Press Room

Intel ISEF 2016 Grand Award winners

2:09PM, May 13, 2016

May 13, 2016, Phoenix, AZ – Society for Science & the Public, in partnership with the Intel Foundation, announced Grand Awards of the Intel ISEF 2016. Student winners are ninth through twelfth graders who earned the right to compete at the Intel ISEF 2016 by winning a top prize at a local, regional, state or national science fair.

The Gordon E. Moore Award

Gordon E. Moore Award $75,000

MCRO065 - *Boosting MFC Biocatalyst Performance: A Novel Gene Identification and Consortia Engineering Approach*
Han Jie (Austin) Wang, 18, David Thompson Secondary, Vancouver, Canada

Intel Foundation Young Scientist Award

Young Scientist Award of $50,000

EBED022 - *Brace Yourself: A Novel Electronically Aided Leg Orthosis*
Syamantak Payra, 15, Clear Brook High School, Friendswood, Texas

EGCH029 - *Nature-Based Solid Polymer Electrolytes for Improved Safety, Sustainability, and Efficiency in High-Performance Rechargeable Batteries*
Kathy Liu, 17, West High School, Salt Lake City, Utah

Dudley R. Herschbach SIYSS Award

The SIYSS is a multi-disciplinary seminar highlighting some of the most remarkable achievements by young scientists from around the world.

CBIO047 - *A Machine Learning Framework for Multi-Omics Discovery and Characterization of Gene Co-Alterations Impacting Disease*
Swetha Revanur, 17, Evergreen Valley High School, San Jose, California

ENEV049 - *Reinventing the Leaf: A Manufactured Biohybrid Photosynthetic System*
Wyatt Martin Pontius, 18, Academy of Science, Sterling, Virginia

PLNT044 - *Comprehensive RNA Profiling Identifies Novel Blackleg Resistance Genes in Canola*
Dennis Adrian Drewnik, 17, Sisler High School, Winnipeg, Canada

Innovation Exploration Award

Innovation Exploration Award, California Institute of Technology.

EGPH008 - *Development of a High Efficiency Solar Cell Using Adaptive Self-Cooling*
Tiasha Joardar, 17, Plano West Senior High School, Plano, Texas

MATS005 - *Optical Encryption with Cellulose Nanocrystals: Polymer and Amino Resin Cellulose Composites Decorated with Nanoparticles*
Nicky Wojtania, 16, Plano West Senior High School, Plano, Texas

PHYS053 - *Constructive Interference of Seismic Surface Waves Antipodal to Crater Impact Sites on Terrestrial Bodies*
Camille Virginia Yoke, 18, Maggie L. Walker Governor's School, Richmond, Virginia

European Union Contest for Young Scientists

Trip to the EU Contest.

ANIM006 - *Shining a Light on the Blind: Evolutionary Regression and Adaptive Progression in the Micro-vertebrate Ramphotyphlops braminus, a Model for Understanding Brain Organization and Complex Neurological Disorders*
River Grace, 16, West Shore Junior/Senior High School, Melbourne, Florida

BEHA008 - *Biochemical Characterization and Imaging of Arc: Insights into Neurodegeneration and Alzheimer's Development*
Rajeev Jha, 18, President Theodore Roosevelt High School, Honolulu, Hawaii

MATH010 - Nested Eggs: Where Brianchon, Pascal and Poncelet Meet
Pei-Hsuan Chang, 17, Taipei Municipal LiShan High School, Taipei City, Chinese Taipei

Intel and Indo-US Science & Technology Forum - Visit to India

Travel to India

BCHM011 - *Highly Sensitive Single Mutation Detection of EGFR by Bridged Nucleic Acid*
Edward Sangyoon Kim, 16, Midway High School, Waco, Texas

BMED037 - *The "Smart" Cancer Drug: Targeting Cancer's Achilles Heel with Novel CRISPR/Cas9*

Jiwoo Lee, 16, Academy for Medical Science Technology, Hackensack, New Jersey

EAEV012 - *Staying Afloat: Utilizing the Physiological Adaptation Mechanisms of Marsh Vegetation and the Use of Mathematical Modeling for Barrier Island Restoration, Year Three*
Natalie Marie Bush, 17, Saint Josephs Academy, Baton Rouge, Louisiana

Intel Foundation Cultural and Scientific Visit to China Award

Cultural and Scientific Visit to China Award

CELL058 - *FOXO Transcription Factor: A Novel Therapeutic for Cardiometabolic Disease*
Marissa Sumathipala, 15, Broad Run High School, Ashburn, Virginia

CHEM006T - *The Effect of Carbon on Iron Nickel Bimetallic Nanoparticle Degradation of Orange G*
Kathryn Anna Lawrence, 17, Fairview High School, Boulder, Colorado
Katherine Afton Younglove, 18, Fairview High School, Boulder, Colorado

ENMC023 - *A Novel and Simple Power Saving Controller for Stepper Motors*
Takahiro Ichige, 18, Chiba Municipal Chiba High School, Chiba-City, Japan

SOFT026 - *Efficient Blockchain-Driven Multiparty Computation Markets at Scale*
Charles Noyes, 17, Villa Park High School, Villa Park, California

TMED010T - *Predicting a Cancerous Outcome: Creating a Novel Test for Assessing Risk of Human Papilloma Virus-Associated Oropharyngeal Cancer*
Prashant Sai Godishala, 18, Breck School, Golden Valley, Minnesota
Brennan Scott Clark, 18, Breck School, Golden Valley, Minnesota

London International Youth Science Forum - The Philip V. Streich Memorial Award

Participation in the London International Youth Science Forum

ENBM036 - *Trapping Phantoms into Robots: A New Control Method and Design for Transradial Myoelectric Prostheses and Induced Penfield's Map Cortical Remapping for Tactile Feedback*
Luiz Fernando da Silva Borges, 17, Instituto Federal de Educacao, Ciencia e Tecnologia do Mato Grosso do Sul - Campus Aquidauana, Aquidauana, Brazil

ROBO046 - *A Novel Haptic Actuator for Robotic Surgery: Utilizing Soft Robotic Pneumatic Networks, a Closed Loop Control System, and an Electro-Pneumatic Control Board to Accurately Restore an Operator's Sense of Touch*
Simone Braunstein, 18, Dalton School, New York, New York

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

ANIM006 - *Shining a Light on the Blind: Evolutionary Regression and Adaptive Progression in the Micro-vertebrate Ramphotyphlops braminus, a Model for Understanding Brain Organization and Complex Neurological Disorders*
River Grace, 16, West Shore Junior/Senior High School, Melbourne, Florida

First Award of $3,000

ANIM006 - *Shining a Light on the Blind: Evolutionary Regression and Adaptive Progression in the Micro-vertebrate Ramphotyphlops braminus, a Model for Understanding Brain Organization and Complex Neurological Disorders*
River Grace, 16, West Shore Junior/Senior High School, Melbourne, Florida

Second Award of $1,500

ANIM007T - *The Bee's Knees: The Effect of Secondary Metabolites in Place of Neonicotinoid Pesticides on Apis mellifera and Drosophila melanogaster*
Austin Wolfgang Katzer, 16, Jasper High School, Plano, Texas
Jason Tanner Smith, 16, Jasper High School, Plano, Texas

ANIM014 - *Geospatial Analysis of Cetacean Distribution and Habitat Utilization Related to Prey Density and Sea Surface Temperature off the Long Island, New York Coastline*
Jared Randolph Bergen, 18, Sayville High School, West Sayville, New York

ANIM049T - *A Silk Sheath Production Frame Developed from Negative Geotropic Spinning Behavior of Silkworms Resulted in Silk Sheath with High Homogeneity*
Charuntorn Doungnga, 18, Damrongratsongkroh School, Chiang Rai, Thailand
Runglawan Charpugdee, 17, Damrongratsongkroh School, Chiang Rai, Thailand

Third Award of $1,000

ANIM002 - *Spotted Wing Drosophila, Baiting and Trapping*
Hannah Nicole Lee, 16, The Bolles School, Jacksonville, Florida

ANIM030 - *Inheritable Longevity Programming: First Epigenetic Mechanism and Proof-of-Concept for Transgenerational Therapies to Prevent Multiple Aging-Related Diseases with Single Molecules*
Brian Xia, 16, Canyon Crest Academy, San Diego, California

ANIM043 - *Slaying the Destructor, Part II: Dosage Optimization and Effects of Oxalic Acid on Honeybee Hives*
Emily Elizabeth Llaneras, 17, Southwest Virginia Governor's School, Pulaski, Virginia

ANIM046T - *Bubble Nesting Behavior Behind Local Wisdom of Rearing Siamese Fighting Fish by Utilizing Dry Leaves*
Puvanat Triamchanchai, 15, Bangkok Christian College, Bangkok, Thailand

Touchakorn Chintavalakorn, 15, Bangkok Christian College, Bangkok, Thailand

Fourth Award of $500

ANIM003 - *Statistical Analysis of Cliff Swallow Population Dynamics*
Lillie Bahrami, 17, Boulder High School, Boulder, Colorado

ANIM010 - *Immune Reactions of Encapsulation in Cockroaches*
Chi-Yuen Wu, 17, Taipei Municipal Zhongshan Girls High School, Taipei City, Taiwan, Chinese Taipei

ANIM015 - *Development of a Caffeine Addiction Paradigm to Examine How Dietary Restriction and Level of TOR Signaling Modulate the Effects of Drugs*
Rachel Lauren Mashal, 18, John F. Kennedy High School, Bellmore, New York

ANIM020 - *Feeding a Hungry World: The Role of Macrocyclic Lactones*
Harrell Henry Phillips III, 17, Vanguard High School, Ocala, Florida

ANIM029T - *Natural Feed to Improve the Production and Quality of Eggs in Egg Laying Hens*
Jose Luis Mesa, 16, Institucion Educativa Presbitero Bernardo Montoya Giraldo, Copacabana, Colombia
Jhon Esteban Acevedo, 16, Intitucion Educativa Pbro. Bernardo Montoya Giraldo, Copacabana, Colombia

ANIM035 - *Sensational Slime Aquatic Allies against Microbial Foes*
Lauren Nicole York, 18, Southmoore High School, Moore, Oklahoma

BEHAVIORAL AND SOCIAL 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

BEHA008 - *Biochemical Characterization and Imaging of Arc: Insights into Neurodegeneration and Alzheimer's Development*
Rajeev Jha, 18, President Theodore Roosevelt High School, Honolulu, Hawaii

First Award of $3,000

BEHA008 - *Biochemical Characterization and Imaging of Arc: Insights into Neurodegeneration and Alzheimer's Development*
Rajeev Jha, 18, President Theodore Roosevelt High School, Honolulu, Hawaii

Second Award of $1,500

BEHA014 - *Going for the Goal: The Effects of Removing Preparatory Information on the Fast and Unconscious Reading of Action Goals in a Computer-Simulated Competitive Interaction*

Miriam Shira Eisenberg, 18, North Shore Hebrew Academy High School, Great Neck, New York

BEHA025 - *Food for Thought: A Novel Modeling Approach to Federal Nutrition Policymaking*
Mary Zhu, 17, Nashua High School South, Nashua, New Hampshire

BEHA035 - *CRANIOMETRIX: Developing Innovative Cognitive Tests to Diagnose Alzheimer's Early, Year Four*
Nikhil Sanjay Patel, 16, Oviedo High School, Oviedo, Florida

Third Award of $1,000

BEHA011T - *The Effect of Prosthetic Arm Vibrotactile Indicators: An Active Haptic Sensing Study of the Effect of Vibration and Visual Stimuli on Perception Accuracy*
Diya Mathur, 17, duPont Manual High School, Louisville, Kentucky
Sophia Nicole Korner, 17, duPont Manual High School, Louisville, Kentucky

BEHA028 - *Golden Ratio Typography: A Novel Approach to Improving Reading Comprension in Nystagmus Patients*
Jordyn Arielle Schor, 17, Plainview-Old Bethpage John F. Kennedy High School, Plainview, New York

BEHA049 - *Digitizing Manipulatives for the Blind and Visually Impaired, Phase 3*
Sara Manshad, 17, Arrowhead Park Early College High School, Las Cruces, New Mexico

