

Los Angeles, CA – Society for Science & the Public, in partnership with the Intel Foundation, announced Grand Awards of the Intel ISEF 2017. Student winners are ninth through twelfth graders who earned the right to compete at the Intel ISEF 2017 by winning a top prize at a local, regional, state or national science fair.

For each Best of Category winner, a \$1,000 grant will be given to the winners' school and the Intel ISEF Affiliated Fair they represent.

Gordon E. Moore Award

Gordon E. Moore Award \$75,000

ENMC003 - A Wing Is Enough: An Improved Flying Wing Based on a Bell-Shaped Lift Distribution

- Ivo Zell, Internatsschule Schloss Hansenberg, Hessen, Germany

Intel Foundation Young Scientist Award

Young Scientist Award of \$50,000

F PHYS021 - Multi-Orbit Space Debris Cloud Tracking Using Iterative Closest Points Registration with Machine Learning

- Amber Yang, Trinity Preparatory School, FL, United States of America

EBED031 - LaserWAN - Laser Broadband Internet Connections

- Valerio Pagliarino, I.I.S. Nicola Pellati, Asti, Italy

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.

BCHM005 – The Role of RAD51 Mutation in Cancer Development

- Karina Movsesian, Prvni Ceske Gymnazium v Karlovych Varech, Czech Republic

BIO025 - DNALoopR: A Novel High-Performance Machine Learning Predictor to Identify Genome-Wide 3D DNA Interactions in Cancer

- Prathik Naidu, Thomas Jefferson High School for Science and Technology, VA, United States of America

TMED058 - *Ameliorating Alpha-Synuclein Aggregation in Parkinson's Using Optimized Chaperones: An in silico Approach*

- Jeremiah Pate, BASIS Oro Valley, AZ, United States of America

European Union Contest for Young Scientists Award

Trip to the EU Contest.

EGCH018 - *A Paper-Based Microbial Fuel Cell for Glucose Monitoring in Saliva*

- Kendra Zhang, Jericho High School, NY, United States of America

MATS050 - *Cellulose Nanocrystals for Security Applications: Embedding Non-Optical Signatures Provided by Nanoparticles into Cellulose Nanocrystal Chiral Nematic Films*

- Nicky Wojtania, Plano West Senior High School, TX, United States of America

Philip V. Streich Memorial Award to the London International Youth Science Forum

Philip V. Streich was an alumnus of the Intel International Science and Engineering Fair in 2007, earning an Intel Foundation Young Scientist Award, and in 2008; and he was selected as a Finalist, and earned third place at the 2009 Intel Science Talent Search, both programs of the Society for Science & the Public. The London International Youth Science Forum offers a unique opportunity to participate in an international event attracting science students from around the world.

BMED035 - *Cytosine to Thymine: Unveiling Cancer's Achilles Heel via a Genome-wide Discovery of CpG Methylation Signatures*

- Daniel Zhang, Westview High School, CA, United States of America

ENEV074 - Biodegradation of Chlorpyrifos and Soil Remediation Using Native Soil Bacteria and Triton X-A Novel Approach

- Prashaant Ranganathan, Carmel Junior College, Jharkhand, India

Intel Foundation Cultural and Scientific Visit to China Award

The Intel Foundation believes that cultural experiences can help shape and strengthen scientific research. This year, for the first time, the Intel Foundation is partnering with the China Adolescents for Science and Technology Organization to award an 11-day trip to the Chinese cities of Beijing, Chengdu and Hong Kong. The winners will attend the China Adolescent Science and Technology Innovation Contest, the largest national science competition in China.

ROBO001 - Drone Defense System: Detection, Tracking, Classification and Targeting of Flight Objects in 3D and Real Time

- Tassilo Schwarz, Johannes-Heidenhain-Gymnasium Traunreut, Bayern, Germany

MATH048 - The Homotopy Theory of Parametrized Objects

- Karthik Yegnesh, Methacton High School, PA, United States of America

BEHA060 - A Novel, Telemedicine Diagnosing and Monitoring Tool for Parkinson's Disease: The Use of Digital Action Unit Biomarkers Generated by Spontaneous and Posed Facial Expressions

- Erin Smith, Shawnee Mission West High School, KS, United States of America

EGPH001 - Thermoelectric Generator Powered Tracking Concentrated Photovoltaic System

- Camille Miles, Niceville High School, FL, United States of America

SOFT042 - MFT: Improving Convolutional Object Tracking with Feed Separated Learning

- Michael Lee, Manhasset High School, NY, United States of America

Indo-U.S. Science & Technology Visit to India Award

Travel to India

MCRO029 - *An Early Warning System for Zika Virus in Mosquito Populations Based on Real-Time Field Detection of Viral RNA in Mosquito Saliva*

