Electronic Guardian Angel
Maximilian Lukas Reif, 14, Justus-von-Liebig-Gymnasium Neusab, Neusaess, Bavaria, Germany

CS018 Deterministic Lexical Categorization Using Genetic Algorithms
Dru Harrington Knox, 18, Roanoke Valley Governor’s School for Science and Technology, Roanoke, Virginia

CS021 BeatHoven: Identifying and Inventing Solutions to Obstacles Hindering Automatic Transcription of Polyphonic Music of a Single Instrument
Vighnesh Leonardo Shiv, 16, The Catlin Gabel School, Portland, Oregon

CS036 A Super-Encryption Standard for Large Data Using Elementary Chaotic Cellular Automata
Akshay Nathan, 17, Lynbrook High School, San Jose, California
Continual Adaptation of Acoustic Models for Domain-Specific Speech Recognition  
David C. Liu, 18, Lynbrook High School, San Jose, California

Neuroslab Rapid Application Development for Artificial Intelligence  
Ionut Alexandru Budisteanu, 16, National College "Mircea cel Batran", Ramnicu Valcea, Romania, Romania

Earth & Planetary Sciences
Intel will present Best of Category Winners with a $5,000 award. Additionally, a $1,000 grant will be given to their school and the Intel ISEF Affiliated Fair they represent.

Intel ISEF Best of Category Award of $5,000 for Top First Place Winner  
EA029 Don't Let It Slide IV: Fire Factor!  
Majdolene Ziad Khweis, 17, Taos High School, Taos, New Mexico

First Award of $3,000  
EA029 Don't Let It Slide IV: Fire Factor!  
Majdolene Ziad Khweis, 17, Taos High School, Taos, New Mexico

Second Award of $1,500  
EA005 Orbit Determination of Near-Earth Asteroids  
Tongji Li, 18, Hershey High School, Hershey, Pennsylvania

EA009 Colorado River Salinity: Correlation to Geostrata and Mitigation with Carbon Fiber Capacitors  
Tanya Nicole Petach, 16, Fairview High School, Boulder, Colorado

Third Award of $1,000  
EA019 Developing a Process for Seismo-Acoustic Imaging Applied to Humanitarian Demining  
Marian Joan Bechtel, 15, Lancaster Catholic High School, Lancaster

EA020 Identifying Diagnostic Characters in the Tooth Enamel Microstructure of Dromaeosaurid Dinosaurs  
Emma Justine Hoffman, 17, Rondout Valley High School, Accord, New York

Fourth Award of $500  
EA015 Computational Simulations of Ring Systems around Rhea Using N-Body Integrated Programs  
Ian Alexander Sohl, 15, DaVinci Academy of Science and the Arts, Ogden, Utah

EA016 Drowning Out Drought: The Effect of Collision and Coalescence on Secondary Ice Multiplication in Mixed-Phase Clouds  
Nicole Sophie Torosin, 17, Niles North High School, Skokie, Illinois

EA022 The Development and Validation of a Novel, Eco-friendly Calcium in situ Precipitation System (ECIPS) for the Mitigation of Liquefaction-Prone Soil  
Evelyn Chang, 17, University High School, Irvine, California
Engineering: Electrical and Mechanical

Intel will present Best of Category Winners with a $5,000 award. Additionally, a $1,000 grant will be given to their school and the Intel ISEF Affiliated Fair they represent.

Intel ISEF Best of Category Award of $5,000 for Top First Place Winner
EE078 CookerSmart
James Sinclair Popper, 18, Marlborough College, Marlborough, Wiltshire, United Kingdom

First Award of $3,000
EE054 Less Sweat or Less Fatigue? My SmartBike Does the Rest!
David Andrew Zarrin, 15, Saratoga High School, Saratoga, California

EE078 CookerSmart
James Sinclair Popper, 18, Marlborough College, Marlborough, Wiltshire, United Kingdom

Second Award of $1,500
EE025 Novel Heating Approach in Dynamic Spraying of Nano Particles
Alice Wei Zhao, 16, Sheboygan North High School, Sheboygan, Wisconsin

EE033 Next Generation Propulsion: the ALFA markVI
Jesse Kane Ellison, 18, Bayfield High School, Bayfield, Colorado

EE045 Demonstration of Terahertz Waveguides Using Structured Metal Films
Albert Cui, 18, Hillcrest High School, Midvale, Utah

EE049 VSR-2 Talos: FG, The Final Ultimatum
Adam Bradley Halverson, 18, Garretson High School, Garretson, South Dakota

Third Award of $1,000
EE021 Low-Aberration Variable-Focus Liquid Lens
Eric Chiwei Shiao, 15, Taipei Municipal Chien-Kuo Senior High School, Taipei, Taiwan (R.O.C), Chinese Taipei

EE022 Underground Imaging
Alexander Kent Kendrick, 17, Los Alamos High School, Los Alamos, New Mexico

EE026 The Design and Development of an Experimental Piston-less Rotary Engine for Improved Thermal Efficiency: Sustainable Engineering for the Transition to Alternative Fuels
Eric Lau, 15, Savannah Arts Academy, Savannah, Georgia

EE028 Lighting the Future: The Power Output of Titanium Dioxide Solar Cells Using Various Dyes
Chaimaa Makoudi, 18, General Douglas MacArthur High School, Levittown, New York
EE052  Distributed Learning for Dynamic Spectrum Sharing in Cognitive Radio Networks: A Decision Theoretic Approach  
Angela Yu-Yun Yeung, 18, Davis Senior High School, Davis, California

EE057  Synthesis of Ternary Semiconductor Nanocrystals (CuInSe2 CuGaSe2, Cu(InGa)Se2) as New Generation Solar Cell  
Idil Ozdamar, 15, Izmir Private Fath Science High School, Izmir, Turkey

EE069  2 for 1 Wheelchair: Improving Autonomy through the Development of Multi-Functional Mobility Aids  
Gary Stanley Kurek, 18, Bonnyville Centralized High School, Bonnyville, Alberta, Canada

Fourth Award of $500

EE003  An Efficiency Study of a Head Controlled Computer Interface Using Embedded Circuitry  
Gavin Grant Ovsak, 15, Eden Prairie High School, Eden Prairie, Minnesota

EE010  The Development of Recyclable Gliding Sonde  
Yuqing Huang, 16, Beijing 101 Middle School, Beijing, Beijing, China

EE015  Stair Climbing Stability, Year Three  
Zachary Harrison Melnik, 16, Viera High School, Viera, Florida

EE020  Closer to Where It Wasn’t: Estimation and Tracking Using Adaptive Filtering  
John Tilla Parish IV, 17, Home School, Colorado Springs, Colorado

EE030  A New Approach to Encryption: Modification of Rossler’s Chaotic Equations to Create a Encrypted Communication System with Signal Masking and Automatic Self Synchronizing Decryption  
Curtis Adrian Khol, 17, James Madison High School, Vienna, Virginia

EE046  Using Environmental Temperature Gradients to Produce Continuous Energy Outputs  
Ellenore Isobel Forrester, 15, Redeemer Baptist School, North Parramatta, New South Wales, Australia

EE061  Can the Concept of Stereo Vision Be Applied in Robotics?  
Arjun Aggarwal, 15, Lexington High School, Lexington, South Carolina

EE070  Robust Displacement Estimation Employing Inexpensive Webcam Based Optical Flow  
Christopher Stephan Nielsen, 16, Home School, Calgary, Alberta, Canada
Engineering: Materials and Bioengineering

Intel will present Best of Category Winners with a $5,000 award. Additionally, a $1,000 grant will be given to their school and the Intel ISEF Affiliated Fair they represent.