BEHA051 - *Assessing the Effectiveness of Virtual Psychotherapies for OCD by Developing a Novel Software Application*
Henry Low, 17, Western Sierra Collegiate Academy, Rocklin, California

Fourth Award of $500

BEHA007 - *Analyzing Women's Representation in the Health Care Field on American Television from 1965-2015*
Katherine Janeway Murphy, 18, Hicksville High School, Hicksville, Ohio

BEHA012 - *MeEmo: An Autism Destroying Avatar, Year Two*
Sapna K. Patel, 15, Oviedo High School, Oviedo, Florida

BEHA024 - *Network Topology and Recovery Phenotype Effects on Social Media Engagement*
Alexus V. McBride, 17, Roanoke Valley Governor's School for Science and Technology, Roanoke, Virginia

BEHA027 - *Developing a Comprehensive Intervention Plan for Parents of Children with Autism with Regard to Parental Stress and Training*
Kevin James Carroll, 18, Yorktown High School, Yorktown Heights, New York

BEHA032 - *Closing the Achievement Gap in STEM: The Influence of Prior Knowledge on the Guidance Effects in Technology-Based Guided Student-Centered Learning*
Anna Lou, 16, Oxford Academy, Cypress, California

BEHA042 - *Understanding Parkinson's Disease: Basal ganglia Dysfunction's Role in the Visual Adaptation of Speech*

Divya Prabhakaran, 17, Plano East Senior High School, Plano, Texas

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

BCHM011 - *Highly Sensitive Single Mutation Detection of EGFR by Bridged Nucleic Acid*
Edward Sangyoon Kim, 16, Midway High School, Waco, Texas

First Award of $3,000

BCHM011 - *Highly Sensitive Single Mutation Detection of EGFR by Bridged Nucleic Acid*
Edward Sangyoon Kim, 16, Midway High School, Waco, Texas

Second Award of $1,500

BCHM014 - *Structural and Kinetic Analysis of Methicillin-resistant Staphylococcus aureus MenE, an acyl-CoA Synthetase of the Bacterial Menaquinone Biosynthesis Pathway as a Novel Antibacterial Target*
Kameron Sedigh, 17, Kings Park High School, Kings Park, New York

BCHM023 - *Inhibition of the Amyloid Processing Pathway by Micronutrients: A Systematic Genome-Wide Chemical Repositioning Approach to Counteract Alzheimer's Pathology*
Swathi Ravi Srinivasan, 16, Beachwood High School, Beachwood, Ohio

BCHM032 - *The Role of NF-E2 in Regulating Chemotherapeutic Metabolite Acrolein-Induced Nephrotoxicity*
Sanjana J. Rane, 18, duPont Manual High School, Louisville, Kentucky

Third Award of $1,000

BCHM018 - *Modeling the Structures of Disease-Causing ACVR1 Mutants Using Ab Initio Methods*
Nicholas Joseph Freitas, 17, Massachusetts Academy of Math and Science, Worcester, Massachusetts

BCHM019 - *Does Gotu Kola (Centella asiatica) or Moringa (Moringa oleifera) Have an Effect on ALS Flies?*
Ashara Naomi Somawardana, 14, Basis San Antonio Medical Center, San Antonio, Texas

BCHM025 - *Investigating Interfacial Cross Linking to Combat Hard Foulants: An Experimental Study on Enzymatic Activities of the Balanus amphitrite*
Christina So-Ye Oh, 17, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia

BCHM042 - *Assessment of Macro and Micro-Nutrients in a Recycled Supplement for Canines*
Alexis Jones, 16, Auburn High School, Auburn, Alabama

Fourth Award of $500

BCHM005 - *Rothmund-Thomson Syndrome Helicase and Its DNA Binding Preferences*
Barbora Cechova, 19, Gymnazium Matyase Lercha, Brno, Czech Republic

BCHM012T - *Misfolded alpha-synuclein: Assessment of Lactulose and Melibiose for Parkinson's Disease*
Yu-Ting Huang, 17, Taipei First Girls High School, Taipei, Taiwan, Chinese Taipei
Jia-Lan Lin, 17, Taipei First Girls High School, Taipei City, Taiwan, Chinese Taipei

BCHM022 - *Protein Interface Targeted Aptamers Screened Using Competitive Selection*
Pushkar Shinde, 15, Oregon Episcopal School, Portland, Oregon

BCHM035 - *A Novel Approach to Cancer Treatment: Allosteric Inhibition of the Carbonic Anhydrase IX Isozyme for Anticancer Applications*
Nandini Tondamantham Naidu, 15, Valley Catholic High School, Beaverton, Oregon

BCHM039 - *Development of a Novel Class of Antidiabetic and Anticancer Agents Targeting PTP1B Enzyme*
Dyuti Shreya Nandy, 17, Newport High School, Bellevue, Washington

BIOMEDICAL 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

BMED037 - *The "Smart" Cancer Drug: Targeting Cancer's Achilles Heel with Novel CRISPR/Cas9*
Jiwoo Lee, 16, Academy for Medical Science Technology, Hackensack, New Jersey

First Award of $3,000

BMED037 - *The "Smart" Cancer Drug: Targeting Cancer's Achilles Heel with Novel CRISPR/Cas9*
Jiwoo Lee, 16, Academy for Medical Science Technology, Hackensack, New Jersey

BMED072 - *Identification of Thymidine Kinase I as a Universal Cell Surface Target for Treating Cancer and Development of a Novel Antibody Drug Conjugate*
Michael Xiao, 18, Lone Peak High School, Highland, Utah

BMED094 - *Accelerating Cancer Immunotherapy: Optimization of an EGFRvIII-Based Cancer Vaccine via Computationally-aided Analysis of Proteasome Processing for Improved Glioblastoma Prognosis*
Anin Sayana, 17, Bellarmine College Preparatory, San Jose, California

Second Award of $1,500

BMED054 - *Machine Learning Tool for Early Detection of Small Cell Lung Cancer Using Novel Nuclear Factor*

I/B Expression: Drastically Increase Patient Survival in 1 Minute for 1 Dollar
Jessika Baral, 16, Mission San Jose High School, Fremont, California

BMED062 - *Novel Selection of Enzymes Loaded in Mesoporous Nanoparticle Carrier Engineered to Selectively Target Cancer Cells Using Aptamer*
Priyanka Jain, 18, La Cueva High School, Albuquerque, New Mexico

BMED064 - *The Effects of Near Infrared Light and Curcumin on Wound Healing and Tissue Regeneration in Girardia tigrina*
Aarushi Iris Pendharkar, 14, Massachusetts Academy of Math and Science, Worcester, Massachusetts

BMED071 - *Examining the Coding and Non-Coding Regions of Enhancer Landscapes in Vascular Smooth Muscle Cells (VSMCs) Stimulated with Angiotensin II*
Varun Mandi, 18, Troy High School, Fullerton, California

BMED095 - *The Smoking Gun: Toxicological Effects of Electronic Cigarettes on Epithelial Cells using Air Liquid Interface, Year Two*
Ralph Ignacio Lawton, 17, Pennsylvania Leadership Charter School - University Scholars Program, West Chester, Pennsylvania

Third Award of $1,000

BMED023T - *Inhibitory Effects of Omega-3 Fatty Acids-Based Fish Oil on Cholangiocarcinoma*
Anin Luo, 17, Taipei First Girls High School, Taipei, Taiwan, Chinese Taipei
Tsan-Mei Chu, 18, Taipei First Girls High School, Taipei, Taiwan, Chinese Taipei

BMED048 - *Metalloprotease Inhibitors as Lead Candidate Drugs to Treat Lymphatic Filariasis and Other Roundworm Infections*
Matthew Moser, 17, Redwood High School, Larkspur, California

BMED053 - *CRISPR Based Gene Editing Confers Resistance to Human Immunodeficiency Virus (HIV)*
Aakshi Agarwal, 17, Hamden High School, Hamden, Connecticut

BMED056 - *A Novel Method of Early Detection of Arteriosclerosis: Analyzing the Effect of Arterial Stiffness and Arterial Clogging on Blood Pressure during Systolic-Diastolic Cardiac Cycle*
Shelly Goel, 15, School of Science and Engineering at Yvonne A Ewell Townview Magnet Center, Dallas, Texas

BMED057 - *Caerin 1.9: A Possible Treatment for Alzheimer's Disease? Investigating the Effects of the Caerin 1.9 Peptide on Amyloid-beta Aggregation and Phagocytosis by Cultured Microglia*
Hannah Jane Sutton, 16, St. Mary's College, Hobart, Australia

BMED066 - *A Novel Mechanism of Chloroquine in Cancer Therapy*
Xiaoxi Gao, 17, Pittsburgh Allderdice High School, Pittsburgh, Pennsylvania

BMED087 - *The Effect of Crataegus songarica Extract on Proliferation and Apoptosis in HCT116 and SW480 Colon Cancer Cells*
Renny Ma, 18, Shawnee Mission West High School, Overland Park, Kansas

BMED091 - *Targeting Mistranslation in Cancer and Neurodegenerative Disease Therapies*

Koushal Rao, 18, Lincoln Park Academy, Fort Pierce, Florida

Fourth Award of $500

BMED006 - *Accuracy of Non-Invasive Continuous Glucose Nanosensor for ex vivo Artificial Pancreas*
Maya Miriam Levy, 16, Dr. Michael M. Krop Senior High School, Miami, Florida

BMED016 - *Using Modified S100A9 Monoclonal-Antibody-Infused Field Effect Transistors to Accurately Detect the Presence of Early Stage Renal Cell Carcinoma*
Mark Laurie, 16, Joe E. Newsome High School, Lithia, Florida

BMED018 - *Revolutionary Blood Test Tube 2.0*
Julian Elmasry, 18, Southwest Virginia Governor's School, Pulaski, Virginia

BMED030 - *Organotypic ex vivo Culture of Liver Tissue for Assessment of HCC Chemoprevention Drug*
Mohamed Ehab El-Abtah, 16, Syosset High School, Syosset, New York

BMED047 - *Investigating p16 Control of Mitochondrial Biogenesis in Melanoma*
Chelsea L. Li, 17, West High School, Salt Lake City, Utah

BMED052 - *PGC1-Alpha and Cyclin D1 Synergistically Activate Lipogenesis via Upregulated Oxidative Pentose Phosphate Pathway and TCA Cycle Citrate Efflux*
Cassandra Mia Grello, 17, Half Hollow Hills High School East, Dix Hills, New York

BMED061 - *Late Stage Osteoarthritis Reveals Increased Expression of SQSTM1*
Alexa Nicole Schneck, 18, Conrad Weiser High School, Robesonia, Pennsylvania

BMED073 - *An Investigation of East Indian Sandalwood Oil (EISO)'s Mechanism of Inhibition in AGS Gastric Cancer Cells: A Patch Clamp Study of TRPM7 Ion Channels*
Nia Myfanwy Clements, 15, Keystone School, San Antonio, Texas

BMED080 - *Studying the Effects of the Missing X Chromosome on the Liver*
Isani Singh, 16, Cherry Creek High School, Greenwood Village, Colorado

BMED086 - *Using Gene Expression Analysis to Identify Tumor Evolution across Cancer Types*
Shaheel Shankar Mitra, 17, Cincinnati Country Day School, Cincinnati, Ohio

BIOMEDICAL ENGINEERING

Intel ISEF Best of Category Award of $5,000

ENBM036 - *Trapping Phantoms into Robots: A New Control Method and Design for Transradial Myoelectric Prostheses and Induced Penfield's Map Cortical Remapping for Tactile Feedback*
Luiz Fernando da Silva Borges, 17, Instituto Federal de Educacao, Ciencia e Tecnologia do Mato Grosso do Sul - Campus Aquidauana, Aquidauana, Brazil

First Award of $3,000

ENBM036 - Trapping Phantoms into Robots: A New Control Method and Design for Transradial Myoelectric Prostheses and Induced Penfield's Map Cortical Remapping for Tactile Feedback
Luiz Fernando da Silva Borges, 17, Instituto Federal de Educacao, Ciencia e Tecnologia do Mato Grosso do Sul - Campus Aquidauana, Aquidauana, Brazil

ENBM053 - Design and Assembly of CRISPR/Cas9-Based Virus-Like Particles for Orthogonal and Programmable Genetic Engineering in Mammalian Cells
Michael Zhang, 18, Conestoga High School, Berwyn, Pennsylvania