- Rahul Subramaniam, Greenwich High School, CT, United States of America

CHEM062 - *Discovery and Characterization of an Undocumented Ferric Sulfate Compound Formed by the Reaction of Gold Ore with Sulfuric Acid*

- Kyle Fridberg, Fairview High School, CO, United States of America

ENBM046 - *Investigating Tuned Magneto-Rheological Reservoirs, Compression Systems, and Shear Thickening Fluids to Improve Mean Peak Acceleration as Measured by High-G Accelerometers in Hockey Headgear*

- Clara Wagner, Saginaw Arts and Sciences Academy, MI, United States of America

ANIMAL SCIENCES

Intel ISEF Best of Category Award of \$5,000

ANIM028 - *Synthesis of a Soy Protein Hydrogel for Invasive Snail Control in Agricultural Settings*

- Jessica Young, Palm Beach Central High School, FL, United States of America

First Award of \$3,000

ANIM028 - Synthesis of a Soy Protein Hydrogel for Invasive Snail Control in Agricultural Settings

- Jessica Young, Palm Beach Central High School, FL, United States of America

ANIM049 - Sustainable Mosquito Control: A Chemical-Free, Low-Cost Approach to Controlling Aedes aegypti, a Vector of Zika Virus

- Shantanu Jakhete, South Fork High School, FL, United States of America

Second Award of \$1,500

ANIM040 - Red and Blue Silk Threads Obtained from Silkworms Reared on Artificial Diets Containing Rhodamine B and Methylene Blue

- Nodoka Fukumitsu, Shimane Prefectural Masuda High School, Shimane, Japan

ANIM014 - Re-Evaluating Reproduction: The Transgenerational Effect of High-Fat Dairy Intake on Fertility in Drosophila melanogaster

- Evan Mizerak, Wachusett Regional High School, MA, United States of America

ANIM048T - The Potential Use of Natural Essential Oils in Prevention from Ticks of Dermacentor and Haemaphysalis Genus

- Samuel Smoter, Grammar School of St. Nicholas, Presovsky, Slovakia

ANIM048T - The Potential Use of Natural Essential Oils in Prevention from Ticks of Dermacentor and Haemaphysalis Genus

- Miriam Feretova, Grammar School of St Nicholas, Prešovský, Slovakia

Third Award of \$1,000

ANIM030 - *Using Response Surface Methods to Optimize a Repellent for the Invasive Sri Lankan Weevil, Myllocerus undecimpustulatus undatus Marshall (Coleoptera: Curculionidae: Entiminae)*

- Sana Shareef, Saint Edward's School, FL, United States of America

ANIM013 - *Home Ranges of Atlantic Great White Sharks, Phase II*

- Kelly van Woesik, Satellite High School, FL, United States of America

ANIM037T - *The Effects of Exercise at Different Stages of Life on the Longevity of C. elegans*

- Grace Lyons, Bancroft School, MA, United States of America

ANIM037T - *The Effects of Exercise at Different Stages of Life on the Longevity of C. elegans*

- Jose Garcia-Chope, Bancroft School, MA, United States of America

ANIM025 - *The Effects of Heart-Specific Downregulation of Histone Deacetylase, Rpd3, on Longevity*

- Catherine Chen, Academy for Health and Medical Sciences, NJ, United States of America

ANIM052 - *The Effect of Expression Patterns of Ammonium Transporters on the Interaction between Corals and Their Symbiotic Dinoflagellates*

- Amaar Amir, Dhahran Ahliyya Schools, Eastern Province, Saudi Arabia

Fourth Award of \$500

ANIM007 - *Optimizing Goat Skin Fibroblast Culture Conditions for Cloning*

- Aakash Arora, Veterans High School, GA, United States of America

ANIM008 - Shining Light on the Blind: Evolutionary Regression and Adaptive Progression in the Micro-Vertebrate Ramphotyphlops braminus, Year Three

- River Grace, West Shore Junior/Senior High School, FL, United States of America

ANIM001 - Blue Light Effect Study: Impact on Drosophila's Cognitive Ability and Gender Ratios

- James Staman, The Bolles School, FL, United States of America

ANIM023 - Grazing Sheep On Deadly Fireweed: A 'BaaaaD' Situation?