Intel ISEF Best of Category Award of $5,000 for Top First Place Winner

**EN049**

A Study on Eco-Friendly Utilization of *Typha orientalis* Fruits for Insulation and Wallpaper  
Kay Hyun Joo, 17, Changduk Girls High School, Seoul, South Korea

First Award of $3,000

**EN013**

Diatom-CdS Nanostructures as a Method to Enhance the Efficiency of a Dye-Sensitized Solar Cell  
William Cummings Newberry, 18, Greenwich High School, Greenwich, Connecticut

**EN049**

A Study on Eco-Friendly Utilization of *Typha orientalis* Fruits for Insulation and Wallpaper  
Kay Hyun Joo, 17, Changduk Girls High School, Seoul, South Korea

Second Award of $1,500

**EN019**

Viability of a Photoinduced Electron Spin Alignment Creating a Magnetic Event in a Polymer  
Michael Vincent Di Mascio, 18, Waynesville High School, Waynesville, Ohio

**EN024**

Refinement of Solar Cell Morphology in Bulk Heterojunction Nanoparticle Polymer Composites  
Mubarrat Nuvid Bhuiyan, 17, Jericho Senior High School, Jericho, New York

**EN025**

A Molecular Automaton with Built-in Visual Display for Filovirus Identification  
Julia Elizabeth Poje, 17, Valley Stream South High School, Valley Stream, New York

Third Award of $1,000

**EN001**

Prospective Thermoelectric Tellurides  
Patrik Cermak, 19, SPSE a VOS, Pardubice, Pardubice, Czech Republic

**EN005**

Novel Thermogelling Dispersions of Polymer Nanoparticles for Controlled Drug Delivery  
Peter D. Hu, 18, Texas Academy of Mathematics and Science, Denton, Texas

**EN017**

ENERGIZE: Optimization of a Process to Determine Algal Species Present in a Sample Prior to Fermentation through Single-Strand Conformational Polymorphism  
Charlotte Sophia Kirk, 17, Westville High School, Westville, Oklahoma

**EN037**

Development of a Low-cost EMG-based Human Interface Device and Associated Applications  
Jun Nishida, 18, Nara Women's University Secondary School, Nara, Nara, Japan
Fourth Award of $500

EN050  Eco-concrete: A Good Use for the Rice Husk
Werner Nicolai Wasen, 17, Liceo Dr. Anibal Acosta Estape, Rio Branco, Cerro Largo, Uruguay

EN011  Development of an Antimicrobial Acrylic Resin, Year Two
Catherine Yang Fan, 18, Tom C. Clark High School, San Antonio, Texas

EN027  Can Recycled Plastics Be Used to Reduce Landfill Waste, Help Improve the Infrastructure of Buildings, Roads, Highways and Bridges and Reduce Greenhouse Gas?
John Charles Boykin, 15, St. Peter Chanel High School, Bedford, Ohio

EN029  Analyzing the NCI-60 Cancer Cell Lines Using Data Obtained from Genome-Wide ChIP-X Experiments
Jayanth Krishnan, 16, Mahopac High School, Mahopac, New York

EN036  Biomechanically Assisting the STS Movement
Spencer R Wilson, 17, Colquitt County High School, Moultrie, Georgia

EN038  The Effect of Helium Ion Irradiation on the Tunneling Behavior in Aluminum/Aluminum Oxide/Lead Junctions
Rahul Mitra, 16, Corona Del Sol, Tempe, Arizona

EN044  Innovative Use of Anaerobic Effective Microorganisms for Natural Rubber Latex Coagulation
Suppachai Nindum, 17, Khunhanwittayasan School, Khunhan, Sisaket, Thailand

Energy and Transportation

Intel will present Best of Category Winners with a $5,000 award. Additionally, a $1,000 grant will be given to their school and the Intel ISEF Affiliated fair they represent.

Intel ISEF Best of Category Award of $5,000 for Top First Place Winner

ET035  "Green" Synthesis of Nanowires on FTO Substrates for Organic Dye-based Solar Cells: Analysis with New Rapid D-SCOPE 2.0
Shyamal Buch, 14, Vista del Lago High School, Folsom, California

First Award of $3,000

ET035  "Green" Synthesis of Nanowires on FTO Substrates for Organic Dye-based Solar Cells: Analysis with New Rapid D-SCOPE 2.0
Shyamal Buch, 14, Vista del Lago High School, Folsom, California

ET041  Maximizing Hybrid Rocket Motor Efficiency for Evaluating Recycled Fuels
Megan Lynn Perkins, 15, duPont Manual High School, Louisville, Kentucky

Second Award of $1,500

ET037  Levoglucoloh: Engineering Ethanologenic E. coli for Levoglucosan Utilization
Avanthi Sai Ajjarapu, 16, Ames High School, Ames, Iowa
Bio-Inspired Photonic Fuel Cell
Dheevesh Arulmani, 14, Gordon Graydon Memorial Secondary School, Mississauga, Ontario, Canada

Ethanol Production: Determining the Optimal Conditions for the Saccharification of Sugar Beet Pulp
Anna Maria Joykutty, 16, American Heritage School, Plantation, Florida

Third Award of $1,000

Coal from Cane
Cole William Bergeron, 15, Houma Junior High School, Houma, Louisiana

Reducing Wing Induced Drag through the Addition of Adaptive Tip Sails - Part II
Joseph Anthony Gerner, 17, George Marshall High School, Falls Church, Virginia

A Simulation using C++ to Evaluate the Performance of the Columbia University Non-Neutral Torus Stellarator Based on a Pedersen Model for Optimization
Soo Kyoung Kim, 18, Bronx High School of Science, Bronx, New York

Optimization of a Novel High Efficiency Photo-Thermovoltaic Concentrator Solar Cell: A Second Year Study
Rounok Joardar, 16, Plano West Senior High, Plano, Texas

Synthesizing Hydrocarbon Derivatives as an Alternative Fuel Source Using Natural Coal (Anthracite) and Hydrogen in a Cobalt Molybdenum Hydrodesulphurization Process
Justin Kenrick Ramsaran, 16, Palm Bay High School, Melbourne, Florida

Fourth Award of $500

The Application of an Electromagnetic Induction Coil Input Frequency Gradient to Conjoin the Lift and Propulsion Systems of an Electromagnetic Suspension Vehicle
Christopher Joseph Davlantes, 17, Bishop Kenny High School, Jacksonville, Florida

Decomposing Energy
Max Aaron Keller, 17, Alden-Conger High School, Alden, Minnesota

Improving Cathode Kinetics and the Rate of Reaction in a Direct Methanol Fuel Cell
Jeffrey Donald Martin, 17, John Adams High School, South Bend, Indiana

Enhancing Algae Biofuels: The Effects of Nitrogen Limitation and Carbon Dioxide Infusion on the Oil Yields of Nannochloropsis oculata
Sara Ellen Volz, 14, Cheyenne Mountain High School, Colorado Springs, Colorado

Novel Method: Detecting High Energies in Sonoluminescence
Lyric Elizabeth Gillett, 18, Cornerstone High Home School, Houston, Texas
ET056  Alarmed and Heated Fuel Tanks Suitable for Retro-fitting and Available for All Commercial Vehicles
Simon David Brookes, 18, Balcarras School, Cheltenham, Gloucestershire, United Kingdom

Environmental Management
Intel will present Best of Category Winners with a $5,000 award. Additionally, a $1,000 grant will be given to their school and the Intel ISEF Affiliated Fair they represent.

Intel ISEF Best of Category Award of $5,000 for Top First Place Winner
EM024  Design, Fabrication, and Evaluation of a Deployable in situ Nitrate Sensor for Real-Time Analysis of Sediments
Avilash Kalpathy Cramer, 17, West Linn High School, West Linn, Oregon

First Award of $3,000
EM024  Design, Fabrication, and Evaluation of a Deployable in situ Nitrate Sensor for Real-Time Analysis of Sediments
Avilash Kalpathy Cramer, 17, West Linn High School, West Linn, Oregon
EM029  Toxicity of Surrogate Organoclay Surfactant to Straight-Chain Hydrocarbon-Degraders and Potential for Organoclay Biodegradation
Laurie Ann Rumker, 17, Oregon Episcopal School, Portland, Oregon

Second Award of $1,500
EM005  Improving Mine Reclamation Outcomes with Soil Amendment Variations
Travis Cole Sylvester, 16, Greybull High School, Greybull, Wyoming
EM031  Pore Size Reduction of Electrospun Polyacrylonitrile (PAN) Scaffolds for High Performance Microfiltration
Brandon Li, 17, Jericho Senior High School, Jericho, New York
EM038  Design and Development of a Portable Light Trap for Sampling Brachyuran Crab Larvae
Heather Marie Eberhart, 18, Bellarmine Preparatory School, Tacoma, Washington
Olexandr Tokarev, 16, Chemical Ecological Lyceum, Dnipropetrovsk, Ukraine

Third Award of $1,000
EM022  Construction of a Continuous Flow SODIS System with PET Bottles Integrated to a Water and Waste-Water Treatment System
Karoline Elis Lopes Martins, 18, Centro Federal de Educacao Tecnologica de Minas Gerais, Belo Horizonte, SP, Brasil
EM039  Foundry Sand: Waste or Beneficial, Year Three
Kayleigh Sue Warner, 17, DeKalb High School, Waterloo, Indiana
**EM052**
Developing an Attractant for Mass Trapping the Invasive Coconut Rhinoceros Beetle
Anran Li, 16, St. John's School, Tumon Bay, Guam