Second Award of $1,500

ENBM032 - *Development of a Portable, Tattoo-Based Biosensor for the Non-Invasive, Low-Cost Diagnosis of Atherosclerosis via Iontophoresis of Macrophage-Targeting Silver Nanoparticles*
William Yin, 16, Greenwich High School, Greenwich, Connecticut

ENBM049 - *The Other Side of Me: An Arduino Based Game for Bilateral Integration in Autism Spectrum Disorder*
Samuel Ferguson, 17, Christian Unified High School, El Cajon, California

ENBM065T - *Turning Probiotics into Antibiotics: Engineering a Broad-Spectrum Antibacterial Probiotic via Inclusion of Antimicrobial Peptide-Encoding DNA, Year Two*
Madeline Chawla McCue, 18, Breck School, Golden Valley, Minnesota
Evelyn Grace McChesney, 17, Breck School, Golden Valley, Minnesota

Third Award of $1,000

ENBM019 - *Combating Antibiotic Resistant Bacteria Using Tissue Adhesive Hydrogel with Cell-Membrane Coated Nanotherapeutics*
Maggie Shin-Young Chen, 16, Canyon Crest Academy, San Diego, California

ENBM045 - *Computational and Experimental Design of MIP Nanoparticles: A Novel Theranostic Solution to Detect and Neutralize Endotoxins*
Sriharshita Vani Musunuri, 16, Henry M. Jackson High School, Bothell, Washington

ENBM047 - *Utilizing Artificial Muscles to Enhance the Human Body*
James Magnasco, 19, East Boston High School, East Boston, Massachusetts

ENBM062 - *Cellphone based Optometry using Hybrid Images*
Shreyas Kapur, 17, Modern School Barakhamba Road, Delhi, India

ENBM063 - *TiC- Tongue Interface Communication: Assistive Technology for Severe Impairments*
Emma Marie Mogus, 17, White Oaks Secondary School, Oakville, Canada

Fourth Award of $500

ENBM010 - *Inexpensive, Portable Glucose Monitor for Diabetics via a Crosslinked Sensing Fluid*

Serena Liang Jing, 17, Saint Paul Central High School, St. Paul, Minnesota

ENBM021 - *Passive Reduction of Involuntary Arm/Hand Tremors, Phase III*
Russell W. Ludwigsen, 15, Early College Academy, Albuquerque, New Mexico

ENBM029T - *Venus: Vascular Locator*
Marcia Cunha dos Santos, 19, Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo, Brazil
Carolina Rosa Kelsch, 19, Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo, Brazil

ENBM033 - *HeadSentry: An Innovative Real Time System for Preventing Second Impact Syndrome (SIS) from an Overlooked Concussion in Aquatic Sports*
Julienne Isabelle Sauer, 16, Dougherty Valley High School, San Ramon, California

ENBM048 - *Polyetherketoneketone (PEKK), 3D Printed, Bipartite Surgical Implant: An Alternative and Supportive Cure for Internal Coxa Saltans in Female Adolescents*
Sophie Elizabeth Edelstein, 15, Wilbur Cross High School, New Haven, Connecticut

ENBM055 - A Ketone Detecting Patch using Perspiration to Detect Type 1 Diabetes
Anna Quinlan, 14, Menlo-Atherton High School, Atherton, California

ENBM068 - *Investigating Shear Thickening Fluid Applications to Decrease Linear and Rotational Mean Peak Acceleration as Measured by Dual Axis Accelerometers in Hockey Headgear and a Hybrid 3 Head Form*
Clara Elizabeth Wagner, 17, Saginaw Arts and Sciences Academy, Saginaw, Michigan

CELLULAR AND MOLECULAR BIOLOGY

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Intel ISEF Best of Category Award of $5,000

CELL058 - *FOXO Transcription Factor: A Novel Therapeutic for Cardiometabolic Disease*
Marissa Sumathipala, 15, Broad Run High School, Ashburn, Virginia

First Award of $3,000

CELL028 - *The Optimization of Nanoparticle-Based Drug Delivery of Melittin in a Colloidal Suspension as a Selective Method to Target HIV Structural Antigen p24*
Sanjeev-Kumar Mamalapuram Sathish, 16, Greenwich High School, Greenwich, Connecticut

CELL058 - *FOXO Transcription Factor: A Novel Therapeutic for Cardiometabolic Disease*
Marissa Sumathipala, 15, Broad Run High School, Ashburn, Virginia

Second Award of $1,500

CELL013 - *Novel Inhibitors of Glucose Transporter 1 (GLUT1) for Cancer*
Brian Jason Du, 17, Plano West Senior High School, Plano, Texas

CELL019 - *Silk-Gland-Derived Sericin as a Growth Promoter in Animal Cell Culture*
Tomoro Warashina, 18, Yokohama Science Frontier High School, Yokohama-City, Japan

CELL021 - *Role of Sirt1 during Oligodendrocyte Progenitor Proliferation in Cerebellar White Matter after Hypoxia*
Jay Gupta, 17, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia

Third Award of $1,000

CELL003 - *Untangling the Mystery: The Link between Variations in the Oxytocin Receptor Gene and Trichotillomania*
Mikayla Katherine Hammers, 18, Arkansas School for Mathematics, Sciences and the Arts, Hot Springs, Arkansas

CELL027 - *Alpha and Beta Adrenergic Agonists Increase Hindrance to Diffusion of 3-kDa Dextran in Mouse Visual Cortex Extracellular Space*
Matthew Raymond Perkins, 16, George W. Hewlett High School, Hewlett, New York

CELL043T - *Study on the Ability of Binding and Killing Several Cancer Cell Lines of Antinuclear Antibody*
Chau Thu Minh Nguyen, 17, Thang Long High School for the Gifted, Da Lat, Viet Nam
Chinh Lu Duc Hoang, 16, Thang Long High School for the Gifted, Da Lat, Viet Nam

CELL056 - *Testing Valproic Acid and Surfactant Regulation as Potential Therapeutics for Nitrogen Mustard Injury*
James Gordon Gow, 17, Lawrence High School, Lawrenceville, New Jersey

CELL057 - *Novel Cancer and Viral Infection Treatment via Antisense RNA-Guided Selective Protein Expression*
Matteo Bomben, 18, Holy Trinity School, Richmond Hill, Canada

Fourth Award of $500

CELL004 - *"Let There Be Light!" rAAV Mediated Delivery of shRNA in a Canine Model of Autosomal-dominant Retinitis pigmentosa*
Margarita Cruz-Sanchez, 17, West Shore Junior/Senior High School, Melbourne, Florida

CELL024T - *The Molecular Basis of the Transdifferentiation of Embryonic Chick Limb Chondrogenic Precursors into a Beige Fate*
Kruti A. Sutaria, 17, Ardsley High School, Ardsley, New York
Anisha Reddy Duvvi, 17, Yorktown High School, Yorktown Heights, New York

CELL030 - *Loss of Fascin Enhances Nuclear Actin Filament Formation*
Sweta Sudhir, 18, John F. Kennedy High School, Cedar Rapids, Iowa

CELL033 - *mTOR Regulates the Phenotypic Modulation of De-differentiated Mesenchymal Stem Cells in*

Vascular Disease
Meera Parvathy Kumanan, 17, Yorktown High School, Yorktown Heights, New York

CELL044 - *Nutrient Starvation-Induced Cancer Cell Death in Acute Myeloid Leukemia Cells*
Eric Wang, 17, Chattahoochee High School, Johns Creek, Georgia

CELL046 - *Mechanism of Inactivation of Piezo Ion Channels*
Alisa Fangchun Cui, 18, North Carolina School of Science and Mathematics, Durham, North Carolina

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

CHEM006T - *The Effect of Carbon on Iron Nickel Bimetallic Nanoparticle Degradation of Orange G*
Kathryn Anna Lawrence, 17, Fairview High School, Boulder, Colorado
Katherine Afton Younglove, 18, Fairview High School, Boulder, Colorado

First Award of $3,000

CHEM006T - *The Effect of Carbon on Iron Nickel Bimetallic Nanoparticle Degradation of Orange G*
Kathryn Anna Lawrence, 17, Fairview High School, Boulder, Colorado
Katherine Afton Younglove, 18, Fairview High School, Boulder, Colorado

Second Award of $1,500

CHEM048 - *Versatile, Efficient, and Facile Functionalization of Poly(p-phenylene oxide) via Azide-Alkyne "Click" Chemistry*
Kailash Raman, 16, Sandra Day O'Connor High School, Phoenix, Arizona

CHEM057 - *Preventing Urushiol (Poison Oak) Induced Dermatitis by Deactivating the Allergen*
Amy Dunphy, 15, The Harker School, San Jose, California

CHEM059 - *Combating Viral Outbreaks: Rapid and Selective Detection of Viruses Using Inexpensive Polymer Films*
Anjini Karthik, 17, Saint Francis High School, Mountain View, California

Third Award of $1,000

CHEM023 - *Nickel Oxy-hydroxide Thin Films as Efficient Electrocatalysts for Dye Wastewater Treatment*
Yuhang Wang, 19, National Junior College, Singapore, Singapore

CHEM027T - *Superparamagnetic Iron(II,III) Oxide Silver Cysteine Complex Nanoparticles (SISCCN) in Metal*

Ions Adsorption and Chiral Recognition
Kwun Wing Thomas Li, 16, King's College, Hong Kong, China, Hong Kong Special Administrative Region
Pak Hei Chu, 18, King's College, Hong Kong, China, Hong Kong Special Administrative Region
Tat Ngai Davis Chan, 17, King's College, Hong Kong, China, Hong Kong Special Administrative Region

CHEM029 - *UV-Light Sensitive Transparent Organic Solar Cells*
Cheng-Pei Lin, 17, Taipei First Girls High School, Taipei City, Taiwan

CHEM036 - *A Highly Efficient and Economically Profitable Electrocatalytic Conversion of Carbon Dioxide using Nanostructured Electrodes*
Nikhil Murthy, 16, Catlin Gabel School, Portland, Oregon

CHEM044T - *Potential Anticancer Complexes from Platinum and Clove Basil Oil (Ocimum grastissimum L.)*
My Ha Nguyen, 17, High School for Gifted Students, Hanoi National University of Education, Hanoi, Viet Nam
Long Quang Nguyen, 18, High School for Gifted Students, Hanoi National University of Education, Hanoi, Viet Nam

Fourth Award of $500

CHEM010 - *A Novel Ultrastable Zwitterionic Quantum Dot Synthesis*
Shrikant Chand, 15, Detroit Country Day School, Beverly Hills, Michigan

CHEM014 - *Molecular Dynamics Simulations of the NF-kB Inducing Kinase in Disease Prevention: The Structure-Function Relationship of the NIK protein and Its Effect on Cancer*
Joshua Yue, 18, Texas Academy of Mathematics and Science, Denton, Texas

CHEM022 - *Immobilization of Glycans on Silicon Substrates for Diagnostic Microarrays*
ShuYi Jia, 19, National Junior College, Singapore, Singapore

CHEM025 - *Removal of Heavy Metals from Water Using Zea mays Stover*
Stephanie Luan Martinez, 16, Success Academy D.S.U., St. George, Utah

CHEM033 - *Next Generation Fatty Acid Binding Protein Inhibitors: Computer-Aided Drug Design and Synthesis of Novel Truxillic Acid Diesters for Chronic Pain Inhibition*
Sarah Lee, 17, Syosset High School, Syosset, New York

CHEM043T - *An Electrodynamic Approach to the Colligative Properties of Solutions through Thermodynamic and Quantum Consideration of Ionic Hydration Systems*
Andrew Owen Neely, 17, St. Andrew's Episcopal School, Ridgeland, Mississippi
Charley Robert Hutchison, 16, St. Andrew's Episcopal School, Ridgeland, Mississippi

CHEM055T - *Can We Directly Measure Each Solute Concentration in Mixed Solution? A New Class of Polarimeter*
Seong Ho Lim, 18, Gyeongnam Science High School, Jin Ju, South Korea
Jihong Kim, 18, Gyeongnam Science High School, Jinju, South Korea
Seung Yoon Lee, 17, Gyeongnam Science High School, Jinju-Si, South Korea