- Jade Moxey, Sapphire Coast Anglican College, New South Wales, Australia

ANIM044T - Effects of Varroa Mite Treatments on Bee Memory and Learning

- Max Freedman, Alternative Family Education, CA, United States of America

ANIM044T - Effects of Varroa Mite Treatments on Bee Memory and Learning

- Jackson Damhorst, Alternative Family Education, CA, United States of America

ANIM056T - Factors Affecting Polystyrene Foam Consuming Rate of Superworms (Zophobas morio)

- Nutchawara Moonkaew, Bunyawat Witthayalai School, Thailand

ANIM057 - Formation and Change of Vocal Dialects in Captive Gentoo Penguin Pygoscelis papua Colonies

- Andrea Dahl, Olathe North High School, KS, United States of America

ANIM056T - *Factors Affecting Polystyrene Foam Consuming Rate of Superworms (Zophobas morio)*

- Jitranooch Chairach, Bunyawatwitthayalai School, Lampang, Thailand

BEHAVIORAL AND SOCIAL SCIENCES

Intel ISEF Best of Category Award of \$5,000

BEHA060 - *A Novel, Telemedicine Diagnosing and Monitoring Tool for Parkinson's Disease: The Use of Digital Action Unit Biomarkers Generated by Spontaneous and Posed Facial Expressions*

- Erin Smith, Shawnee Mission West High School, KS, United States of America

First Award of \$3,000

BEHA032 - *The Dynamics of Habituation: A Neural Study of the Effects of Repeated Exposures to Risky Behaviors on Cognitive Control and Emotional Responses in the Adolescent Brain*

- Kashfia Rahman, Brookings High School, SD, United States of America

BEHA060 - *A Novel, Telemedicine Diagnosing and Monitoring Tool for Parkinson's Disease: The Use of Digital Action Unit Biomarkers Generated by Spontaneous and Posed Facial Expressions*

- Erin Smith, Shawnee Mission West High School, KS, United States of America

Second Award of \$1,500

BEHA019 - *Maternal Behavior Contributing to Early Life Adversity and the Subsequent Neural and Behavioral Effects on Rat Pups*

- Hannah Brown, Dobbs Ferry High School, NY, United States of America

BEHA025 - *Lucid Dreaming: Its Electrophysiological Correlates and Induction through Multiple Awakenings*

- DeeAnn Guo, John Jay High School, NY, United States of America

BEHA062T - *Compassion Fade and the Limitations of Student Subjects in Social Science Research*

- Alexander Sun, Hillcrest High School, UT, United States of America

BEHA062T - *Compassion Fade and the Limitations of Student Subjects in Social Science Research*

- Emma Sun, The Waterford School, UT, United States of America

Third Award of \$1,000

BEHA044 - *The Turban Myth*

- JJ Kapur, Valley High School, IA, United States of America

BEHA046 - *Dress to Impress: The Influence of the Enclothed Cognition Effect on Self-Esteem and Self-Efficacy*

- Chloe Levin, Roslyn High School, NY, United States of America

BEHA021 - *EWS: Express without Stress*

- Tala Haddad, Jubilee School, Jordan

BEHA010 - *The Effect of Paper, Electronic, and Audio-Electronic Reading Modalities on Reading Comprehension in Adults Aged 60 and Above*

- Alison Thomas, Oregon Episcopal School, OR, United States of America

BEHA002 - *Kemotions: Keys to Emotional Cues*

- Sapna Patel, Oviedo High School, FL, United States of America

Fourth Award of \$500

BEHA065 - *RoboGlove: A Design for Engagement and Hedonic Motivation with Visual-Spatial for Deaf and Hearing Impaired Children, Phase II*

- Hiba Muhyi, Arrowhead Park Early College High School, NM, United States of America

BEHA040 - *The Effect of Dual Neurotransmission on Male Aggression and Courtship in Drosophila melanogaster*

- Lucy Sirrs, Hellgate High School, MT, United States of America

BEHA029 - *Evaluation of Gender Bias in Social Media Using Artificial Intelligence*

- Nitya Parthasarathy, Northwood High School, CA, United States of America

BEHA033 - *Fighting the Silent Epidemic: The Effects of Stress-Reduction Techniques on PTSD, Depression, and Anxiety*

- Quristienna Bateman, Bonneville High School, UT, United States of America

BEHA017T - *Does Modern Information Technology Exacerbate Teen Procrastination?*

- Abigail Lifferth, The Villages Charter High School, FL, United States of America

BEHA017T - *Does Modern Information Technology Exacerbate Teen Procrastination?*

- Carter Draney, The Villages Charter High School, FL, United States of America

BEHA017T - *Does Modern Information Technology Exacerbate Teen Procrastination?*

- Tiffany Liu, The Villages Charter High School, FL, United States of America

BEHA008 - *Investigating Triggers of Sundowners Syndrome in Dementia Patients in an Institutional Setting, Year Two*

- Cassandra Blew, La Veta High School, CO, United States of America

BEHA056 - *Neglected Children: Case Study of Public Attitudes toward Children with HIV AIDS in 6 (Six) Sub-Districts in Surakarta*

- Latifah Maratun Sholikhah, State Senior High School 1 Teras, East Java, Indonesia