**EM058**
Grasping Water: Exploring a Novel Method of Inducing Precipitation
Yiyue Zhao, 18, Sir Winston Churchill High School, Vancouver, British Columbia, Canada

**EM060**
The Preference in Predation of the Native Aquatic Bug, *Anisops nasutus*, on the Larvae of Four Mosquito Species Found in American Samoa
Faaloloi Teo, 16, Tafuna High School, Pago Pago, American Samoa

**Fourth Award of $500**

**EM006**
The Feasibility of Reinforcing the Mississippi River Embankments with Borrow Harvested via Flocculation
Alaina Brooke Leggette, 16, Saint Joseph's Academy, Baton Rouge, Louisiana

**EM009**
Heavy Metal Bioremediation: Relief for a Ravaged Land
Paige Hunter Parrack, 16, Southmoore High School, Moore, Oklahoma

**EM023**
Rhodamine Dye Retention in Silica Isolated from Diatoms *Cyclotella meneghiniana* and *Thalassiosira sp.*
Kalia S. Bistolas, 17, Wilsonville High School, Wilsonville, Oregon

**EM025**
Monitoring Ammonia Oxidizing Bacteria Using Quantitative Polymerase Chain Reactions
Arezu Hajar Monawer, 18, Madison West High School, Madison, Wisconsin

**EM033**
The Effects of Pesticides on the Viability of Macro Invertebrates, Specifically *Artemia franciscana*, Phase III
Alexa Anne Lunt, 17, Weber High School, Pleasant View, Utah

**EM056**
Novel Synthesis: Imidacloprid CYP450 Pesticide Synergist from Dill Lowers Surface Runoff Toxicity
Emma Jean Graham, 16, Lisgar Collegiate Institute, Ottawa, Ontario, Canada

**EM059**
The Effect of Biomass Type on Hydrothermally Carbonized Biochar as a Soil Supplement and Energy Source
Afia Zarrin Khan, 15, Spring Valley High School, Columbia, South Carolina

**Environmental Sciences**
Intel will present Best of Category Winners with a $5,000 award. Additionally, a $1,000 grant will be given to their school and the Intel ISEF Affiliated Fair they represent.

**Intel ISEF Best of Category Award of $5,000 for Top First Place Winner**

**EV027**
Environmental Toxin 4-Nonylphenol and Autoimmune Diseases: Using DNA Microarray to Examine Genetic Markers of Cytokine Activity
Celline Kim, 17, Manhasset High School, Manhasset, New York
First Award of $3,000

EV027 Environmental Toxin 4-Nonylphenol and Autoimmune Diseases: Using DNA Microarray to Examine Genetic Markers of Cytokine Activity
Celline Kim, 17, Manhasset High School, Manhasset, New York

Second Award of $1,500

EV001 The Pyrolytic Synthesis of Biocchar and Biofuel from Biowaste: An Analysis of Its Potential to Amend Fuel Crisis and Food Security
Andrea Aleah Pugh, 15, Saginaw High School/Saginaw Arts and Sciences Academy, Saginaw, Michigan

EV035 An Innovative Method to Evaluate the Effects of the Aquatic Environment on the Chemotaxis of the Amphibian Pathogen Batrachochytrium dendrobatidis
Scott Paul Boisvert, 16, Basha High School, Chandler, Arizona

EV048 Get the Lead Out: The Removal of Lead from Water Using Common Seashells
Madeline Maley Landon, 16, Friendswood High School, Friendswood, Texas

Third Award of $1,000

EV019 The Uptake of Endocrine Disrupting Chemicals
Benjamin Waring Armstrong, 17, Monte Vista Senior High School, Monte Vista, Colorado

EV029 Chemical and Environmental Degradation of Oseltamivir Phosphate
Ashley Marie Thelen, 18, Mitchell High School, Mitchell, South Dakota

EV034 Sources of Sedimentary Organic Matter in NY, Jamaica Bay Region
Elaine Gomez, 18, Union City High School, Union City, New Jersey

EV037 Environmental Effects of Carbon Nanotubes as Shown via the Indicator Organism Triops longicaudatus
Gabriel Scott Stephens, 17, East Noble High School, Kendallville, Indiana

Fourth Award of $500

EV009 Acid Mine Drainage Remediation: A Novel Approach, Phase II
John Tyler Barnes, 16, Northwestern High School, Kokomo, Indiana

EV016 Determining the Effects of Greywater on the Efficiency of Nitrogen Removal in Septic Systems
Mary Maxine Luber, 16, Camdenton R-3 High School, Camdenton, Missouri

EV021 Phytoremediation of Heavy Metal Contamination: Utilizing Freshwater Aquatic Plants to Remove Lead, Cadmium, and Zinc
Lacey Taylor Jobe, 16, Grove High School, Grove, Oklahoma

EV024 Getting Carried Away IV: Investigating Environmental Consequences of Soil Treated with Polysacrylamide and Polyvinyl Alcohol
Cameron Bradley Strong, 18, The Woodlands College Park High School, The Woodlands, Texas
EV033  Does T.F. Green Airport’s De-Icing Affect Water Quality?
Nathan Edward Andrews, 16, Bishop Thomas F. Hendricken High School, Warwick, Rhode Island

Mathematical Sciences
Intel will present Best of Category Winners with a $5,000 award. Additionally, a $1,000 grant will be given to their school and the Intel ISEF Affiliated Fair they represent.

Intel ISEF Best of Category Award of $5,000 for Top First Place Winner
MA023  Super Kohler-Ricci Flow
Joshua William Pfeffer, 17, North Shore Hebrew Academy High School, Great Neck, New York

First Award of $3,000
MA001  On the Lattice Representations and Linear Extensions of Series-Parallel and (m+n)-free Posets
Martin Ayalde Camacho, 14, Central High School, Saint Paul, Minnesota

MA023  Super Kohler-Ricci Flow
Joshua William Pfeffer, 17, North Shore Hebrew Academy High School, Great Neck, New York

Second Award of $1,500
MA005  Creating and Deducing Structure Using Domination Numbers in Permutation Graphs
Maxim Ilya Wimberley, 17, Liberal Arts and Science Academy, Austin, Texas

MA010  Universal Law for the Distribution of Odd Periodic Cycles within Chaos in Nonlinear Dynamical Systems: A Fine Classification of Odd Cycles (Year III)
Almas Abdulla, 16, West Shore Junior Senior High School, Melbourne, Florida

MA047  On the Lower Central Series Quotients of a Graded Associative Algebra
Anirudha Balasubramanian, 17, Saint Albans School, Washington, District of Columbia

Third Award of $1,000
MA014  Analysis of Single-Elimination Tournaments
Chi-Hua Wang, 18, National Pingtung Senior High School, Pingtung, Chinese Taipei

MA024  Deligne Categories and Representation Theory in Complex Rank
Akhil Mathew, 18, Madison High School, Madison, New Jersey

MA050  Fractals and Fugues: Analyzing Music with Math
Rachel Danielle Perfecto, 16, Roy C. Ketcham High School, Wappingers Falls, New York

MA052  Constructing Inverse Limits with Upper Semi-Continuous Functions
Yong Zhi Zhou, 17, Pinetree Secondary School, Coquitlam, British Columbia, Canada
MA054 Hyperbolic Triangles of the Maximum Area and Two Fixed Sides
Evgeniia Iskanderovna Alekseeva, 16, GOU Lyceum "Vtoraiia Shkola", Moscow, Russia

Fourth Award of $500
MA003 Grids and Greenery: Mathematical Models of Invasive Species
Cathryn Margaret Manduca, 18, Century High School, Rochester, Minnesota

MA026 Decycling Densities of Tessellations
Jacob Benjamin Hurwitz, 17, Montgomery Blair High School, Silver Spring, Maryland

MA027 On the Construction of an Uncountable Class of Transcendental Numbers
Yevgeniy Rudoy, 18, Stuyvesant High School, New York, New York

MA031 Barycentric Coordinates and their Applications
Bayram Safa Cicek, 17, Ankara Fen Lisesi, Ankara, Turkey

MA035 Crank 0 Partitions and the Parity of the Partition Function
Kaavya Niveda Jayram, 11, Sravani Academy, Morgan Hill, California

MA053 Six Lines Passing through Feuerbach Point
Fedor A. Ivlev, 17, Kolmogorov's Specialized Educational Scientific Center of MS, Moscow, Russia

Medicine and Health Sciences
Intel will present Best of Category Winners with a $5,000 award. Additionally, a $1,000 grant will be given to their school and the Intel ISEF Affiliated Fair they represent.