COMPUTATIONAL BIOLOGY AND BIOINFORMATICS

Intel ISEF Best of Category Award of $5,000

CBIO047 - *A Machine Learning Framework for Multi-Omics Discovery and Characterization of Gene Co-Alterations Impacting Disease*
Swetha Revanur, 17, Evergreen Valley High School, San Jose, California

First Award of $3,000

CBIO047 - *A Machine Learning Framework for Multi-Omics Discovery and Characterization of Gene Co-Alterations Impacting Disease*
Swetha Revanur, 17, Evergreen Valley High School, San Jose, California

Second Award of $1,500

CBIO010 - *Application of a Machine Learning Logistic Regression Algorithm in a Classification Model to Predict Epileptic Seizures*
Christine Joy Liu, 16, The Westminster Schools, Atlanta, Georgia

CBIO034T - *Window to the Brain: Using Retinal Biomarkers to Diagnose Alzheimer's Disease*
Archana Bhagyalakshmi Murali, 17, Breck School, Golden Valley, Minnesota
Elena Alexandra Berman, 16, Breck School, Golden Valley, Minnesota

Third Award of $1,000

CBIO001 - *A Rehabilitation Aid for the Treatment of 'Clenched Fist,' Condition in Multiple Sclerosis*
Lauren Ursula Murphy, 17, Loreto Balbriggan, Dublin, Ireland

CBIO005 - *Novel Machine Learning Algorithms for Early Diagnosis of Melanoma*
Simran Modi, 17, The Gwinnett School of Math, Science, and Technology, Lawrenceville, Georgia

CBIO024 - *Determining the Protein Structure from Ant Colony Optimization Using Energy Minimization Derived From the Ising Model*
Michelle Chushan Xu, 15, Arnold O. Beckman High School, Irvine, California

CBIO037 - *Predictive Modeling of Optimal Cancer Therapies*
Joyce Xu, 17, Fairview High School, Boulder, Colorado

Fourth Award of $500

CBIO012 - *A Novel Orientation-Based Statistical Potential for Efficient Prediction of Protein Structure*
Venkatesh S. Sivaraman, 18, Bexley High School, Bexley, Ohio

CBIO016 - *Identification of Parkinson's Disease-Associated SNP-SNP Interaction Using Interaction Analysis by Chi-Square (IAC)*
Sidney K. Chu, 16, Hong Kong International School, Hong Kong, China, Hong Kong Special Administrative

Region

CBIO041 - *A Machine Learning Approach to Identifying Ordered Binding Regions on Order-Disorder Protein Interfaces*
Jake Yee Cui, 17, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia

CBIO042T - *Applying Jacobian Free Krylov Solvers to Model Epidemics*
Jovan Y. Zhang, 18, Los Alamos High School, Los Alamos, New Mexico
Sophia Li, 17, Los Alamos High School, Los Alamos, New Mexico

CBIO043T - *Linked Fuzzy Inference System: A Novel Approach to Schizophrenia Diagnosis*
Adhya Beesam, 15, Plano East Senior High School, Plano, Texas
Shriya Beesam, 15, Plano East Senior High School, Plano, Texas

EARTH AND 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

EAEV012 - *Staying Afloat: Utilizing the Physiological Adaptation Mechanisms of Marsh Vegetation and the Use of Mathematical Modeling for Barrier Island Restoration, Year Three*
Natalie Marie Bush, 17, Saint Josephs Academy, Baton Rouge, Louisiana

First Award of $3,000

EAEV012 - *Staying Afloat: Utilizing the Physiological Adaptation Mechanisms of Marsh Vegetation and the Use of Mathematical Modeling for Barrier Island Restoration, Year Three*
Natalie Marie Bush, 17, Saint Josephs Academy, Baton Rouge, Louisiana

EAEV017 - *Sea Level Rise and March of the Molokai Mangrove: The Socioeconomic and Environmental Impacts of Sea Level Rise and Introduced Red Mangrove (Rhizophora mangle) on Molokai, Hawaiian Islands*
Lily Nalulani Jenkins, 16, Molokai High School, Hoolehua, Hawaii

Second Award of $1,500

EAEV028 - *A Novel Profitable Phytoremediation Process for Reducing Eutrophication at Zero Cost*
Uttkarshni Tripathii, 15, Dalton School, New York, New York

EAEV058 - *Testing the Water Quality of Karst Outflows in the Ozarks*
Mandolin Harris, 18, Arkansas School for Mathematics, Sciences and the Arts, Hot Springs, Arkansas

EAEV067 - *NEW Low-Cost System Uses Novel Visual Aid to Improve the Quality and Accessibility of Water in Developing and 3rd World Countries*
Rachel Elizabeth Brouwer, 14, Bedford Academy, Bedford, Canada

EAEV079 - *Quakify: A Low-Cost, Crowdsourced, Real-Time Solution to Earthquake Early Warning*
Harish Palani, 16, Sunset High School, Portland, Oregon

Third Award of $1,000

EAEV004 - *Global Warming and El Niño-Southern Oscillation Cycles Effect on Sea Turtles*
Cathleen Teresa Mestre, 18, Lake Highland Preparatory School, Orlando, Florida

EAEV011T - *An Enzymatic Approach to Treating Colony Collapse Disorder in Pollinating Bee Populations as a Result of Neonicotinoid Pesticides*
Jessica Moore, 16, Union Grove High School, McDonough, Georgia
Katie Lauren Gwaltney, 17, Union Grove High School, McDonough, Georgia

EAEV024T - *Experimental Simulation of Cellular Convection with Miso Soup*
Yu-Hung Chen, 18, The Affiliated Senior High School of National Taiwan Normal University, Taipei, Taiwan, Chinese Taipei
Shih-Hao Chen, 18, The Affiliated Senior High School of National Taiwan Normal University, Taipei, Taiwan, Chinese Taipei

EAEV031 - *Getting the Dirt on Diversity II*
Chali Ann Simpson, 17, Grants High School, Grants, New Mexico

EAEV063T - *Rice Straw Phytolith to enhance CO2 capture: Ideas for sustainable management of rice straw and reduction of greenhouse gases from paddy soils*
Phong Tuan Pham Vu, 16, H.U.S. High School for Gifted Students, Hanoi, Viet Nam
Ngoc Bao Nguyen, 16, H.U.S. High School for Gifted Students, Ha Noi, Viet Nam

EAEV076 - *Ice Ice Maybe*
Brooke-destinee Lockwood, 15, DeKalb High School, Waterloo, Indiana

EAEV083 - *Biomimetic Vortex Dredger*
Bradley Stalker, 17, Energy Coast UTC, Workington, United Kingdom

Fourth Award of $500

EAEV016 - *Optimization and Field Testing of a Low-cost Portable Enterococci Test (PET) Kit*
Margaret Katherine Parrish, 17, Chamberlain High School, Tampa, Florida

EAEV018 - *A Super Soaker for Greenhouse Gas: The Design and Synthesis of a Novel Metal Organic Framework for Adsorption and Storage of Gases like CO2*
Megha Vyakaranam, 15, Independence High School, Frisco, Texas

EAEV034 - *The Effect of Tri-sprintec and Metformin and Their Doses on the Mortality and Reproduction of Ampullariidae, Daphnia magna, and Lemnoideae & the Heart Rate of Daphnia magna in Aquatic Ecosystems*
Sarayu K. Das, 15, Spring Valley High School, Columbia, South Carolina

EAEV035T - *Superconductive Hybrid Desalination*
Samah Ayman Hamdy, 17, Maadi STEM School for Girls, Cairo, Egypt

Maria Hany Hanna Shehata, 18, Maadi STEM School for Girls, Cairo, Egypt

EAEV043T - *Polymers to Care for the Environment*
Jose Carlos Hernandez Garcia, 17, Colegio de Bachilleres del Estado de Hidalgo, Actopan, Mexico
Aylin Diaz Alamilla, 17, Colegio de Bachilleres del Estado de Hidalgo, Actopan, Mexico

EAEV060 - *Geochemical Extraction of Ceratopsian Remains and Opal from Ironstone*
Emily Grace Cross, 16, Hammarskjold High School, Thunder Bay, Canada

EAEV066 - *Identifying Greenhouse Gas Hotspots in Megacities*
Siona Prasad, 15, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia

EAEV069 - *The Effect of Epoxy Resin Liners on Bisphenol A Contamination of Canned Foods*
Zhiyue Wang, 16, West Lafayette Junior-Senior High School, West Lafayette, Indiana

EAEV072 - *Developing a Numerical Box Model to Compute Algae Concentration (as Chlorophyll)*
Sichen Shawn Chao, 16, Oxford High School, Oxford, Mississippi

EMBEDDED SYSTEMS

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

EBED022 - *Brace Yourself: A Novel Electronically Aided Leg Orthosis*
Syamantak Payra, 15, Clear Brook High School, Friendswood, Texas

First Award of $3,000

EBED022 - *Brace Yourself: A Novel Electronically Aided Leg Orthosis*
Syamantak Payra, 15, Clear Brook High School, Friendswood, Texas

Second Award of $1,500

EBED013T - *Eye-controlled Wheelchair: A Low-cost Open Source Hard- and Software System Allowing Independent Mobility for People with Severe Disabilties*
Myrijam Stoetzer, 15, Franz-Haniel-Gymnasium, Duisburg, Germany
Paul Foltin, 16, Franz-Haniel-Gymnasium, Duisburg, Germany

Third Award of $1,000

EBED001T - *Time-Domain Reflectometry Applied to Irrigation Control*
Fabiane Kuhn, 19, Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo, Brazil
Guilherme de Oliveira Ramos, 18, Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo

Hamburgo, Brazil

EBED005 - *Wearable Device to Translate American Sign Language (ASL) into English*
Abishek Stenush Gomes, 16, Belvoir College International, Colombo, Sri Lanka

EBED031 - *MyHealth: A Wearable for Detection, Monitoring, and Control of Parkinsonian Tremor*
Surabhi Gopal Mundada, 16, Olympia High School, Olympia, Washington

EBED039 - *Communication by Ultrasound Using Radio Modulation Techniques*
Adeline Frances Hillier, 15, Newport High School, Bellevue, Washington

Fourth Award of $500

EBED003T - *IP Intercom*
Nuria Rocio Orquin, 18, Escuela Educacion Tecnica Numero 1 "Republica del Paraguay", Ituzaingo, Argentina
Jason Leonel Linares, 19, Escuela Educacion Tecnica Numero 1 "Republica del Paraguay", Ituzaingo, Argentina

EBED012 - *Two Transistor Ternary Random Access Memory*
Simon Peter Tsaoussis, 18, Christopher Columbus High School, Miami, Florida

EBED024 - *Development and Systems Integration of a Modular Power Factor Corrected Pre-regulator, LiFePO4 Battery Charger, DC Motor Controller, and Battery Monitoring System*
Drew Prevost, 18, Covenant Christian Academy, Huntsville, Alabama

EBED030 - *CastMinder: Embedded Smart Sensors and Companion Software to Detect the Onset of Conditions Associated with Cast and Splint Complications and to Promote Patient Healing in Orthopedic Casts and Splints*
Alexander Frederick Wulff, 16, Skaneateles High School, Skaneateles, New York

EBED037 - *Engineering a Modern-Day Enigma Machine*
Andrew John Eggebraaten, 15, John Marshall High School, Rochester, Minnesota

ENERGY: CHEMICAL

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

EGCH029 - *Nature-Based Solid Polymer Electrolytes for Improved Safety, Sustainability, and Efficiency in High-Performance Rechargeable Batteries*
Kathy Liu, 17, West High School, Salt Lake City, Utah

First Award of $3,000

EGCH029 - *Nature-Based Solid Polymer Electrolytes for Improved Safety, Sustainability, and Efficiency in High-Performance Rechargeable Batteries*
Kathy Liu, 17, West High School, Salt Lake City, Utah

Second Award of $1,500

EGCH013T - *Investigation and Development of a New Solid Polymer Electrolyte Using an Natural Membrane for Fuel Cell Devices*
Chizumi Maeta, 18, Yonago National College of Technology, Yonago-City, Japan
Mei Yamamura, 17, Yonago National College of Technology, Yonago-city, Japan

EGCH021 - *Incorporation of Platinum and Gold Partially Reduced Graphene Oxide into Polymer Electrolyte Membrane Fuel Cells for Increased Output Power and Carbon Monoxide Tolerance*
Lee Blackburn, 17, Lawrence High School, Cedarhurst, New York