BIOCHEMISTRY

Intel ISEF Best of Category of \$5,000

BCHM005 – *The Role of RAD51 Mutation in Cancer Development*

- Karina Movsesian, Prvni Ceske Gymnazium v Karlovych Varech, Czech Republic

First Award of \$3,000

BCHM005 – *The Role of RAD51 Mutation in Cancer Development*

- Karina Movsesian, Prvni Ceske Gymnazium v Karlovych Varech, Czech Republic

Second Award of \$1,500

BCHM029T - *A Novel Iso-Enzyme Based Dot Blot Strip Test for Rapid Detection of Multiple Insecticide Residues*

- Suhani Jain, Taywade College, India

BCHM029T - *A Novel Iso-Enzyme Based Dot Blot Strip Test for Rapid Detection of Multiple Insecticide Residues*

- Divya Kranthi, Ambedkar College, India

BCHM019 - *Bioengineering Islet Cells Using 3D-Bio Printing Technology for the Treatment of Type-1 Diabetes*

- Vishaal Balamurugan, North Oldham High School, KY, United States of America

Third Award of \$1,000

BCHM013 - *Synthesis of a Fusarochromanone Analog and Its Efficacy in Treating Triple Negative Breast Cancer*

- Sunjay Letchuman, Caddo Parish Magnet High School, LA, United States of America

BCHM017 - *Buffalo vs. Beef: Analyzing Lipid Components in Search of Potential Health Benefits*

- Elsie DuBray, Timber Lake High School, SD, United States of America

BCHM032 - *Treating Hypertension: Using Natural Compounds to Inhibit Angiotensin Converting Enzyme*

- Brindha Rathinasabapathi, Eastside High School, FL, United States of America

Fourth Award of \$500

BCHM003 - *Enzyme Dynamics of Biofilm-Breaking Dispersin B*

- Edward Kim, Midway High School, TX, United States of America

BCHM012 - *Aptamer Based Disruption of the CD47-SIRP α Interface for Anticancer Applications*

- Pushkar Shinde, Oregon Episcopal School, OR, United States of America

BCHM006 - *Pathogenic Yeast *Candida parapsilosis* and Its Carbonic Anhydrase*

- Jan Blaha, Gymnazium a Stredni Odborna Skola Prelouc, Pardubicky Kraj, Czech Republic

BCHM031T - *Developing a Nanoscale DLD Array Using Immunosignature-Derived Aptamers to Effectively Separate and Analyze Tumor Exosomes*

- Sachin Jaishankar, Hamilton High School, AZ, United States of America

BCHM031T - *Developing a Nanoscale DLD Array Using Immunosignature-Derived Aptamers to Effectively Separate and Analyze Tumor Exosomes*

- Somil Jain, Hamilton High School, AZ, United States of America

BIOMEDICAL AND HEALTH SCIENCES

Intel ISEF Best of Category Award of \$5,000

BMED035 - *Cytosine to Thymine: Unveiling Cancer's Achilles Heel via a Genome-wide Discovery of CpG Methylation Signatures*

- Daniel Zhang, Westview High School, CA, United States of America

First Award of \$3,000

BMED022 - *Crucial Role of Telomerase Activity in Mitigation of Chemotherapeutic/Cardiovascular Disease Induced Reactive Oxygen Species Mediated Oxidative Stress and Reconstitution of Microvascular (Endothelial) Function*

- Nabeel Quryshi, University School of Milwaukee, WI, United States of America

BMED035 - *Cytosine to Thymine: Unveiling Cancer's Achilles Heel via a Genome-wide Discovery of CpG Methylation Signatures*

- Daniel Zhang, Westview High School, CA, United States of America

Second Award of \$1,500

BMED038 - *The Effect of Oleic Acid on Intracellular Calcium through Liposome Formation*

- Clairisse Whang, Academy for Medical Science Technology, NJ, United States of America

BMED033 - *Hum Your Way to Better Health To Investigate through Research and Experimentation: The Effect of Nasal Breathing and Meditative Humming Techniques on Lung Function*

- Caolann Brady, St. Wolstan's Community School, Leinster, Ireland

BMED077 - *Hospitalization in Women with Turner Syndrome*

- Isani Singh, Cherry Creek High School, CO, United States of America

BMED076 - *The Effect of Pollutant Bisphenol A on Cancer Cell Proliferation*

- Zhiyue Wang, West Lafayette Junior-Senior High School, IN, United States of America

Third Award of \$1,000

BMED048 - *Discovery of Highly-Correlated Circadian Oscillations in Oral MicroRNA and Microbiome Levels Using Next Generation Sequencing of Human Saliva: Implications for Human Health and Disease*

- Neil Khurana, Fayetteville-Manlius High School, NY, United States of America

BMED064 - *A Patch Clamp Study of TRPM7 Ion Channels: East Indian Sandalwood Oil (EISO) as a Possible Therapeutic Target for Cancer, Year II*