Intel ISEF Best of Category Award of $5,000 for Top First Place Winner
ME041 Novel Identification/Subjugation of Prostate Cancer Cells' Intrinsic Resistance Mechanism to Cisplatin
Jong Hyuck Won, 17, Langley High School, McLean, Virginia

First Award of $3,000
ME041 Novel Identification/Subjugation of Prostate Cancer Cells' Intrinsic Resistance Mechanism to Cisplatin
Jong Hyuck Won, 17, Langley High School, McLean, Virginia

ME043 High Cholesterol Impairs Water and Gas Transport in Red Blood Cells and Is Ameliorated by the PLA2 Inhibitor ONO-RS-082
Siddhartha Gautama Jena, 16, International Academy, Bloomfield Hills, Michigan

ME065 Piece de Resistance: The Synthesis of Complex Dimeric Pyrrole-Imidazole Alkaloid Natural Product Derivatives and their Efficacy in Inhibiting and Dispersing Pseudomonas aeruginosa Biofilms
Justin To, 17, Oak Grove High School, San Jose, California
Second Award of $1,500

ME006  Antibody-Coated Magnetic Nanoparticles: Targeting and Treating Cancer in a Dynamic Environment
       Philip Samuel Schlenoff, 18, Maclay School, Tallahassee, Florida

ME011  A Study of Types I and II Diabetes Using Insulin Gene Microsatellites
       Amy Elizabeth Meyer, 17, Oakville Senior High School, St. Louis, Missouri

ME012  Treatment of Diabetic Vascular Disease by Targeting TGF-&#946;1 Gene
       Samantha Renae Prabakaran, 14, Fort Myers High School, Fort Myers, Florida

ME031  Novel Role of PARP-4 as a Potential Target in Breast Cancer
       Olga Y. Skirda, 17, Health Careers High School, San Antonio, Texas

ME037  Expression Profiling of Putative microRNA in Epithelial Ovarian Cancer
       Samantha Brooke Halpern, 17, Roslyn High School, Roslyn Heights, New York

ME084  Glucosaminyl (N-acetyl) Transferase 2 (GCNT2) Gene Expression Highly Influences Breast Cancer Metastasis and Promotes an Epithelial-Mesenchymal Transition (EMT)
       Sherwin Zhang Wu, 17, Detroit Country Day School, Beverly Hills, Michigan

Third Award of $1,000

ME026  Identification of Biological Insect-larvicides
       Joao Batista de Castro David Junior, 17, Colegio Estadual Liceu de Maracanaú, Maracanaú, CE, Brasil

ME034  The Novel Use of Fluorescence Resonance Energy Transfer (FRET) to Observe Apoptosis in Oligodendrocytes
       Pragya Kakani, 18, Jericho Senior High School, Jericho, New York

ME035  Inhibition of Vascular Cell Migration by Bisdemethoxycurcumin: A Bioinformatics Based Approach to Identify Target Genes
       Shalini Ramanan, 16, Hanford High School, Richland, Washington

ME036  Sequence Similarity between Rotavirus and Insulin-Regulating Genes
       Mary Olivia Richardson, 15, duPont Manual High School, Louisville, Kentucky

ME046  Critical Role of TGFb1/Smad3 Signaling in Hepatic Metabolism: A Novel Therapeutic Target for Metabolic Syndrome
       Samirkumar S. Devalaraja, 17, Thomas Sprigg Wootton High School, Rockville, Maryland

ME059  Microfluidic Device for Quantitative Single-Cell Profiling of Human Pluripotent Stem Cells, Year Two
       Jane Yoonhae Suh, 18, Palos Verdes Peninsula High School, Rolling Hills Estates, California

ME075  Identification of a Novel Signal Pathway and Its Therapeutic Targets for Tobacco Promotion of Lung Cancer
       Angela Zhang, 15, Monta Vista High School, Cupertino, California
ME093  Aptamer-conjugated Gold Nanorods for Personalized Detection and Nanothermal Treatment of Glioblastoma Cancer Cells  
Muna Oli, 17, Eastside High School, Gainesville, Florida

Fourth Award of $500

ME001  Food Additive or Carcinogen? Carrageenan Inhibits ASB Activity and Induces Cell Invasion Involving RhoA Activation and MMP-9 Secretion  
Prithwis Kumar Mukhopadhyay, 17, Woodbury High School, Woodbury, Minnesota

ME003  The Synergistic Effects of Tolfenamic Acid and Radiation on Sp1 and Survivin in Head and Neck Cancer  
Shannon Somer Stockton, 16, Lake Highland Preparatory School, Orlando, Florida

ME010  A Comparison of the Efficacy of Alternative Therapeutic Agents against Colon, Pancreatic, and Urinary Bladder Cancer Cell Proliferation, in vitro  
Christopher Daniel Louviere, 16, Ridgeview High School, Orange Park, Florida

ME025  YWHAZ (14-3-3zeta) Involved in the Metastasis of Lung Adenocarcinoma through Wnt Signaling Pathway  
Tsung-Han Chan, 17, National Taichung First Senior High School, Taichung City, Taiwan, Chinese Taipei

ME033  The Effects of Epoxyeicosatrienoic Acids and their Metabolites on Myocardial Function and Perfusion during Acute Myocardial Ischemia  
Matthew A. Nugent, 16, Oregon Episcopal School, Portland, Oregon

ME044  Improving Stethoscope Hygiene at Two Community Hospitals  
Ariel Lynne Schroeder, 18, Saint Joseph High School, Natrona Heights, Pennsylvania

ME045  Factors Affecting the Prescription Volume (V100) of the Tandem/Ring HDR Applicator  
Anirudh Krishna, 16, Solon High School, Solon, Ohio

ME063  Role of TSPYL1, FGIF, and MTF-1 in Gamma-globin Gene Activation for Treatment of Hemoglobinopathies: A Tissue Study in Novel Binary Transgenic Mouse Models  
Prarthana Jignesh Dalal, 16, Shawnee Mission East High School, Prairie Village, Kansas

ME080  Prostate Cancer Diagnosis Using Metabolomic Fingerprints  
Rahul Ananth Doraiswami, 16, Foothill High School, Pleasanton, California

ME083  A Miraculous Cost-Effective Natural Dietary Intervention that Reverses an Epidemic of Obesity, Diabetes, Hypertension, & Arthritis in the Mississippi Delta: The Effects of Organic Safflower Oil and Flax Seed Oil with Vitamin D and a Multivitamin  
Ericka Maxine Wheeler, 16, Greenwood High School, Greenwood, Mississippi
ME095  Regulation of the Latent-Lytic Switch of Epstein-Barr Virus by MiRNAs and TGF-beta
Iris J. Xu, 18, James Madison Memorial High School, Madison, Wisconsin

**Microbiology**

Intel will present Best of Category Winners with a $5,000 award. Additionally, a $1,000 grant will be given to their school and the Intel ISEF Affiliated Fair they represent.

**Intel ISEF Best of Category Award of $5,000 for Top First Place Winner**

**MI027**  Altering Lentiviral Tropism by Pseudotyping with Specific Receptor-Mediated Proteins
Thomas Scott Silver, 16, Bergen Academy for Medical Science and Technology, Hackensack, New Jersey

**First Award of $3,000**

**MI026**  Attachment Factor Secretion in Uropathogenic *E. coli* Bacteria
Erica Brooke Portnoy, 16, Commack High School, Commack, New York

**MI027**  Altering Lentiviral Tropism by Pseudotyping with Specific Receptor-Mediated Proteins
Thomas Scott Silver, 16, Bergen Academy for Medical Science and Technology, Hackensack, New Jersey

**Second Award of $1,500**

**MI011**  Utilization of the Fungus *Aspergillus niger* on Wastewater Treatment II

**MI037**  Development and Application of Novel Screen for Detecting Biofilm-Inhibiting Metabolites in Four Bacteria Strains: *E. coli*, *B. subtilis*, *A. tumefaciens* and *P. aeruginosa*
Christina Kun Wang, 17, Shanghai American School, Shanghai, Shanghai, China

**MI045**  Watch H2Out!
Augusto German Niez Gay, 17, Instituto San Jose Adoratrices, Concordia, Entre Rios, Entre Rios, Argentina

**Third Award of $1,000**

**MI004**  Evaluation of *Burkholderia pyrocinia* (FL728) and *Pae nibacillus lentimorbus* (FL92) for the Presence of Genes Encoding the Biosynthesis of Pyrrolnitrin, Pyoluteorin, Phenazine, and 2,4-diacetylphloroglucinol Antibiotics
Stephanie Page Hoskins, 17, Lincoln Park Academy, Fort Pierce, Florida