EGCH048 - *The Effect of the Type of Extraction Method on the Amount of Crude Algal Lipids Recovered for Economically Feasible Biofuel Production*
McKenna Kristin Loop, 17, Arizona College Preparatory- Erie, Chandler, Arizona

Third Award of $1,000

EGCH014 - *Fabrication, Characterization, and Modeling of a Biodegradable Battery for Transient Electronics*
Vineet Edupuganti, 16, Oregon Episcopal School, Portland, Oregon

EGCH018T - *Sencha Power*
Hei Man Fong, 16, The Chinese Foundation Secondary School, Hong Kong, China, Hong Kong Special Administrative Region
Ching Man Felice Tang, 17, The Chinese Foundation Secondary School, Hong Kong, China, Hong Kong Special Administrative Region
Nai To Chan, 16, The Chinese Foundation Secondary School, Hong Kong, China, Hong Kong Special Administrative Region

EGCH027 - *Novel Glycerol-Free Biodiesel Production using Enzyme Catalysis*
Martha Haddad, 16, Immaculate High School, Danbury, Connecticut

EGCH037 - *Enhancing the Rate Capability of the Ni-Co-O System Electrode Using NH3 Treatment*
Anchit Narain, 17, Clovis North High School, Fresno, California

Fourth Award of $500

EGCH005 - *Synthesis of Biodiesel from Hydrolyzed Rice By-Products Fermented with Engineered B. subtilis*
Taryn Renee Imamura, 18, Arkansas School for Mathematics, Sciences and the Arts, Hot Springs, Arkansas

EGCH008 - *Black Silicon Inflatable Hybrid Solar Power, a 3rd Year Study*
Camille Alden Miles, 16, Niceville High School, Niceville, Florida

EGCH023T - *Power to Gas: An Alternative Approach*
Jakob Dichgans, 18, Gymnasium Uberlingen, Uberlingen, Germany
Daniel Simon Riesterer, 19, Gymnasium Uberlingen, Uberlingen, Germany
Lumen Latus Haendler, 19, Freie Waldorfschule Uberlingen, Uberlingen, Germany

EGCH028 - *Development and Optimization of High Energy Density Sodium-Sulfur Secondary Battery Technology: Attractive Alternative to Lithium*
Roshan Duggineni, 18, duPont Manual High School, Louisville, Kentucky

EGCH031T - *Ceria Supported Cu-Co Composite Catalyst for WGS Reaction*
Nayeong Kim, 17, Korean Minjok Leadership Academy, Hoengseong, South Korea
Jongha Choi, 18, Korean Minjok Leadership Academy, Hoengseong, South Korea

EGCH039 - *Novel Brine Water-Graphene Based Energy Generation: Engineering the Endless Cycle*
Hannah Meiseles, 16, The Woodlands College Park High School, The Woodlands, Texas

ENERGY: PHYSICAL

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

EGPH008 - *Development of a High Efficiency Solar Cell Using Adaptive Self-Cooling*
Tiasha Joardar, 17, Plano West Senior High School, Plano, Texas

First Award of $3,000

EGPH008 - *Development of a High Efficiency Solar Cell Using Adaptive Self-Cooling*
Tiasha Joardar, 17, Plano West Senior High School, Plano, Texas

Second Award of $1,500

EGPH010 - *A Novel Method of Reverse Electrowetting Utilizing Self-Induced Potential with Direct Applications in Energy Harvesting*
Rishi Shankar Sundaresan, 18, North Carolina School of Science and Mathematics, Durham, North Carolina

EGPH015 - *Improving Energy Efficiency and Reducing Our Carbon Footprint: A Novel Approach for Fabricating Inexpensive Electrochromic Coatings for Smart Windows*
Naveena Bontha, 16, Hanford High School, Richland, Washington

Third Award of $1,000

EGPH006T - *Renewable Power Pole*
Travis Wayne Gunn, 18, Hewitt Trussville High School, Trussville, Alabama

Elijah Noah Greene, 17, Hewitt Trussville High School, Trussville, Alabama

EGPH017 - *From Nano Defects to Mega Power: Heavily-Zirconium-Doped Trapped Field (Gd,Y)BaCuO Superconductor Tapes for High Power Wind Turbine Generators*
Kavita Selva, 16, Clear Lake High School, Houston, Texas

EGPH040 - *Phase Change Material Based Thermal Energy Storage for Higher Efficiency Photovoltaics*
Aditya Jog, 17, William Mason High School, Mason, Ohio

Fourth Award of $500

EGPH004T - *CONSERVAA*
Matteo Monni, 19, Istituto Tecnico Industriale Statale Michele Giua, Cagliari, Italy
Emma Bordigoni, 19, Istituto Tecnico Industriale Statale Michele Giua, Cagliari, Italy

EGPH011 - *Numerical and Analytical Model Development for Tidal Barrage Energy Output*
Peter Joseph Menart, 16, Carroll High School, Dayton, Ohio

EGPH023 - *The Solar System: A Green Power & Water Cleaning Invention for Improved Life Quality in Developing Communities*
Macinley Neve Butson, 15, The Illawarra Grammar School, Mangerton, Australia

EGPH034 - *A New Spin on Renewable Energy*
Shahmir Khan Niazi, 15, Beaconhouse School System Valencia Town Campus, Lahore, Pakistan

ENGINEERING MECHANICS

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

ENMC023 - *A Novel and Simple Power Saving Controller for Stepper Motors*
Takahiro Ichige, 18, Chiba Municipal Chiba High School, Chiba-City, Japan

First Award of $3,000

ENMC023 - *A Novel and Simple Power Saving Controller for Stepper Motors*
Takahiro Ichige, 18, Chiba Municipal Chiba High School, Chiba-City, Japan

ENMC056 - *Development of a Hybrid Inkjet 3D Printer: A Novel Approach to 3D Printing Conductive Architectures and Flexible Electronics*
Joshua Murphy Jacob, 16, Saint Xavier High School, Louisville, Kentucky

Second Award of $1,500

ENMC006 - *Orbital Recognition System for Space Debris Tracking Using Artificial Neural Networks: A Journey from Inner-Brain GPS to Outer-Space GPS*
Amber Zoe Yang, 17, Trinity Preparatory School, Winter Park, Florida

ENMC016 - *Dual Purpose Muffler*
Edmond Bruce Strickland, 18, South Montgomery County Academy, Grady, Alabama

ENMC034 - *Project Maverick: An Omni-Directional Robotic Mobility System*
Alex Cristian Tacescu, 18, Clovis North High School, Fresno, California

ENMC036 - *Understanding Heat Transfer Mechanisms in Forest Fire Spread: Convection, Radiation, Fluid Dynamics, and Their Applications for Firefighter Protection in a High Temperature Fine Fuel Particle Environment*
Kyra Leigh Seevers, 17, Paul Laurence Dunbar High School, Lexington, Kentucky

Third Award of $1,000

ENMC011 - *A Smart Burn and Spill Proof "SAFE" Microwave that Spares the Salad: Novel Application of Levenberg-Marquardt Algorithms in Bayesian Analysis for Real-Time Numerical Thermodynamic Modeling*
Muhammad Shahir Rahman, 16, Westview High School, Portland, Oregon

ENMC028T - *Electric Skateboard with Disk Brakes and Bluetooth Remote Control*
Ming Yan, 19, NO.6 High School, Xiamen, China
Weizhen Cai, 17, NO.6 High School, Xiamen, China

ENMC030T - *Developing a Novel Public Intra-city Small- to Medium-sized Cargo Distribution System for Cities of the Future*
Mark Tsz Chun Lau, 17, Shanghai American School- Puxi Campus, Shanghai, China
Hyun Seo Chung, 16, Shanghai American School- Puxi Campus, Shanghai, China
Ricky Tsun Yuen Ho, 16, Shanghai American School- Puxi Campus, Shanghai, China

ENMC050 - *Project ARROW: Autonomous Rocket Return on Wings*
Benjamin Kolland, 17, Alternative Family Education (A.F.E.), Santa Cruz, California

ENMC064T - *True-HEV: An Innovation for Hybrid Electric Engines*
Burzin Poras Balsara, 16, Clark High School, Plano, Texas
Malav H. Shah, 16, Clark High School, Plano, Texas

ENMC066T - *Diverse Terrain Wheelchair*
Ngan Hoang Nguyen, 18, Le Hong Phong High School for the Gifted, Ho Chi Minh City, Viet Nam
Truc Thanh Pham, 18, Le Hong Phong High School for the Gifted, Ho Chi Minh city, Viet Nam

Fourth Award of $500

ENMC005 - *A Novel Prosthetic Design Utilizing a Unique, Integrated Sensory Control Platform, Brushless Motor Drive System, and Worm Gear Mechanism through Rapid Prototyping*
Megan Rose Erdozain, 17, Medical Academy for Science and Technology, Homestead, Florida

ENMC012 - *Highly Effective Hybrids*
Danika Louw, 16, Holy Spirit Catholic High School, Tuscaloosa, Alabama

ENMC018 - *Rotating Fluid in Paraboloidal Tank Tuned Liquid Damper as an Effective Vibration Absorber*
Yen-Chen Chen, 16, National Tainan First Senior High School, Tainan City, Chinese Taipei

ENMC022 - *A Wing of the Future: Part III*
Trevor Michael Jordan, 18, Animas High School, Durango, Colorado

ENMC031 - *Origami Transformer: Bridging Ancient Art with Modern Computer Sciences*
Chin Yeoh, 16, ChengDu International School, Chengdu, China

ENMC054 - *Dynamics of 3D Printing: Reactor3D*
Jason Kaufmann, 16, Suncoast Community High School, Riviera Beach, Florida

ENMC060 - *Get Up 'N' Go: Walker Stabilization Device*
Alexandra Jade Miller, 17, Northern Garrett High School, Accident, Maryland

ENMC067 - *Recycling Aluminum in Resource Scarce Regions*
Zoe Crisp, 18, Marietta High School, Marietta, Georgia

ENVIRONMENTAL ENGINEERING

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

ENEV049 - *Reinventing the Leaf: A Manufactured Biohybrid Photosynthetic System*
Wyatt Martin Pontius, 18, Academy of Science, Sterling, Virginia

First Award of $3,000

ENEV032 - *An Eye in the Sky: Determining the Viability of Using Drones for Agricultural Improvement*
Waylon Reid Williams, 18, Muldrow High School, Muldrow, Oklahoma

ENEV049 - *Reinventing the Leaf: A Manufactured Biohybrid Photosynthetic System*
Wyatt Martin Pontius, 18, Academy of Science, Sterling, Virginia

ENEV066 - *Developing Inexpensive Calcium Alginate Based Scaffolds for Phosphate Sorption in Stormwater*
Paige Elizabeth Brown, 17, Bangor High School, Bangor, Maine

Second Award of $1,500

ENEV020 - *Addressing Global Water Scarcity with a Novel Hydrogel Based Desalination Technique Using Saponified Starch-g-polyacrylamide and Its Hydrophilic Properties to Harvest Fresh Water with a Low Energy*

and Chemical Footprint
Chaitanya Dasharathi Karamchedu, 16, Jesuit High School, Portland, Oregon

ENEV021 - *Design and Implementation of a Sustainable Permeate Gap Membrane Distillation System for Water Purification in the Turkana Basin of Kenya*
Alexis Maria D'Alessandro, 18, Half Hollow Hills High School West, Dix Hills, New York

ENEV043T - *Novel Utilizations of Globally Invasive Algal Species: Environmental and Economical Implementations of Fermented Macroalgae*
Ariana Kim, 18, Saint Andrew's Priory School, Honolulu, Hawaii
Sreelakshmi Kutty, 18, Saint Andrew's Priory School, Honolulu, Hawaii

ENEV045 - *Effective Remediation of Air Pollution through an Algal System Integrated with Carbon Mineralization Technology: Phase II - Enhancing the Biohydrogen Production using Flue Gas Derived Bicarbonate and Nutrient Limitation Methods*
Sai Sameer Pusapaty, 17, Liberal Arts and Science Academy, Austin, Texas

ENEV050 - *Solar Powered UV-c Treatment for Fecal Coliform and Enterococcus Bacteria in Storm Water Overflow*
Megan Coral Ploch, 16, Pelham Memorial High School, Pelham, New York