- Nia Clements, Keystone School, TX, United States of America

BMED025 - *Unsupervised Analysis of Gene Expression in Neurological Animal Models Reveals Spatiotemporal Differences between Developing Mouse and Human Brains*

- Kevin Hu, Massachusetts Academy of Math and Science, MA, United States of America

BMED062 - *Hepatic Stellate Cell-Targeting Nanoparticles for Hepatocellular Carcinoma Chemoprevention*

- Mohamed El-Abtah, Syosset High School, NY, United States of America

BMED009 - *The Effects of Amino Acids on Preimplantation Mouse Embryo Development*

- Emily Yang, Kalani High School, HI, United States of America

BMED015 - *A Novel Method for Auto-Suturing in Robotic-Assisted Laparoscopic Coronary Artery Bypass Grafting Anastomosis*

- Ethan Levy, Dr. Michael M. Krop Senior High School, FL, United States of America

BMED001 - *The Effects of Secondhand E-Cigarette Vapor on *Drosophila melanogaster**

- Lindsay Poulos, Episcopal School of Jacksonville, FL, United States of America

Fourth Award of \$500

BMED082 - *Effects of Gut Microbiota on *Drosophila* Models of Parkinson's Disease*

- Vivek Kamarshi, Monta Vista High School, CA, United States of America

BMED074 - *Oncolytic Activity of Engineered Adenovirus Ad-TERT in Glioblastoma Multiforme*

- Jooyoung Lee, West Lafayette Junior/Senior High School, IN, United States of America

BMED058T - *Chair of Hope*

- Rose Barakat, Anabta Secoundry Girls School, Palestine

BMED060 - *Selective Inhibition of Metastatic Cancer Cell Migration*

- Akshat Singh, Century High School, MN, United States of America

BMED058T - *Chair of Hope*

- Raghad Marie, Anabta Secondary Girls School, West Bank, Palestine

BMED034 - *Imbalanced Folate Status Promotes Metabolic Stress, Cancer Stem Cell Phenotype, and Proteomic Signatures of Human Breast Cancer Cells*

- Angel Huang, Taipei American School, Chinese Taipei

BMED037 - *A Novel Application of Microfluidic Assay to Evaluate the Role of Calponin in Platelet Function and Clot Formation*

- Neha Seshadri, Skyline High School, MI, United States of America

BMED068 - *A Scalable, Non-Invasive, and Digital Tool to Quickly Diagnose the Zika Virus by Applying Correlation Analysis, Edge Detection Methods, and K-Means Clustering to Fundus Images*

- Arsh Banerjee, Bayonne High School, NJ, United States of America

BMED051 - *The Relationship between Artificial Sugars and Increased Lipid Levels*

- Alexander Rodriguez, Mitchell High School, SD, United States of America

BMED036 - *Innovative Optimization for Malnutrition Treatment*

- Garyk Brix, Winston Churchill High School, MD, United States of America

BIOMEDICAL ENGINEERING

Intel ISEF Best of Category Award of \$5,000

ENBM046 - *Investigating Tuned Magneto-Rheological Reservoirs, Compression Systems, and Shear Thickening Fluids to Improve Mean Peak Acceleration as Measured by High-G Accelerometers in Hockey Headgear*

- Clara Wagner, Saginaw Arts and Sciences Academy, MI, United States of America

First Award of \$3,000

ENBM028 - *Mosquito-Inspired Insertion Guide Prevents Flexible Intracortical Microelectrodes from Buckling during Implantation*

- Suraj Srinivasan, Strongsville High School, OH, United States of America

ENBM046 - *Investigating Tuned Magneto-Rheological Reservoirs, Compression Systems, and Shear Thickening Fluids to Improve Mean Peak Acceleration as Measured by High-G Accelerometers in Hockey Headgear*

- Clara Wagner, Saginaw Arts and Sciences Academy, MI, United States of America

Second Award of \$1,500

ENBM063 - *Membrane-Based Nanostructured Biosensor to Detect Hemolytic Bacteria*

- Camila Moran-Hidalgo, Westdale Secondary School, Ontario, Canada

ENBM074T - *A Real-Time Vein Imaging System Using Image Processing Algorithms On Images Obtained From A Standard Smartphone Camera*

- Geeve, Little Rock Indian School, Karnataka, India

ENBM074T - *A Real-Time Vein Imaging System Using Image Processing Algorithms On Images Obtained From A Standard Smartphone Camera*

- Chaitanya, Little Rock Indian School, Karnataka, India

ENBM059 - *Hermes Braindeck: A Brain-Computer Interface for Communication with Patients Initially Classified as Comatose or Vegetative*

- Luiz da Silva Borges, Instituto Federal de Educacao, Ciencia e Tecnologia de Mato Grosso do Sul - Campus Aquidauana, MS, Brazil