**MI025**  The Effects of Grazer Exclusion on the Colonization of Hard Substrates by Microbial Communities
Joshua Andrew Lewin-Jacus, 18, Lynbrook Senior High School, Lynbrook, New York
MI031  pVISIA, Vaccine Vector for Antigen Presentation  
Vishwajith Sridharan, 18, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia

MI041  Antifungal Effects and Identification of *Eisenia foetida* Bacteria on *Batrachochytrium dendrobatidis* (Bd), an Amphibian Pathogenic Fungus, Year II  
Jayton Lewis Rainey, 16, Slaton High School, Slaton, Texas

MI057  Irradiation Extermination, Part II: A Portable System to Eliminate Water-Borne Microorganisms  
Kelli Ann Lynch, 16, Rocky Mountain High School, Fort Collins, Colorado

Fourth Award of $500
MI009  Vitis labrusca Anthocyanin Identification and Their Antibacterial Effects on *Capra hircus* Hoof Rot Bacteria  
Sarah Marie Cox, 15, Zane Trace Local Schools, Chillicothe, Ohio

MI016  The Effect of Different Inocula and Media on the Power Output of Microbial Biobatteries  
Sarah Katherine Hooper, 17, Charlottesville High School, Charlottesville, Virginia

MI020  Antimicrobial Activity of a Phenolic Compound Extracted from the Rind of *Punica granatum* against *Klebsiella pneumonia, Haemophilus influenzae* and Acinetobacter Species  

MI033  A Solution to the Worldwide Malaria Epidemic: A Comprehensive Study of Iron and Nitric Oxide's Effect on the Growth and Survival of *Toxoplasma gondii*  
Matthew Karmen McIntyre, 17, Yorktown High School, Yorktown Heights, New York

MI056  Microbial Inhibitory Activities of Extracts from Seven Philippine Seaweeds  
Marc Arthur Jordan Irlandez Limpiado, 16, Philippine Science High School-Eastern Visayas Campus, Tacloban City, Leyte, Philippines

MI062  A Multipronged Investigation of the Amphibian Pathogen *Batrachochytrium dendrobatidis*  
Madeline Berit Sides, 17, Davis Senior High School, Davis, California

**Physics and Astronomy**

Intel will present Best of Category Winners with a $5,000 award. Additionally, a $1,000 grant will be given to their school and the Intel ISEF Affiliated Fair they represent.

**Intel ISEF Best of Category Award of $5,000 for Top First Place Winner**

PH018  Adiabatic Quantum Evolution for NP-Complete and Physical Problems  
Yale Wang Fan, 18, The Catlin Gabel School, Portland, Oregon
First Award of $3,000
PH018  Adiabatic Quantum Evolution for NP-Complete and Physical Problems
Yale Wang Fan, 18, The Catlin Gabel School, Portland, Oregon

PH026  Traveling the Interplanetary Superhighway: An Autonomous Spacecraft Navigation System
Erika Alden DeBenedictis, 18, Albuquerque Academy, Albuquerque, New Mexico

Second Award of $1,500
PH023  Reducing the Computation Time of a N-Body Galactic Simulation
Evan Haley Fletcher, 17, Kalamazoo Area Mathematics and Science Center, Kalamazoo, Michigan

PH025  The First Electronic Structure Calculations and Determination of Related Properties for Radium
Aryan Iden Khojandi, 18, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia

PH045  Hidden Sounds: Harmonic Symmetry of Human Voices, Continuation Year Two
Ellen Marie Price, 17, Jefferson County International Baccalaureate School, Birmingham, Alabama

Third Award of $1,000
PH015  Nonlinear Diffusion Dynamics Measured by Using a Simple Light-Transmission Method
Yu-Sheng Huang, 17, National Chia-yi Senior High School, Chaiyi City, Chinese Taipei

PH019  Experimental Study of Viscosity Using Stokes' Law: Examining and Correcting Stokes’ Law’s Limitations in Viscometry
Katrina Lynn Hui, 15, Richland High School, Richland, Washington

PH032  Fission Vision: The Detection of Prompt and Delayed Induced Fission Gamma Radiation, and the Application to the Detection of Proliferated Nuclear Materials
Taylor Ramon Wilson, 15, The Davidson Academy of Nevada, Reno, Nevada

PH036  An Improved Metric for Visual Differentiation Using Colour-Modified Clinical Eye Charts
Jonathan David Sapolinski, 16, Redeemer Baptist School, North Paramatta, New South Wales, Australia

PH047  Satellite Constellations: A New Way for Determining Atmospheric Densities
Cayley Erin Dymond, 14, North Point High School for Science, Technology, and Industry, Waldorf, Maryland

Fourth Award of $500
PH013  Sandstorm in a Teacup: Patterns in a Vibrated Granular Layer
Ivan Alexandrovich Lazarevich, 16, Lyceum # 40, Nizhny Novgorod, Nizhegorodskaya, Russia
PH020  Assessing Changes in Collagen Levels of Prostate Tissue from Castrated Rats Using Non-linear Optics
Bruna Favetta, 16, Escola Americana de Campinas, Campinas, Sao Paulo, Brasil

PH030  Efficiency of Thermoelectric Power Conversion in Bi2Te3
Daniela Jane Flax, 15, Lincoln Park High School, Chicago, Illinois

PH031  Study of Magnetic Properties for Nanocrystalline Materials
Daniel Neimark, 17, Religious Comprehensive "AMIT" High School, Beer Sheva, Israel

PH033  Finding the Minimum Energy Conformation of Protein-like Heteropolymers by Greedy Neighborhood Search
Joon Suk Huh, 18, Home School, Yongin-si, Gyeonggi-do, South Korea

PH039  The Efficiency of a Small Particle Accelerator at Irradiating Various Targets and Producing Radiation
Adam Joseph Bowman, 14, Montgomery Bell Academy, Nashville, Tennessee

Plant Sciences
Intel will present Best of Category Winners with a $5,000 award. Additionally, a $1,000 grant will be given to their school and the Intel ISEF Affiliated Fair they represent.

Intel ISEF Best of Category Award of $5,000 for Top First Place Winner
PS037  The Potential Allelopathic Suppression of Kudzu (Pueraria montana)
Mason Cole McFarland, 18, Jefferson County International Baccalaureate School, Birmingham, Alabama

First Award of $3,000
PS037  The Potential Allelopathic Suppression of Kudzu (Pueraria montana)
Mason Cole McFarland, 18, Jefferson County International Baccalaureate School, Birmingham, Alabama

Second Award of $1,500
PS008  Algae—the Green Fuel: Optimizing Growth and Lipid Composition in Algae through Environmental Stress
Wenxi Li, 16, Thomas Chilton Jasper High School, Plano, Texas

PS009  Impatiens shimianensis sp. nov (Balsaminaceae): A New Species from Southwest China Based on Morphological and Molecular Evidence
Gechen Zhang, 17, Rockwood Summit High School, Fenton, Missouri

PS042  Growth Form in Intertidal Lichen Zonation
Luizetta Vadimovna Navrazhnykh, 16, Florida Atlantic University High School, Boca Raton, Florida
Third Award of $1,000

**PS015**  
*Antimicrobial Effect of Cuminum cyminum Fruit Extract and Isolation of Its Active Components*  
Fangzhou Xiao, 17, No. 2 Secondary School Attached to East China Normal University, Shanghai, China

**PS044**  
*Investigation of Antimicrobial Property of Ervatamia coronaria Flower*  
Kaushik Srivatsan Krishna Swamy, 16, Jawahar Navodaya Vidyalaya, Mandya District, Karnataka, India

**PS045**  
*Leaf Extracts of Euphorbiaceae Can Eradicate the Field Crab, Somanniathelphusa sexpunctata*  
Malinee Meeta, 16, Phanomsarakam Phanomadunwitthaya, Chachoengsao, Chachoengsao, Thailand

**PS052**  
*Aspen in a State of SADness: A Statistical Analysis of the Decline of Populus tremuloides, Phase II*  
Nikki Taylor Buhrdorf, 16, Hotchkiss High School, Hotchkiss, Colorado

Fourth Award of $500

**PS003**  
*Analysis of Plant Promoter Expression Abilities as an Alternative to Viral Promoters in Transgenic Produce*  
Stephen Taylor Bethel, 17, Lake Brantley High School, Altamonte Springs, Florida

**PS012**  
*Aqueous Extract of Lemon Leaves as a Novel Powerful Insecticide against Trialeurodes vaporariorum (Whitefly)*  
Xiangbo Meng, 17, Beijing 101 Middle School, Beijing, China

**PS031**  
*Conservation of an Endangered Plant, Nymphoides indica, by a Simple and Novel Method*  
Noriaki Namba, 17, Niigata Prefectural Kashiwazaki Shoyo Secondary Education School, Kashiwazaki-shi, Niigata, Japan

**PS033**  
*Does Azadirachta indica Affect the Motility and Life Cycle of Meloidogyne inconita?*  
Swetha Krishna Doppalapudi, 15, Morgantown High School, Morgantown, West Virginia

**PS050**  
*Diversity of Foliar Fungal Endophytes in Wild and Cultured Metrosideros polymorpha Inferred from Environmental PCR and ITS Sequence Data*  
Mali'o Wanda Kodis, 18, Waiakea High School, Hilo, Hawaii
Team Projects
Intel will present Best of Category Winners with a $5,000 award. Additionally, a $1,000 grant will be given to their school and the Intel ISEF Affiliated Fair they represent.