ENEV085 - *Functionalizing Biochar with Layered Double Hydroxides for Phosphate Removal from Aqueous Solutions*
Stefan Wan, 16, A.W. Dreyfoos School of the Arts, West Palm Beach, Florida

Third Award of $1,000

ENEV008 - *Clathrate-Assisted Freezing/Melting Seawater Desalination*
Shixuan Justin Li, 18, Rutherford High School, Panama City, Florida

ENEV009 - *Reducing Phosphorus in Stormwater Basins Using Algae Spherification*
Ester Rose Archer, 18, Loyola High School, Mankato, Minnesota

ENEV040 - *HEXA Leaf: Designing a Biologically Inspired Artificial Leaf Capable of Capturing and Transforming Carbon Dioxide Emissions and Sequestering Airborne Pollutants via Photosynthetic Oxygen Evolution and Phytotransformation*
Wilfred Aldo Mason, 18, Laval Senior Academy, Montreal, Canada

ENEV067 - *Easy Water: One New Easy Handling Physico-Chemical Treatment Unit, with Microbiological Action, Powered by Solar Energy*
Ygor Requenha Romano, 18, Escola Estadual de Ensino Fundamental Murilo Braga, Porto Velho, Brazil

ENEV087 - *Low Cost Continuous Flow Microbial Desalination Cells for Environmentally Sustainable Integrated Water Treatment*
Rhiannon Edwards, 18, New Horizons Governor's School for Science and Technology (Warwick High School), Hampton, Virginia

ENEV100T - *Acacia xanthophloea Characterization and Preservation Techniques of Sapwood (Plant Xylem) as a Low Cost Membrane Filtration Device for Arid and Semi-Arid Areas in Kenya*
Mansi Ajey Apte, 15, Shree Cutchi Leva Patel Samaj School, Nairobi, Kenya

Vishal Hareshkumar Dhanji Vekaria, 15, Shree Cutchi Leva Patel Samaj School, Nairobi, Kenya

ENEV105 - *Developing a pH Sensor Using a Raspberry Pi to Monitor Ocean Acidification*
Evelyn Haase, 15, Molokai High School, Hoolehua, Hawaii

ENEV107T - *The Wobble: A Sustainable Noise Barrier Consisting of Noise Absorbing Materials and a Revolutionary Shape*
Marie-Anne Irene de Gier, 16, Atheneum College Hageveld, Heemstede, Netherlands
Bram Janssen, 15, Atheneum College Hageveld, Heemstede, Netherlands

Fourth Award of $500

ENEV017T - *Desalination by Pervaporation System*
Haya Ahmed Mohamed, 16, STEM School for Girls, Benisuef, Egypt
Mdouna Attaalla, 17, STEM School for Girls, Cairo, Egypt

ENEV018 - *Adsorption and Desorption of Oil Spills using Jordanian Zeolitic Tuff*
Yara Muhannad Marei, 17, Jubilee School, Amman, Jordan

ENEV042T - *Chitobiotics: Chitin vs. Chitosan Novel Pharmaceutical Water Filtration and Filter Development*
Arasely Margarita Rodriguez, 18, Taos High School, Taos, New Mexico
Andrea Chin-Lopez, 17, Taos High School, Taos, New Mexico
Jinpeng (Will) Song, 17, Taos High School, Taos, New Mexico

ENEV053T - *Water Quality Improvement and Development of Bakery Products with the Residue of Jucara acai Pulp*
Joao Vitor Kingeski Ferri, 18, Instituto Federal de Educacao, Ciencia e Tecnologia do Rio Grande do Sul - Campus Osorio, Osorio, Brazil
Maria Eduarda Santos de Almeida, 17, Instituto Federal de Educacao, Ciencia e Tecnologia do Rio Grande do Sul - Campus Osorio, Osorio, Brazil

ENEV056T - *A Novel Approach to Heavy Metal Removal Using Home-Based Superparamagnetic Iron Oxide Nanoparticle Enhanced BioSand Filters*
Jennifer Marchibroda, 17, James W. Robinson Jr. Secondary School, Fairfax, Virginia
Alexander Charles Lin, 17, James W. Robinson Jr. Secondary School, Fairfax, Virginia

ENEV077T - *Development of a Toxic Metal Ion Sensor in Water Using Gold Nanoparticle-Amino Acid Assays*
Aneesh Susarla, 17, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia
Nirmaan Shanker, 17, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia

ENEV079 - *SUPER-PLANT: A Multifunctional Sustainable Energy System for the Curbing and Mitigation of Greenhouse Gas Emissions*
Thomas Raimundo Ribeiro, 15, Laval Senior Academy, Laval, Canada

ENEV084 - *All in a Nutshell: Synthesis and Analysis of Novel Bioplastics Enhanced with Organic Wastes*
Aniruddh Chennapragada, 15, James Ruse Agricultural High School, Sydney, Australia

ENEV088 - *NOGOS: A Novel Nano-Oligosaccharide Doped Graphene Sand Composite Water Filter for Developing Countries*
Marcus Douglas Anthony Deans, 14, Academie Ste Cecile International School, Windsor, Canada

ENEV093 - *The Development of 3R Water Filter: Round Wave - Rusty Wire - for Rural Regions*
Jae hyeok Choi, 17, Myungduk High School, Seoul, South Korea

ENEV099 - *Lemnoideae: A Sustainable Bioremediation Treatment Targeting Eutrophication*
Minh Nga Nguyen, 15, Sydney Girls High School, Sydney, Australia

MATERIALS 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

MATS005 - *Optical Encryption with Cellulose Nanocrystals: Polymer and Amino Resin Cellulose Composites Decorated with Nanoparticles*
Nicky Wojtania, 16, Plano West Senior High School, Plano, Texas

First Award of $3,000

MATS005 - *Optical Encryption with Cellulose Nanocrystals: Polymer and Amino Resin Cellulose Composites Decorated with Nanoparticles*
Nicky Wojtania, 16, Plano West Senior High School, Plano, Texas

MATS017 - *Advanced Au-SPIONs: Synthesis and Characterization of Multifunctional Nanoparticles for Personalized Nanomedicine*
Grace Hu, 17, Jericho High School, Jericho, New York

Second Award of $1,500

MATS046 - *The Novel Fabrication of a Superhydrophobic Glass Surface*
Lauren Cooper, 17, Lake Oswego High School, Lake Oswego, Oregon

MATS050 - *Novel Synthesis of Water-Soluble Paramagnetic Polymer Nanoparticles (Metal Free) for Selective Drug Delivery and Cancer Therapy Applications*
Arnob Das, 16, Jesuit High School, Portland, Oregon

MATS058 - *Improving Exciton Transport in Novel Tetracarboalkoxyphenyl Porphyrin Thin Films for Enhanced Organic Optoelectronics*
Taesoo Daniel Lee, 17, North Carolina School of Science and Mathematics, Durham, North Carolina

Third Award of $1,000

MATS011T - *Electrospinning Nanodiamond FIber Patches for the Prevention of Secondary Myocardial Infarctions*

Manasa Sunkara, 16, duPont Manual High School, Louisville, Kentucky
Danielle Lauren Graves, 18, duPont Manual High School, Louisville, Kentucky

MATS048T - *Pineapple Skin Galore*
Dylan Lim Shu Zhe, 16, Penang Free School, Georgetown, Malaysia
Nizar Bin Jalaludeen Rajagobar, 16, Penang Free School, Georgetown, Malaysia
Derric Lim Shu Chuen, 16, Penang Free School, Jelutong, Malaysia

MATS049 - *Highly Sensitive Respiration Strain Sensor Based on Tuned Silver Nanowire Network*
Sophia Jia Luo, 16, William G. Enloe High School, Raleigh, North Carolina

MATS052 - *The Creation of a Chitosan Scaffold for Bovine Chondrocyte Culturing*
Alexis Joan Vance, 18, Blue Valley Center for Advanced Professional Studies, Overland Park, Kansas

MATS053 - *Surface Modification of Polycaprolactone and Hydroxyapatite Endosseous Implant Fixture Coatings*
Samna Tariq Aziz, 18, Westmount Secondary School, Hamilton, Canada

Fourth Award of $500

MATS004 - *Peptide Nanotubes: Redesigning Amyloid-B as a Metalloprotein*
Ryan Sung Han, 17, The Gwinnett School of Math, Science, and Technology, Lawrenceville, Georgia

MATS013 - *Utilizing Dynamic Bracing Orthosis in Forward Head Posture Rehabilitation*
Arianna Marie Guiao Claveria, 17, Kapolei High School, Kapolei, Hawaii

MATS035 - *A Comparitive Strength Analysis of an Artificial Monofilament Nylon Passive Fiber Muscle vs. a Linear Acuator*
Maile Summer Paulmeier, 14, H.E. McCracken School, Bluffton, South Carolina

MATS037 - *Using a Scalable Atmospheric-pressure Vapor Transport Strategy for the Growth of VOx Nanowires in Energy Efficient Commercial Applications*
Suliaman Nasser Aljubaily, 18, Manarat AlRiyadh School, Riyadh, Saudi Arabia

MATS040T - *Development of Materials for Optoelectronics: Understanding the Local Structure and Optical Properties of Ternary Chalcogenide Glasses*
Arzu Mammadova, 16, Baku European Lyceum, Baku, Azerbaijan
Narmin Aydarova, 17, Baku European Lyceum, Baku, Azerbaijan

MATS042 - *Engineering a Better Brain Electrode*
Katelyn Salotto, 18, Dallastown Area High School, Dallastown, Pennsylvania

MATS061T - *Science Overcomes Drug Addiction: A New Approach on Monitoring the Receptors Overexpress on Brain Cells*
Ece Derin Aydın, 16, Takev Science High School, Izmir, Turkey
Begum Kınay, 17, Takev Science High School, Izmir, Turkey

MATHEMATICS

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

MATH010 - *Nested Eggs: Where Brianchon, Pascal and Poncelet Meet*
Pei-Hsuan Chang, 17, Taipei Municipal LiShan High School, Taipei City, Chinese Taipei

First Award of $3,000

MATH010 - *Nested Eggs: Where Brianchon, Pascal and Poncelet Meet*
Pei-Hsuan Chang, 17, Taipei Municipal LiShan High School, Taipei City, Chinese Taipei

Second Award of $1,500

MATH033 - *The Center of One Geometric World*
Roman Krutovskiy, 18, Gymnasium №1514, Moscow, Russian Federation

MATH046 - *Fast Sampling of Stochastic Kronecker Graphs by Identifying Erdos-Renyi Subregions*
Arjun Srinivasan Ramani, 17, West Lafayette Junior-Senior High School, West Lafayette, Indiana

MATH048 - *The Arrangement Graph: A New Design for Computational Systems*
Omer Siddiqui, 16, Detroit Country Day School, Beverly Hills, Michigan

Third Award of $1,000

MATH006 - *Stochastic Analysis in Biomedical Engineering: Identifying Acute Myocardial Infarction*
Muhammad Ugur oglu Abdulla, 16, West Shore Junior/Senior High School, Melbourne, Florida

MATH016 - *Alzheimer's Disease Risk Model Using Survival Analysis: Identifying Key Modifiable Risk Factors to Be Implemented in Public Health Strategy*
Talia Alysse Lichtenberg, 18, West Linn High School, West Linn, Oregon

MATH020 - *Towards Common Algorithm for Computation of Polygonal Numbers*
Phuong Anh Tran, 16, Cherkasy Physics and Mathematics Lyceum, Cherkasy, Ukraine

MATH040 - *Conjecture of Maximum Number of Minimum-Area Triangles Determined by N Lattice Points in No-Three-in-Line Situation*
Xuanlin Li, 18, The McCallie School, Chattanooga, Tennessee

Fourth Award of $500

MATH008 - *A Tree Branch Path Solution to the Collatz Conjecture*
David Chang Luo, 18, Baton Rouge Magnet High School, Baton Rouge, Louisiana

MATH011 - *A Study of Bar and Arc k-Visibility Graphs*
Mehtaab Sawhney, 17, Commack High School, Commack, New York

MATH021 - *The Rolling Lamp Problem and Related Link Structure*
Qingxuan Jiang, 17, Shanghai High School, Shanghai, China