ENBM014 - *Inexpensive Glucose Monitoring Device for Diabetics Using Capillary Action of Crosslinked Sensing Fluid, Year II*

- Serena Jing, St. Paul Central High School, MN, United States of America

Third Award of \$1,000

ENBM004 - *Novel Point-of-Care, Non-Invasive Mild Traumatic Brain Injury (mTBI) or Concussion Diagnostic Tool*

- Paritosh Suri, Jasper High School, TX, United States of America

ENBM055 - *A Fully-Integrated and Self-Contained Lab-On-A-Chip Device for Sample Preparation, RNA Amplification, and Detection for Disease Diagnostics*

- Benjamin Liu, Arcadia High School, CA, United States of America

ENBM045 - *Synthesized Limpet Snail Teeth: A Novel Inexpensive Nanocomposite for Stronger Bio-Compatible Prosthetics*

- Soham Dessai, Academy of Science, VA, United States of America

ENBM041 - *Analysis of Retinal Fundus Images to Detect Macular Degeneration Using Machine Learning Methods*

- Alexander Cheng, Hillcrest High School, UT, United States of America

ENBM058 - *Diagnosing the Puzzle of Autism: A Wearable Micro-Movement Sensing Cap for Early Pediatric Screening*

- Samuel Ferguson, Christian Unified High School, CA, United States of America

ENBM029 - *Formulation of a Bovine Gelatin Crosslinked Scaffold for Potential Human Tissue Applications: Cost-Effective, Patient Specific Alternative Treatment of Acetabular Labral Tears of the Hip*

- Sophie Edelstein, Wilbur Cross High School, CT, United States of America

ENBM044 - *MyHealth: A Novel Wearable Solution for Early Detection and Monitoring of Parkinson's Disease and a Transformation from Subjective to Quantifiable Testing*

- Surabhi Mundada, Olympia High School, WA, United States of America

Fourth Award of \$500

ENBM026T - *Accurate, Low-Cost Diagnosis and Monitoring of Parkinson's Disease by Detecting Dysphonic Features through a Machine-Learning Algorithm*

- Rishik Reddy, Amador Valley High School, CA, United States of America

ENBM026T - *Accurate, Low-Cost Diagnosis and Monitoring of Parkinson's Disease by Detecting Dysphonic Features through a Machine-Learning Algorithm*

- Parth Saxena, Amador Valley High School, CA, United States of America

ENBM026T - *Accurate, Low-Cost Diagnosis and Monitoring of Parkinson's Disease by Detecting Dysphonic Features through a Machine-Learning Algorithm*

- Shiladitya Dutta, Foothill High School, CA, United States of America

ENBM036 - *Detecting the Elusive Lyme Disease: Creating a Novel Lateral Flow Test for Detection of Borrelia burgdorferi in Ticks*

- Luke Little, Timber Ridge Scholars Academy, MO, United States of America

ENBM035 - *High-Dimensional Single-Cell Cytometry Analysis for Understanding Cancer Stemness*

- Madeleine Yang, Detroit Country Day School, MI, United States of America

ENBM048 - *Prosthetic Replacement Technology Mark 6 (PRT-6)*

- Aristomenes Tambakis, QSI Chengdu, Sichuan, China

ENBM038T - *The Influence of Metalized Graphene Oxide/Reduced Graphene Oxide and Sulfonated Polystyrene on Dental Pulp Stem Cell Differentiation and Protein Adsorption*

- Rachel Sacks, Hebrew Academy of the Five Towns and Rockaway, NY, United States of America

ENBM038T - *The Influence of Metalized Graphene Oxide/Reduced Graphene Oxide and Sulfonated Polystyrene on Dental Pulp Stem Cell Differentiation and Protein Adsorption*

- Gila Schein, Hebrew Academy of the Five Towns and Rockaway, NY, United States of America

ENBM007T - *Microsensors Monitoring Devices Regarding the Rehabilitation Process Carried Out After Orthopaedic Surgeries of the Lower Limb*

- Miruna Ojoga, International Computer High School of Bucharest, Romania

ENBM007T - *Microsensors Monitoring Devices Regarding the Rehabilitation Process Carried Out After Orthopaedic Surgeries of the Lower Limb*

- Ana-Maria Tudorache, International Computer High School of Bucharest, Romania

ENBM015 - *Bioengineering the Lung: Directed Differentiation of Human Pluripotent Stem Cells into Definitive Endoderm on a Lung Extracellular Matrix*

- Meghana Iyer, Edina High School, MN, United States of America

ENBM005 - *Body Balance Ability Monitor Based on Acceleration Spectrum Analysis*

- Zewei Shi, Beijing No. 4 High School, China

ENBM021 - *A Novel High-Efficiency System for Infant Warming through Secondary Heating Mechanisms*