Intel ISEF Best of Category Award of $5,000 for Top First Place Winners
AS303 Determining the Optimal Scaffold for Three-Dimensional Bone Formation Using Bovine Adipose-Derived Adult Stem Cells
Melissa Severn McDowell, 17, Saint Joseph's Academy, Baton Rouge, Louisiana
Michael Charles McDowell, 15, Catholic High School, Baton Rouge, Louisiana

CS303 The Classification and Recognition of Emotions in Prerecorded Speech
Akash Krishnan, 15, Oregon Episcopal School, Portland, Oregon
Matthew Fernandez, 16, Oregon Episcopal School, Portland, Oregon

First Award of $3,000
AS303 Determining the Optimal Scaffold for Three-Dimensional Bone Formation Using Bovine Adipose-Derived Adult Stem Cells
Melissa Severn McDowell, 17, Saint Joseph's Academy, Baton Rouge, Louisiana
Michael Charles McDowell, 15, Catholic High School, Baton Rouge, Louisiana

CB306 High Glucose Levels Alter Morphine Signaling Systems: A Novel Pathway for Sugar Addiction
Jan Gong, 17, Garden City High School, Garden City, New York

CH303 Synthesis and Analysis of the New Superconducting Material - FeSe Nanocrystals
Chi-Chieh Lin, 18, Taipei Municipal First Girls' Senior High School, Taipei City, Taiwan (R.O.C.), Chinese Taipei
Jacqueline Hung, 18, Taipei Municipal First Girls' Senior High School, Taipei, Taiwan (R.O.C.), Chinese Taipei

CS303 The Classification and Recognition of Emotions in Prerecorded Speech
Akash Krishnan, 15, Oregon Episcopal School, Portland, Oregon
Matthew Fernandez, 16, Oregon Episcopal School, Portland, Oregon

EA302 The Domino Effect of Global Warming: An Experimental Study of the Positive Feedback Mechanism (PFM) due to Global Warming on Methane Emissions and a Model to Quantify Its Worldwide Effect in the 21st Century from Anthropogenic and Natural Wetlands
Naomi C Shah, 14, Sunset High School, Portland, Oregon
Priyam C Shah, 17, Sunset High School, Portland, Oregon

EE325 A New Approach to Accident Prevention Systems: Designing a Low-cost Driver Assistance System to Prevent Traffic Collision
Cristian Emilian Rosu, 18, "Emanui Gojdu" National College, Oradea, Bihor, Romania
Paul Stelian Sucala, 18, Silvania National College, Zalau, Bihor, Romania
EN301  The Use of an Electroless Intermetallic Coating to Reduce Infrared Emissivity and Temperature Oscillation in Metal Alloy Saw Blades
Gennifer Reid Rubin, 17, Lake Highland Preparatory School, Orlando, Florida
Audrey Christine Leasure, 17, Lake Highland Preparatory School, Orlando, Florida

EV311  Health Effects of Metal Nanoparticles: The Role of Hypoxia Inducible Factor-1α in MMP-2 and MMP-9 Production by Human Monocytes Exposed to Nickel Nanoparticles
Yixin Li, 17, Ballard High School, Louisville, Kentucky
Yihua Li, 17, Ballard High School, Louisville, Kentucky

Second Award of $1,500

BE307  Analysis of the Effects of Sleep Deprivation on Learning Behavior and Cognitive Deficit in a Drosophila Model: A Potential Target for Neuroprotective Pharmacotherapy
Shaunak Krishan Bakshi, 16, Manhasset Senior High School, Manhasset, New York
Peter Hans Massey, 17, Manhasset High School, Manhasset, New York

BI302  Effect of Environmental Factors on Tanshinone Content and Related Synthesis Gene Expression of Salvia miltiorrhiza Bunge
Wenqi Lu, 17, No. 7 High School of Chengdu City, Chengdu, Sichuan, China
Xinyan Yang, 17, No. 7 High School of Chengdu City, Chengdu, Sichuan, China
Junjun Wu, 17, No. 7 High School of Chengdu City, Chengdu, Sichuan, China

BI304  A New Spin on Green Energy: Increasing Hydrogen Evolution in a Spirulina Derived Photobiological System
Megan M. Kurohara, 16, Hilo High School, Hilo, Hawaii
Hannah Rojeski, 16, Hilo High School, Hilo, Hawaii

CB301  RNAi as a Safe Method of Insect Population Control
Joseph Corbett Ferguson, 17, Paul Laurence Dunbar High School, Lexington, Kentucky
Roshan Palli, 16, Paul Laurence Dunbar High School, Lexington, Kentucky

CH312  Research on the Usability of Low-cost Materials in Dye Sensitized Solar Cells
Andreas Wagner, 19, HTL Braunau am Inn, Braunau am Inn, Upper Austria, Austria
Juergen Koechl, 19, HTL Braunau am Inn, Braunau am Inn, Upper Austria, Austria

CS307  Synchronous Tangible Augmented Reality
Lai Xue, 17, Chengdu International School, Chengdu, Sichuan, China
Darren Lim, 16, Chengdu International School, Chengdu, Sichuan, China
Hyun Ki Lee, 18, Chengdu International School, Cheng Du, Si Chuan, China

EA305  A Study on the Features of Gudul Used for Korean Heating System (Ondol)
Subin Shin, 19, Damyang High School, Damyang-gun, Jeollanam-do, South Korea
Hyeon-A Choi, 19, Damyang High School, Damyang-gun, Jeollanam-do, South Korea
EE301  
**Bring to Light: The Development of a Novel PFO Inverse Organic Light Emitting Diode**  
Elisa Bisi Lin, 18, Plano West Senior High School, Plano, Texas  
Ian Chan, 18, Plano East Senior High School, Plano, Texas

EE324  
**Processor Cooling Engine**  
Krisztina Sugar, 18, Szent Margit Secondary School, Budapest, Hungary  
David Szabolcs Simon, 18, Szent Margit Secondary School, Budapest, Hungary

EM303  
**Enhanced Sprinkling System with Energy-Efficient Applications at Stevenson School**  
Michael Lin, 16, Robert Louis Stevenson Upper School, Pebble Beach, California  
Jimmy Lin, 15, Robert Louis Stevenson Upper School, Pebble Beach, California

EN314  
**REVO FOOT: Low Cost Orthopedic Prosthesis to Lower Limb Amputations, Produced from Recyclable Materials**  
Eduardo Trierweiler Boff, 18, Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo, Rio Grande do Sul, Brasil  
Lucas Strasburg Ferreira, 18, Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo, Rio Grande do Sul, Brasil

ET306  
**Having Our Cake and Eating It Too: Novel Composite Membranes with Low Methanol Permeability and Good Proton Conductivity for Direct Methanol Fuel Cells**  
Liang-Bo Shen, 17, Beijing No. 4 High School, China, Beijing, China  
Kan-Ran Tan, 17, Beijing No. 4 High School, China, Beijing, China

ET320  
**A Novel and Efficient Method of Hydrogen Production: Optimizing the Microbial Electrolysis Cell and Microbial Fuel Cell Coupled System**  
Cheng Cheng, 17, Lynbrook High School, San Jose, California  
Aakriti Jain, 17, Lynbrook High School, San Jose, California

ME320  
**Engineering a Novel Genetics-Based Early Disease Detection Mechanism Designed Using an Ontology-Driven Semantically Annotated Microarray Repository with Thermal Gradient Focusing Mass Spectrometry**  
Ritik Malhotra, 17, Lynbrook High School, San Jose, California  
Tony Ho, 17, Lynbrook High School, San Jose, California