MATH038 - *Patterns in the Continued Fraction Expansion of Various Infinite Series*
Jared Matthew Geller, 17, Pine Crest School, Fort Lauderdale, Florida

MATH047 - *Break Divisors as Canonical Representatives for Divisor Classes on Complete Graphs: Applications to the Internet of Things*
Agni Kumar, 18, Milton High School, Milton, Georgia

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

MCRO065 - *Boosting MFC Biocatalyst Performance: A Novel Gene Identification and Consortia Engineering Approach*
Han Jie (Austin) Wang, 18, David Thompson Secondary, Vancouver, Canada

First Award of $3,000

MCRO023 - *Creating an Organic Pesticide to Save the North American Ash Trees*
Nick A. Wamsley, 16, Home School, Pacific, Missouri

MCRO065 - *Boosting MFC Biocatalyst Performance: A Novel Gene Identification and Consortia Engineering Approach*
Han Jie (Austin) Wang, 18, David Thompson Secondary, Vancouver, Canada

Second Award of $1,500

MCRO026 - *Analysis of the Antimicrobial Efficacies and Structural Characteristics of Fractional Components of Selected Algal Extracts*
Beau Taylor Bingham, 16, Cascia Hall Preparatory School, Tulsa, Oklahoma

MCRO043 - *Microfluidic Analysis of E. coli Thermotaxis*
Ariel Slepyan, 18, George W. Hewlett High School, Hewlett, New York

MCRO050 - *A Novel Approach to the Reduction of Antibiotic Resistant Escherichia coli Present in Livestock Waste through Use of Plant Extracts*
Sarah Kay Strickler, 18, Bonney Lake High School, Bonney Lake, Washington

MCRO057 - *Point of Care Testing for Malaria Using a Smartphone and a Microfluidic ELISA System*
Nikhil Sajan Gopal, 15, The Lawrenceville School, Lawerenceville, New Jersey

MCRO059 - *Reversing Antibiotic-Resistance: Discovery, Evaluation, and Optimization of Extended-Spectrum Beta-Lactamase Inhibitors*
David M. Lu, 18, Mills E. Godwin High School, Henrico, Virginia

Third Award of $1,000

MCRO014 - *GASP!: Growth Advantage in Stationary Phase in Acinetobacter baylyi*
Rebecca Bloomfield, 17, William J. Palmer High School, Colorado Springs, Colorado

MCRO019 - *Enhancement of Beta-lactam Antibiotic Susceptibility by Tannic Acid through Beta-lactamase Inhibition*
Justin Kim, 16, Jericho High School, Jericho, New York

MCRO021 - *Methanogenerate! A Methanogen-Methanotroph Carbon Recycler*
Wesley Sheker, 18, Harrisburg Academy, Lemoyne, Pennsylvania

MCRO022 - *Tracing Evolutionary Patterns in West Africa: A Phylogenetic Analysis of the HIV-1 and HIV-2 Strains*
Vivek Bhupatiraju, 14, Lexington High School, Lexington, Massachusetts

MCRO060 - *The Identification of ATPase Activity Regulation in Tetrahymena thermophila: Understanding the Function of the Malarial ATP Synthase in Order to Develop New Antimalarials*
Rachana Mudipalli, 17, Downingtown STEM Academy, Downingtown, Pennsylvania

MCRO061 - *Engineering of a Conjugated Endolysin as an Efficient Method for Acne Treatment*
Sepehr Asgari, 15, Carmel High School, Carmel, Indiana

MCRO071 - *Nano Is Novel: Improving Antibiotic Efficacy for S. epidermidis with Structurally Modified Silver*
Afeefah Fatimah Khazi-Syed, 16, Harmony School of Innovation-Fort Worth, Fort Worth, Texas

Fourth Award of $500

MCRO001 - *Novel Approach to Antibiotics and Antifungals: Testing the Effectiveness of Azadirachta indica Extracts*
Saket Myneni, 16, Westwood High School, Austin, Texas

MCRO002 - *Isolation and Characterization of Bacteriophages Effective at Killing Enterococcus faecalis*
Candace Walther, 16, University School of Milwaukee, Milwaukee, Wisconsin

MCRO030 - *Inhibition of Bacterial Mutagenesis through Polyubiquitination: A Solution to Antibiotic Drug Resistance*
Abheer Singh, 16, American High School, Fremont, California

MCRO037 - *Conjugative Transfer of Cytotoxic Genes for Targeted Cell Elimination*
Anthony Kyuwon Kang, 17, Canyon Crest Academy, San Diego, California

MCRO038 - *A Study of Microbial Communities from Till and No-Till Missouri Soils Using Genetic Fingerprinting*
Monica Mary Malone, 18, Ladue Horton Watkins High School, St. Louis, Missouri

MCRO040 - *A Novel Treatment for Candida glabrata Infection*
Elan Eng Filler, 17, Palos Verdes High School, Palos Verdes Estates, California

MCRO066 - *Functional Characterization of the Pseudomonas aeruginosa ExoY Virulence Factor*
Liam Bernard Kimel, 18, Hakfar Hayarok Environmental Leadership High School, Ramat HaSharom, Israel

MCRO076 - *Metagenomics, Digital & qPCR Molecular Analysis of Bed-Time Oral Brushing*
Pranav Chhaliyil, 15, Maharishi School of the Age of Enlightenment, Fairfield, Iowa

MCRO081 - *Investigating Novel Bacteriophage Solutions as a Preventative Measure for Biofilm Formation in Medically Relevant Settings*
Aryasp Seyed Nejat, 16, Hamilton High School, Chandler, Arizona

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

PHYS053 - *Constructive Interference of Seismic Surface Waves Antipodal to Crater Impact Sites on Terrestrial Bodies*
Camille Virginia Yoke, 18, Maggie L. Walker Governor's School, Richmond, Virginia

First Award of $3,000

PHYS029 - *Determining the Frequency of Jupiter Analogs and the Announcement of a New Jupiter Analog Orbiting HD32963*
Dominick Michael Rowan, 17, Byram Hills High School, Armonk, New York

PHYS053 - *Constructive Interference of Seismic Surface Waves Antipodal to Crater Impact Sites on Terrestrial Bodies*
Camille Virginia Yoke, 18, Maggie L. Walker Governor's School, Richmond, Virginia

Second Award of $1,500

PHYS024 - *Electrically-Induced Acoustic Oscillations of Gas Bubbles*
Shailaja Humane, 18, Watchung Hills Regional High School, Warren, New Jersey

PHYS033 - *A Label Free Optical Technique to Detect Protein-Protein Binding*
Sulekh Frederic Fernando-Peiris, 15, Mount Vernon High School, Mount Vernon, Ohio

PHYS038 - *Nanobubble: Generation and Applications*
Bo-Han Lin, 17, Taipei Fuhsing Private School, Taipei, Chinese Taipei

PHYS042 - *Deformable Body Analysis through Gauge Kinematics*
Huws Yoshito Landsberger, 18, Palos Verdes Peninsula High School, Rolling Hills Estates, California

Third Award of $1,000

PHYS001T - *Essential Toolkit for Dancing Droplets*
Gabriel Louis Moreau, 18, Lycee Vauvenargues, Aix en Provence, France
Benjamin Roman, 17, Lycée Vauvenargues, Aix-en-Provence, France
Benjamin Suzzoni, 17, Lycée Vauvenargues, Aix-en-Provence, France

PHYS007T - *Capability of Modern Technology to Detect Exoplanets Orbiting Black Holes*
Brian Anthony Mills, 17, Vero Beach High School, Vero Beach, Florida
Spencer James Toll, 18, Vero Beach High School, Vero Beach, Florida

PHYS039 - *Generation of Beat Sound of Korean Bell with a Bicycle Rim*
Kim Dae Hyun, 18, Pung Duck High School, Gyeonggi Province, South Korea

PHYS040 - *Breakage of SET Nanowires and Determination of the Resistivity Constant for Multilayer Graphene*
Parker Jean Coye, 17, Lake Highland Preparatory School, Orlando, Florida

PHYS045 - *3D Printed Gas Electron Multiplier*
Adam Syndergaard, 17, Maple Mountain High School, Spanish Fork, Utah

Fourth Award of $500

PHYS013 - *Deriving an Analytical Algorithm for the Localization of Signal Sources in Orb Webs and Other Net Geometries: A Novel Mathematical Approach to Positioning Systems*
Sophie Atzpodien, 16, Gymnasium St. Mauritz, Munster, Germany

PHYS015 - *The Water Wheel: An Exploration of Deterministic Chaos*
Tobias Spanke, 18, Hans-Thoma-Gymnasium, Lorrach, Germany

PHYS018T - *Gravitational Influence on Planet Formation*
Patricia Asemann, 17, Schulerforschungszentrum Nordhessen, Kassel, Germany
Robin Ole Heinemann, 17, Schulerforschungszentrum Nordhessen, Kassel, Germany

PHYS028 - *Two-Dimensional Mapping of Energy Transfer in Graphene/MoS2 Photodetectors*
Michael Thomas Earle, 18, Ossining High School, Ossining, New York

PHYS043T - *Astrophysical Modeling of Wolf Rayet Stars Using Low Resolution Gratings*
Ivo Jose Goncalves, 17, Escola Secundaria Dona Maria II, Braga, Portugal
Daniel Alexandre Diaz da Costa, 19, Agrupamento de Escolas D.Maria II, Braga, Portugal
Mauro Barbosa Franqueira, 18, Escola Secundária Dona Maria II, Braga, Portugal

PHYS046 - *Analysis of Chemical Vapor Deposition Diamonds for Neutron Detection on OMEGA*
Ishir Seth, 18, Brighton High School, Rochester, New York

PHYS047 - *The Race against Instabilities: Gravity vs. Carbopol - Who Will Win?*
Sidhika Balanchandar, 16, F. W. Buchholz High School, Gainesville, Florida

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

PLNT044 - *Comprehensive RNA Profiling Identifies Novel Blackleg Resistance Genes in Canola*
Dennis Adrian Drewnik, 17, Sisler High School, Winnipeg, Canada

First Award of $3,000

PLNT017 - *Plant Tissues that Fail to Regenerate Undergo Early Steps of Remodeling but Fail to Induce a Cytokinin Hormone Response*
Charlotte Underwood Keeley, 17, Ossining High School, Ossining, New York

PLNT044 - *Comprehensive RNA Profiling Identifies Novel Blackleg Resistance Genes in Canola*
Dennis Adrian Drewnik, 17, Sisler High School, Winnipeg, Canada

Second Award of $1,500

PLNT013 - *Dressing the Seed: A Comprehensive, Wide-Scale Approach to Food Insecurity*
Alon Millet, 18, Bergen County Academies, Hackensack, New Jersey

PLNT036 - *Molecular-Based Genotyping of Lactuca sativa for Accelerated Genotypic Selection*
Sophia Edith Swartz, 16, Central Bucks High School South, Warrington, Pennsylvania

PLNT041 - *Determining the Effect of the Novel CarL2 Strigolactone Analog on the Seed Germination of Parasitic Weeds*
Fatimah Abdulmonem Alshaikh, 18, AlFaisaliah Islamic Schools, Khobar, Saudi Arabia

Third Award of $1,000

PLNT032T - *Innovative Strategy using Endophytes for Effective Biocontrol of Insect Pests in Cotton*
Suhani Sachin Jain, 15, Centre Point School, Nagpur, India
Divya Kranthi, 16, Centre Point School, Nagpur, India

PLNT035T - *Asian Lady Beetles...Infestation or Curation? A Novel Study to Evaluate the Efficacy of Harmonia axyridis Hemolymph as a Pesticide to Control Diaphorina citri (Asian Citrus Psyllid), and as an*

Antibiotic against the Huanglongbing Disease Causing Liberibacter!
Rowan Said ElQishawi, 17, Hoover High School, Hoover, Alabama
Rozan Said ElQishawi, 16, Hoover High School, Hoover, Alabama

PLNT038 - *Turning the Red Planet Green: Study of Cyanobacteria/Algae Growth Kinetics Coupled with Hydroponics Applications for Terraforming and Settling on Mars*
Andrew Dong-Hyun Kim, 16, The Woodlands College Park High School, The Woodlands, Texas