- Swathi Srinivasan, Beachwood High School, OH, United States of America

CELLULAR AND MOLECULAR BIOLOGY

Intel ISEF Best of Category Award Winner of \$5,000

CELL053 - *A Morphokinetic and Machine Learning Model for Aneuploidy Screening of Human Preimplantation Embryos*

- Davey Huang, Iolani School, HI, United States of America

First Award of \$3,000

CELL020 - *Tactile Stimulation of the Tongue Elicits the Activation of TrkC Neurons in the Trigeminal Ganglion*

- Madison Sneve, duPont Manual High School, KY, United States of America

CELL024 - *Circumventing Traditional Bottlenecks in Glioma Genetic Therapy: Ultra-pH Sensitive Nanodelivery Vehicles*

- Marc Huo, Jericho High School, NY, United States of America

CELL053 - *A Morphokinetic and Machine Learning Model for Aneuploidy Screening of Human Preimplantation Embryos*

- Davey Huang, Iolani School, HI, United States of America

Second Award of \$1,500

CELL036 - *A Novel Systemic Approach to Cardiometabolic Disease with Dual Therapeutics*

- Marissa Sumathipala, Broad Run High School, VA, United States of America

CELL045T - *Site-Specific Integration of Large DNA Fragments: Evaluating and Redesigning Genome Editing Systems*

- Kshitij Sachan, Plano East Senior High School, TX, United States of America

CELL045T - *Site-Specific Integration of Large DNA Fragments: Evaluating and Redesigning Genome Editing Systems*

- Yesh Doctor, Plano East Senior High School, TX, United States of America

Third Award of \$1,000

CELL046 - *Neurotrophin Receptor Isoform Expression Analysis in Breast Invasive Carcinoma: Potential Considerations for Targeted Therapy and Precision Medicine*

- Vaishnavi Phadnis, Nikola Tesla STEM High School, WA, United States of America

CELL016 - *Autism and Genetics: Understanding the Role of AUTS2 in the Pathology of Autism Spectrum Disorder*

- Katherine Miles, Sleepy Hollow High School, NY, United States of America

CELL050 - *Retain CHD7, an Epigenetic Regulator, in the Nucleus to Combat Breast Cancer Metastasis*

- Kenneth Jiao, Indian Springs School, AL, United States of America

CELL004 - *Optimization of Zinc Oxide Nanoparticles for Vaccine Delivery*

- Hari Sowrirajan, Cherry Creek High School, CO, United States of America

CELL021 - *Epigenetic and Biotransformation Effects of Hookah Smoke Extract on Human Oral Keratinocytes*

- Anusha Zaman, Baton Rouge Magnet High School, LA, United States of America

Fourth Award of \$500

CELL001 - *Galectin-4 and the Functions of N- and C- Terminal Domains in Innate Immunity*

- Marissa McDonald, Union Grove High School, GA, United States of America

CELL003 - *Effect of Thymol on Telomerase Systems: A Potential "Catch-All" Cure for Cancer Therapy*

- Eric Wang, Chattahoochee High School, GA, United States of America

CELL023 - *Identification of TBX3 as a Novel Regulator of Lung Angiogenesis*

- Michael Lai, Jericho Senior High School, NY, United States of America

CELL049 - *An Investigation into Caffeine as a Migraine Treatment and Its Effects on the Severity of Spreading Depolarizations*

- Rusty Ludwigsen, The Early College Academy, NM, United States of America

CELL048 - *Lecithin-Retinol Acyl Transferase in Squamous Cell Carcinoma: The Relationship between Oncology and Wound Repair*

- Emily Peterson, Smithtown High School East, NY, United States of America

CHEMISTRY

Intel ISEF Best of Category Award Winner of \$5,000

CHEM062 - *Discovery and Characterization of an Undocumented Ferric Sulfate Compound Formed by the Reaction of Gold Ore with Sulfuric Acid*

- Kyle Fridberg, Fairview High School, CO, United States of America

First Award of \$3,000

CHEM042 - *Solution Grown and Tunable Plastic Magnets: Room Temperature Ferromagnetism in Mesoscopic Conjugated Polymer Rings*

- Arnob Das, Jesuit High School, OR, United States of America

CHEM062 - *Discovery and Characterization of an Undocumented Ferric Sulfate Compound Formed by the Reaction of Gold Ore with Sulfuric Acid*

- Kyle Fridberg, Fairview High School, CO, United States of America

Second Award of \$1,500

CHEM047 - Development of an Algorithm to Filter and Assign Signals in Protein NMR Spectroscopy to Accelerate Drug Discovery

- Suganth Kannan, American Heritage School, FL, United States of America

CHEM032 - Spin-Orbit Coupling Induced Heterogeneous Excited-State Dynamics of 6-Coordinate Transition Metal Protodyes