PH303  
**H-α [O III] Photometry of Galactic Plane Candidate Planetary Nebulae**  
Laree Danielle Gardner, 18, Grosse Pointe North High School, Grosse Pointe Woods, Michigan  
Genevieve Ying Wang, 18, Grosse Pointe South High School, Grosse Pointe Farms, Michigan  
Stephen J. Morrison, 16, Grosse Pointe North High School, Grosse Pointe Woods, Michigan

PS304  
**Finding a Transcription Factor in Eucalyptus grandis that Regulates Wood Formation**  
Jason Ye, 16, Cedar Shoals High School, Athens, Georgia  
Rebekah Bau, 17, Cedar Shoals High School, Athens, Georgia
<table>
<thead>
<tr>
<th>Project Code</th>
<th>Description</th>
<th>Students and Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>BE316</td>
<td><strong>A Functional MRI Study of Brain Activation during the Reading of Music</strong></td>
<td>Timothy A Ochsner, 17, Hilton Head Preparatory School, Hilton Head Island, South Carolina Qiuzi Zhu, 16, Hilton Head Preparatory School, Hilton Head Island, South Carolina Cara Marie Borelli, 16, Hilton Head Preparatory School, Hilton Head Island, South Carolina</td>
</tr>
<tr>
<td>BI308</td>
<td><strong>Effectiveness of <em>Plectranthus amboinicus</em> (Indian borage), <em>Salvia officinalis</em> (Sage) and <em>Ocimum basilicum</em> (Basil) Plant's Leaves Extracts to Eliminate the <em>Solenopsis invicta</em> (Red Fire Ant)</strong></td>
<td>Jamarys Torres-Diaz, 17, Elvira M. Colon Negron, Santa Isabel, Puerto Rico Jackeline Torres-Questell, 18, Elvira M. Colon Negron, Santa Isabel, Puerto Rico</td>
</tr>
<tr>
<td>EA303</td>
<td><strong>ESR Dating Early Men and Their Tools at Pradayrol, France and Ainikab I, Russia:</strong></td>
<td>Israt Ahmed, 17, Francis Lewis Highschool, Fresh Meadows, New York Xiao Y. Zhou, 16, Francis Lewis High School, Fresh Meadows, New York Stephanie S Chen, 17, Stuyvesant High School, New York, New York</td>
</tr>
<tr>
<td>EE321</td>
<td><strong>Design of a Novel, Low-cost, Easy to Use, Auto-disposable Syringe</strong></td>
<td>Manosij Ghosh Dastidar, 17, South Point High School, Kolkata, West Bengal, India Anarta Roy, 17, South Point High School, Kolkata, West Bengal, India</td>
</tr>
</tbody>
</table>
EE327  The Design and Construction of a Rugosity Substrate Profile Gauge and Comparison with the in situ Chain Method  
Lauren Michelle Farwell, 17, Bellarmine Preparatory School, Tacoma, Washington  
Kate Noel Donahue, 18, Bellarmine Preparatory School, Tacoma, Washington

EM313  Integrating Programmable Thermostats with the National Digital Forecast Database XML Web Service and Web Scheduler to Maximize Energy Efficiency  
Neil Nijhawan, 16, duPont Manual High School, Louisville, Kentucky  
Kush Nijhawan, 16, duPont Manual High School, Louisville, Kentucky

EN309  Comparative Analysis: Sorbothane versus Non-Newtonian Fluids  
David Booth, 18, Saint Xavier High School, Louisville, Kentucky  
Tyler James Chumbley, 17, Saint Xavier High School, Louisville, Kentucky

EN319  Applications of Faraday Shielding  
Barron Collins Roberts, 18, Central High School, Saint Joseph, Missouri  
Chelsey Maxine Bartlett, 18, Central High School, St. Joseph, Missouri  
Sirish Veligati, 17, Saint Joseph Central High School, St. Joseph, Missouri

EN322  Ultrascale Modeling of Supercapacitors for Electrical Energy Storage  
Linus Hauming Liang, 17, Oak Ridge High School, Oak Ridge, Tennessee  
Jonathan Linden Bryan, 18, Oak Ridge High School, Oak Ridge, Tennessee

EN324  Mini Magnetic Muck Managers  
Vivienne Hui Xian Tam, 17, Waterloo Collegiate Institute, Waterloo, Ontario, Canada  
Janelle Hui Min Tam, 14, Waterloo Collegiate Institute, Waterloo, Ontario, Canada

ET317  Electrochromic Sun-Tracking Windshield  
Aaron V. Schild, 18, The Bishop's School, La Jolla, California  
Rafael S. Cosman, 16, La Jolla High School, La Jolla, California

ET318  PEM Productivity: An Analysis of Efficiency-Affecting Aspects in Polymer Electrolyte Membrane Fuel Cells through Pressure Transducers in a Pressure Decay Model  
Angela Jean Smith, 16, Louisville High School, Louisville, Ohio  
Jackson Lee Frazier, 15, Louisville High School, Louisville, Ohio

EV323  Alkaline Rainfall  
Sol Paskvan, 17, Colegio San Ignacio, Tandil, Buenos Aires, Argentina  
Lucas Matias Gille, 17, Colegio San Ignacio, Tandil, Buenos Aires, Argentina

MA303  Ballot Problem Approached from n-Dimensional Paths  
Te-Wei Hsu, 18, Kaohsiung Municipal Kaohsiung Senior High School, Kaohsiung City, Chinese Taipei  
Justin Tony Hou, 18, Kaohsiung Municipal Kaohsiung Senior High School, Kaohsiung City, Chinese Taipei
MA308  An Improvement of the Hardy Condition
Bogdan O. Neterebskiy, 17, Center of Mathematical Education, Saint Petersburg, Saint Petersburg, Russia
Konstantin A. Anisimov, 16, Center of Mathematical Education, Saint Petersburg, Saint Petersburg, Russia

ME307  Mesenchymal Genes Are Upregulated in Putative Murine Mammary Cancer Stem Cells
Rachel Ann Wilkinson, 15, Nicolet High School, Milwaukee, Wisconsin
Katelynn Connell McShane, 15, Nicolet High School, Glendale, Wisconsin

ME309  Neutralization of E. coli Lipopolysaccharide with a Novel Recombinant ASS Protein Treatment
Gabriel Molina, 16, Oak Hall School, Gainesville, Florida
Alvin Wang, 16, Oak Hall School, Gainesville, Florida

ME319  The Effects of Caloric Restriction on the Subsequent Stress Resistance and Chemosensation of Caenorhabditis elegans
Sudarshan Bhat, 18, Lynbrook High School, San Jose, California
Priyanka Athavale, 17, Lynbrook High School, San Jose, California

MI307  Evolution of the H5N1 Virus: A Study of How Single Nucleotide Polymorphisms Affect Host and Regional Variability in the H5N1 Virus
Boning Han, 18, North Central High School, Indianapolis, Indiana
Lauren Hannah Stephens, 17, North Central High School, Indianapolis, Indiana

PH305  Validation of Parabolic Ion Trap Geometries for Application within Quantum Computing
Jennifer Wang, 17, Montgomery Blair High School, Silver Spring, Maryland
Grace Calvert Young, 17, The Potomac School, McLean, Virginia

Fourth Award of $500
BE309  Examining Top-Down Control in Cognition and Perception
Charlotte Kleiman, 16, Ossining High School, Ossining, New York
Alina Lesnovskaya, 16, Ossining High School, Ossining, New York

BE310  The Effects of an Action Video Game on Reducing the Gender Gap in Geometry Scores
Klaudia Kluzinski, 16, Forest Hills High School, Forest Hills, New York
Angela Lee, 16, Forest Hills High School, Forest Hills, New York

BI303  The Role of Perspiration Constituents in the Attraction of Culex pipiens to Humans
Ruchi Jayesh Shah, 15, Sachem High School North, Lake Ronkonkoma, New York
Garima Yadav, 15, Sachem High School North, Lake Ronkonkoma, New York

CB308  Study the Radiosensitivity and Carrier's Frequency of Ataxia telangiectasia-like Disorder (ATLD)
Fhad Abdulrahel Almusharraf, 18, Riyadh Schools, Riyadh, Saudi Arabia
Abdulaziz Sultan Almugairin, 18, Riyadh Schools, Riyadh, Saudi Arabia
Ahmed Rashed Alhomaid, 18, Riyadh Schools, Riyadh, Saudi Arabia
CH302  Investigation of Rain-X™ and Sunscreen Coating, Year Three: Protection against Radiation-Induced Oxidative Stress
Derek Robert Lam, 15, Keystone School, San Antonio, Texas
Brigette Mary Lee, 15, Keystone School, San Antonio, Texas