PLNT051 - *The Green Algae, Chlorella vulgaris, Mitigates Detrimental Effects of Methylmercury in Zebrafish*
Jay Maturi, 16, University High School of Indiana, Carmel, Indiana

PLNT056 - *Tracking the Spread of Potato Late Blight (Phytopthora infestans) on a Regional Scale*
Benjamin Firester, 16, Hunter College High School, New York, New York

Fourth Award of $500

PLNT022 - *Mutants of Leucine Rich Receptor Like Kinase Proteins Show Increased Biomass: A Proteomic Study*
Sandhya Kalavacherla, 16, Amador Valley High School, Pleasanton, California

PLNT024 - *Weed Warfare: Investigating Allelopathy, Year Six*
Julia Grace Canady, 17, Lakeland Christian School, lakeland, Florida

PLNT027 - *Evaluating the Impact of Soil Management on Weed Pressure in Organic and Transitioning Agricultural Ecosystems*
Rahul Rambhatla, 18, Solon High School, Solon, Ohio

PLNT043 - *The Spread of Seeds through Cattle*
Jade Moxey, 16, Sapphire Coast Anglican College, Bega, Australia

PLNT053T - *Nematicidal Activity and Saponin Concentration of Chenopod Extracts*
Emma Kate Batson, 17, Karns High School, Knoxville, Tennessee
Taimur Kouser, 18, Webb School of Knoxville, Knoxville, Tennessee

PLNT057 - *Potential Use of Secondary Metabolite in Protection against Plant Parasites*
Jana Cornakova, 17, Saint Nicholas Grammar School, Presov, Slovakia

ROBOTICS AND INTELLIGENT MACHINES

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

ROBO046 - *A Novel Haptic Actuator for Robotic Surgery: Utilizing Soft Robotic Pneumatic Networks, a Closed Loop Control System, and an Electro-Pneumatic Control Board to Accurately Restore an Operator's Sense of Touch*
Simone Braunstein, 18, Dalton School, New York, New York

First Award of $3,000

ROBO046 - *A Novel Haptic Actuator for Robotic Surgery: Utilizing Soft Robotic Pneumatic Networks, a Closed Loop Control System, and an Electro-Pneumatic Control Board to Accurately Restore an Operator's Sense of Touch*
Simone Braunstein, 18, Dalton School, New York, New York

Second Award of $1,500

ROBO012 - *Use the Force, Lyapunov! A Novel Quadcopter Motor Controller Using Force Sensor Feedback*
Steven Thomas Elliott, 17, The Home Educator's Outsourcing High School, Plano, Texas

ROBO032 - *Shape-Shifting Origami Robotics*
Francisca Vasconcelos, 18, Torrey Pines High School, San Diego, California

ROBO047T - *Fido: A Universal Robot Control System Using Reinforcement Learning with Limited Feedback*
Joshua Aaron Gruenstein, 17, Horace Mann School, Bronx, New York
Michael Truell, 15, Horace Mann School, Bronx, New York

Third Award of $1,000

ROBO006 - *Deriving Unsupervised Fluid Intelligence from Schema-Less Polymorphic Unstructured Data*
Animesh Koratana, 17, Northview High School, Johns Creek, Georgia

ROBO022 - *Safecopter: Developing a Collision Avoidance System Based on an Array of Time-of-Flight 3D Cameras*
Robert Gabriel Tacescu, 16, Clovis North High School, Fresno, California

ROBO026 - *6-Axis Robot Manipulator for an Educational Process and for Automation of Small-Scale Enterprises*
Oleg Valerevich Zobov, 17, Lyceum 1502, Moscow, Russian Federation

ROBO036T - *Permaximize*
Abraham James Oliver, 16, Brown County High School, Nashville, Indiana
Jadan Taylor Ercoli, 15, Brown County High School, Nashville, Indiana

Fourth Award of $500

ROBO001 - *Logical Levitation: Achieving Magnetic Levitation via Computational Feedback Loop*
Brighton Ancelin, 18, Creekside High School, Saint Johns, Florida

ROBO005T - *The Future of Mechanical Prosthetics: Electromyogram Controlled Extremities*
Javier Antonio Ortiz - García, 18, Escuela Secundaria Especilizada en Ciencias, Matematicas y Tecnologia, Caguas, Puerto Rico
Osvaldo Efraín Rivera-Valentín, 18, Escuela Secundaria Especilizada en Ciencias, Matematicas y Tecnologia, Caguas, Puerto Rico

Luis Angel Ramirez-Torres, 17, Escuela Secundaria Especilizada en Ciencias, Matematicas y Tecnologia, Caguas, Puerto Rico

ROBO013 - *Mimicking Robotic "Smart" Prosthetic Arm*
Niko Ray Bhagwandin, 17, W. F. West High School, Chehalis, Washington

ROBO030 - *Investigations into Cardiology: Categorizing Heart Rhythms using Machine Learning*
Oliver Hamilton, 17, Mills E. Godwin High School, Henrico, Virginia

ROBO037 - *Direct Connection Technology between Disabled and Prosthetic Robot Hand*
Yun Kang, 16, Cheonan Jungang High School, Cheonan-Si, South Korea

SYSTEMS SOFTWARE

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

SOFT026 - *Efficient Blockchain-Driven Multiparty Computation Markets at Scale*
Charles Noyes, 17, Villa Park High School, Villa Park, California

First Award of $3,000

SOFT026 - *Efficient Blockchain-Driven Multiparty Computation Markets at Scale*
Charles Noyes, 17, Villa Park High School, Villa Park, California

Second Award of $1,500

SOFT032 - *Using Data-Driven Frequency Analysis Techniques to Detect Seizures and Falls*
Amir Helmy, 15, Eastside High School, Gainesville, Florida

SOFT045 - *Optimizing Mobile Blood Collection Logistics with a Computational Tool*
Petteri Timonen, 18, Valkeakosken Tietotien lukio, Valkeakoski, Finland

SOFT051 - *Psychological Classification by Applying Deep Learning to Social Media Text*
Daniel Mogilny, 17, Laval Senior Academy, Montreal, Canada

Third Award of $1,000

SOFT004 - *iSight: A New Method of Gesture Recognition and Analysis*
Logan Alexander Apple, 17, Millbrook High School, Winchester, Virginia

SOFT012 - *Determining Network Robustness Using Region Based Connectivity*
Rucha Joshi, 16, Westwood High School, Austin, Texas

SOFT017 - *"Whitestorm JS": A Web Browser 3D Framework*
Oleksandr Buzin, 16, Liceum "Holosiivskiy" No241, Kiev, Ukraine

SOFT029 - *Traffic Camera Dangerous Driver Detection (TCD3): Contextually Aware Heuristic Feature & OFA Density-Based Computer Vision with Movement Machine Learning Analysis of Live Streaming Traffic Camera Footage to Identify Anomalous & Dangerous Driving*
Vidur Tenali Prasad, 17, Dayton Regional STEM School, Kettering, Ohio

Fourth Award of $500

SOFT015 - *User Authentication Based on Gait Analysis*
Chloe Baker, 16, Lake Braddock Secondary School, Burke, Virginia

SOFT018T - *Yarner: Study of Technologies Inside Classrooms Focusing on Literacy with the Development of a Digital Web and Mobile Application*
Rafael Eiki Matheus Imamura, 19, Colegio Tecnico de Campinas, Campinas, Brazil
Laura Rubia Paixao Boscolo, 18, Colegio Tecnico de Campinas, Campinas, Brazil

SOFT022 - *Smart Safety Warning and Notification System for Treadmills*
Himanshu Minocha, 16, Hopkinton High School, Hopkinton, Massachusetts

SOFT031 - *Developing Operating System for High-Performance Computing with a Hardware Approach to the Transactional Memory Support*
Wojciech Krzysztof Rozowski, 17, Liceum Ogolnoksztalcace im. Tadeusza Kosciuszki w Krzeszowicach, Krzeszowice, Poland

SOFT035 - *Efficient, Hardware Implementations of Computationally-Intensive Operations in Quotient Polynomial Rings for NTRU-Based Digital Signatures*
Vikul Gupta, 17, Oregon Episcopal School, Portland, Oregon

SOFT052 - *Classification of Subtle Morphological Features for Individual Nuclei in Stained Glioma Tissue Slides*
Kunal Varun Singh, 18, High Technology High School, Lincroft, New Jersey

Translational Medical Science

Intel ISEF Best of Category Award of $5,000

TMED010T - *Predicting a Cancerous Outcome: Creating a Novel Test for Assessing Risk of Human Papilloma Virus-Associated Oropharyngeal Cancer*
Prashant Sai Godishala, 18, Breck School, Golden Valley, Minnesota
Brennan Scott Clark, 18, Breck School, Golden Valley, Minnesota

First Award of $3,000

TMED010T - *Predicting a Cancerous Outcome: Creating a Novel Test for Assessing Risk of Human*

Papilloma Virus-Associated Oropharyngeal Cancer
Prashant Sai Godishala, 18, Breck School, Golden Valley, Minnesota
Brennan Scott Clark, 18, Breck School, Golden Valley, Minnesota

Second Award of $1,500

TMED011 - *Development of Low Cost Paper-Base Point-of-Care Platform for Quantitative Biomarker Analysis*
Praharshasai Paladugu, 17, duPont Manual High School, Louisville, Kentucky

TMED051 - *Putative High-pIC50 SpDHBP Synthase Inhibitors against Multi-Drug Resistant S. pneumoniae*
Catherine Jessica Yihui Lai, 17, Brearley School, New York, New York

TMED052 - *Alternative Preservation Methods in ex-vivo Bovine Liver*
Brandon Michael Muncan, 16, Queens High School for the Sciences at York College, Jamaica, New York

Third Award of $1,000

TMED006T - *Rapamycin as a Novel Therapeutic for Alzheimer's Disease: Prevention Assessed through Neuroimaging*
Amy C. Wang, 16, Paul Laurence Dunbar High School, Lexington, Kentucky
David Wang Ma, 16, Paul Laurence Dunbar High School, Lexington, Kentucky

TMED007 - *The Effect of Spermidine on β-Amyloid Peptide Toxicity in C. elegans: A Model System for Understanding Alzheimer's Disease*
Sedra Khan, 16, Niles West High School, Skokie, Illinois

TMED024T - *Towards Next Generation Cancer Therapy: In vivo Dosimetry Studies of Boron Neutron Capture Therapy using Protist Models*
Nitya Krishna Kumar, 16, Olympia High School, Olympia, Washington
Veenadhari Kollipara, 15, Interlake High School, Bellevue, Washington

TMED028 - *Novel TolC Inhibitors: Computer-Aided Drug Discovery for MDR-Conferring Efflux Pumps*
Shayan Daniel Farmand, 16, Methacton High School, Eagleville, Pennsylvania

TMED035T - *Automated Diagnosis of Diabetic Retinopathy Severity in Color Fundus Images Using a Novel Synthesis of Biological and Data Driven Approaches*
Manan Ajay Shah, 16, The Harker School, San Jose, California
Rishab Gargeya, 17, The Harker School, San Jose, California

Fourth Award of $500

TMED020 - *Development of Beta-Galactosidase Reusable Micro-Capsules for Lactose Intolerant People*
Maria Vitoria Valoto, 16, Colegio Interativa, Londrina, Brazil

TMED025 - *A Novel Paper Sensor as a Diagnostic Test for Multiple Sclerosis*
Vasudev Malyan, 18, Maharaja Agarsain Public School, Delhi, India

TMED038 - *Leveraging the Antimicrobial Properties of Jatropha curcas in Suture Engineering*
Lauren Kathyrn Enten, 17, Saint Thomas Aquinas High School, Fort Lauderdale, Florida

TMED046 - *A Novel Measurement Method to Determine Patient Adherence to PCSK9 Inhibitor Treatment*
Madeline Alice Musaus, 17, Ravenscroft School, Raleigh, North Carolina

TMED055 - *Design and Evaluation of Betulin-Based Anti-Cancer Compounds*
Anjali Chakradhar, 14, High Technology High School, Lincroft, New Jersey

TMED057 - *The Cytotoxic and Mutagenic Effects of Arsenic on Mammalian Cells and the Countering Antioxidant Effects of Caffeic Acid Phenethyl Ester and Turmeric*
Sarah Choudhury, 18, Spackenkill, Poughkeepsie, New York

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