CH307  A Combined Approach: Comparing Liquid Runway Deicer Performance Characteristics with Their Impact on Aircraft Corrosion, Catalytic Oxidation, the Environment, and the Economy
Bailie Jo Bryant, 17, Central Lee High School, Donnellson, Iowa
Lynnely Greye Parker, 18, Central Lee High School, Donnellson, Iowa

CS302  Making Chemistry Easier with Genii
Werner van Zyl, 17, Duineveld High School, Upington, Northern Cape, South Africa
Gideon Christiaan Kruger, 17, Duineveld High School, Upington, Northern Cape, South Africa

EA304  Effect of Solar Exposure on the Atomic Oxygen Erosion of Hubble Space Telescope Bi-Stem Thermal Shield Aluminized-Teflon FEP
Aobo Guo, 16, Hathaway Brown School, Shaker Heights, Ohio
Claire Ashmead, 16, Hathaway Brown School, Shaker Heights, Ohio

EE303  Research on a Mechanical Detecting Pipe-Rat with Steerable Double Driving Wheels
XingYuan Xu, 18, Liaoning Province Shiyan High School, Shenyang, Liaoning, China
XinYi Gong, 18, Liaoning Province Shiyan High School, Shenyang, Liaoning, China
Tian Zhang, 18, Liaoning Province Shiyan High School, Shenyang, Liaoning, China

EE311  Saving Water through Weather Analysis: Using Precipitation Probabilities and Moisture Sensing in Lawn Irrigation
Alexander Joseph Mullen, 18, Oxford High School, Oxford, Mississippi
Cathy Hsi Chen, 18, Oxford High School, Oxford, Mississippi

EE312  Regenerative Braking
Erick Yiqing Chen, 16, West High School, Salt Lake City, Utah
Delian Tihomirov Asparouhov, 16, West High School, Salt Lake City, Utah

EM308  Enhancing Biofilters: The Impact of Abscisic Acid on the Sequestration of Heavy Metals by Euglena gracilis
Jackie Bokor, 16, Long Beach High School, Lido Beach, New York
Hannah Michele Berkowitz, 16, Long Beach High School, Lido Beach, New York

EN308  Construction of a Contrast-Enhanced Brain-Mimicking Hydrogel and Simulation of the Mechanical Effects of Implantable Brain Electrodes
Rohit Anish Ramani, 17, Half Hollow Hills High School East, Dix Hills, New York
EN313  Switchgrass: A Source of Biofuels and Fibers
Mallory Ruth Busso, 16, Kalamazoo Area Mathematics and Science Center, Kalamazoo, Michigan
Lauren Marie Raycraft, 16, Kalamazoo Area Mathematics and Science Center, Kalamazoo, Michigan

EN321  Making the Best Better: Optimizing the TiO2 Semiconducting Layer for Applications in Dye-Sensitized Solar Cells
Amy B.C. Tang, 16, Westview High School, Portland, Oregon
Anjali Jaba Das, 18, Westview High School, Portland, Oregon

ET301  A Current Event: An Ongoing Study of the Production of Clean Tidal Energy
Kyle Scott Saleeby, 15, Niceville Senior High School, Niceville, Florida
Katherine Marie Stone, 16, Fort Walton Beach High School, Fort Walton Beach, Florida

ET305  Cylindrical Organic Solar Cells with Carbon Nanotube Charge Collectors
Raymond Lou, 16, Texas Academy of Mathematics and Science, Denton, Texas
Dante Zakhidov, 16, Texas Academy of Mathematics and Science, Denton, Texas
Navaneeth Goduwin Ravindranath, 16, Texas Academy of Mathematics and Science, Denton, Texas

Susana Beatriz Garita-Araya, 17, Colegio Cientifico de Costa Rica-Sede San Carlos, Santa Clara de San Carlos, Alajuela, Costa Rica
Alexia Quiros-Rojas, 18, Colegio Cientifico de Costa Rica-Sede San Carlos, Santa Clara de San Carlos, Alajuela, Costa Rica

EV325  Heavy Metals in Mines
Saud Dakhel Alharbi, 18, Alhakm Bin Hesham Public School, Mahd Althahhab, Saudi Arabia
Rakan Thareeb Almutairi, 16, Alhakm Bin Hesham Public School, Mahd Althahhab, Saudi Arabia
Humoud Saleh Almutairi, 16, Alhakm Bin Hesham Public School, Mahd Althahhab, Saudi Arabia

EV328  Use of Natural Flocculants in Mitigating Harmful Algal Blooms (Red Tides)
Maria Clara Isabel De Los Reyes Sia, 15, Philippine Science High School - Eastern Visayas Campus, Palo, Leyte, Philippines
Marc Abegonia Mapalo, 16, Philippine Science High School - Eastern Visayas Campus, Palo, Leyte, Philippines
Jean Reni Briones De Guzman, 16, Philippine Science High School- Eastern Visayas Campus, Palo, Leyte, Philippines

MA309  Improviny of Inequalities between Means
Abylay Galymzhanuly Kuanyshov, 18, High School #134, Almaty, Almaty, Kazakhstan
Assel Almazbekovna Aliyeva, 18, High School 134, Almaty, Almaty, Kazakhstan

Intel ISEF 2010 Grand Award Winner Announcement - Page 37
ME310 Internal Combat With Melanoma: Triggering an Immune Response Through the Up-Regulation of FAS Using Toll Ligand Combination Treatments
Laura Katherine Gudvangen, 16, William J. Palmer High School, Colorado Springs, Colorado
Tonya Alexia Pavlenko, 16, William J. Palmer High School, Colorado Springs, Colorado

ME312 Generation of a RNA probe for in situ Hybridization
Kelly Kathleen Christensen, 18, Monarch High School, Louisville, Colorado
Molly Alyisse McMahon, 17, Monarch High School, Louisville, Colorado

ME313 A Novel Gallium and Zinc Nitrate Based Intravenous Medicine for the Treatment of Pseudomonas aeruginosa Nosocomial Infections
Aditya Samir Mazmudar, 15, Fairfax High School, Fairfax, Virginia
Atif Javed, 17, Fairfax High School, Fairfax, Virginia

ME318 Remote Ischemic Preconditioning
Naman Gupta, 17, Folsom High School, Folsom, California
Anshum Sood, 17, Folsom High School, Folsom, California
Anuhya Venkata Ghorakavi, 17, Folsom High School, Folsom, California

ME321 Epigenetic Biomarker Assays for Colon Cancer Screening
Benjamin Paul Song, 16, Methacton High School, Eagleville, Pennsylvania
Quan Chen, 18, Methacton High School, Eagleville, Pennsylvania

MI304 The Antimicrobial Effects of Commercial Spices and Plant Extracts on Escherichia coli O157:H7 in Ground Beef
Sumedha Ravishankar, 15, Empire High School, Tucson, Arizona
Sirtaj Bir Singh, 15, Empire High School, Tucson, Arizona

MI305 The Investigation of Antimicrobial Properties of Bark from Selected Local Trees
Allison Elizabeth Bye, 18, North Toole County High School, Sunburst, Montana
Haeli Elizabeth Turner, 17, North Toole County High School, Sunburst, Montana

PH301 Research of Atmosphere Influence on Propagation of Electromagnetic Wave
Lilia Nikolaevna Khrapunova, 16, School # 2 of Dzerzhinsk, Dzerzhinsk, Nizhegorodskaya, Russia
Antonina Mikhailovna Toropkina, 15, School #2 of Dzerzhinsk, Dzerzhinsk, Nizhegorodskaya, Russia
Anastasia Andreevna Shaykina, 15, Lyceum # 40, Nizhny Novgorod, Nizhegorodskaya, Russia

PH311 Muon Detection at Elevation
Taylor Tsuyoshi Shong Wong Nakamura, 16, Maui High School, Kahului, Hawaii
Michael Owen Flynn, 17, Maui High School, Kahului, Hawaii
PS303  Phytochemistry and Antioxidant Activity of Gunnera tinctoria Stem
Sharon Priscila Castro Perez, 17, Instituto Cristiano Gracia y Paz, Valdivia, De los Rios, Chile
Diego Ignacio Baeza, 17, Instituto Cristiano Gracia y Paz, Valdivia, De los Rios, Chile

PS306  Modification of Breeding Rice Grains through Artificial Colors, Flavor and Smell Used in Prevention of Grain-Consuming Birds
Saifon Nopnipa, 17, Phanomsarakham "Phanomadunwitthaya" School, Phanomsarakham, Chachoengsao, Thailand
Aphitchaya Noppalert, 16, Phanomsarakham "Phanomadunwitthaya" School, Phanomsarakham, Chachoengsao, Thailand