- Archana Verma, Jericho High School, NY, United States of America

CHEM006T - Utilization of Carbon Monoxide as a Reducing Agent for C-C and C-N Bond Formation: Application to Asymmetric Catalyst and Synthesis of New Effective Fungicide

- Maria Makarova, Moscow Chemical Lyceum of Moscow South-Eastern Lyceum and Grammar School Complex, Russian Federation

CHEM023T - Leading the Environment with Less Lead, Nano-Structured Jordanian Kaolinite for the Removal of Lead from Industrial Waste Water

- Bayan Abu Alragheb, Al-Hasaad Al-Tarbawi School, Jordan

CHEM023T - Leading the Environment with Less Lead, Nano-Structured Jordanian Kaolinite for the Removal of Lead from Industrial Waste Water

- Ayah Shehadeh, Al-Hasaad Al-Tarbawi School, Jordan

CHEM006T - Utilization of Carbon Monoxide as a Reducing Agent for C-C and C-N Bond Formation: Application to Asymmetric Catalyst and Synthesis of New Effective Fungicide

- Alexandra Samoylova, Moscow Chemical Lyceum of Moscow South-Eastern Lyceum and Grammar School Complex, Moscow, Russian Federation

Third Award of \$1,000

CHEM004T - *Caffeine Termiticide: Caffeine as a Novel and Eco-friendly Termiticide*

- Zhan Yi Chng, Chung Ling High School, Penang, Malaysia

CHEM004T - *Caffeine Termiticide: Caffeine as a Novel and Eco-friendly Termiticide*

- Xian Jing Koay, Chung Ling High School, Penang, Malaysia

CHEM030T - *Saponin Anti Larvae Treatment (S.A.L.T)*

- Raul Vimal Kumar, Penang Free School, Georgetown, Malaysia

CHEM030T - *Saponin Anti Larvae Treatment (S.A.L.T)*

- Norman Sim, Penang Free School, Georgetown, Malaysia

CHEM020T - *High Efficiency TADF-based Transparent OLEDs*

- Yun-Ching Wu, Taipei First Girls High School, Taiwan, Chinese Taipei

CHEM020T - *High Efficiency TADF-based Transparent OLEDs*

- Yi-Chen Chen, Taipei First Girls High School, Chinese Taipei

CHEM027T - *A Novel Zwitterionic Superparamagnetic Iron Oxide Nanoparticle Synthesis*

- Shrikant Chand, Detroit Country Day School, MI, United States of America

CHEM027T - *A Novel Zwitterionic Superparamagnetic Iron Oxide Nanoparticle Synthesis*

- Marlies Michielssen, Washtenaw International High School, MI, United States of America

CHEM058 - *Silk Torsional Actuators: Automatic Moisture-Activated Emergency Locator for Aircraft Life Vests*

- Joycelyn Yiu, Plano Senior High School, TX, United States of America

CHEM073 - *Synthesis of Iron Oxide Nanorods*

- Andrea Noronha, Redlands High School, CA, United States of America

Fourth Award of \$500

CHEM049T - *Design, Synthesis and Bioevaluation of Novel Hydroxamic Acids Incorporating 2-Oxoindoline Moiety as Histone Deacetylase Inhibitors and Anticancer Agents*

- Nam Anh Vu, High School for Gifted Students, Hanoi University of Science, Viet Nam

CHEM033 - *Gold Nanoparticles as a Colorimetric Sensor for Escherichia coli*

- Aparna Paul, Elizabethtown Area High School, PA, United States of America

CHEM061 - *Surface-Migrating Additives to Improve Stain Resistance of Coatings*

- Kairav Kukkala, Ballard High School, KY, United States of America

CHEM063 - *Improving Nitration Activity of Fused TxtE-CYP102A1 Reductase Domain by Optimizing the Linker Length*

- Padmavathi Reddy, American Heritage School, FL, United States of America

CHEM048T - *Zerumbone Derivatives: New Candidates for Cancer Treatment*

- Mai Do, Tran Phu Gifted High School, Viet Nam

CHEM048T - *Zerumbone Derivatives: New Candidates for Cancer Treatment*

- Quan Bui, Tran Phu Gifted High School, Viet Nam

CHEM055 - *Optimization of Temperature Conditions for Pristine Graphene Synthesis*

- Govind Krishna, duPont Manual High School, KY, United States of America

CHEM024T - *Semiconductor Cells for Photocatalytic Decomposition of Industrial Dyes under Visible Light*

- Nichakorn Kheawkham, Princess Chulabhorn Science High School Pathumthani, Pathumthani, Thailand

CHEM024T - *Semiconductor Cells for Photocatalytic Decomposition of Industrial Dyes under Visible Light*

- Pimpayom Sudcharean, Princess Chulabhorn Science High School Pathumthani, Pathumthani, Thailand

CHEM049T - *Design, Synthesis and Bioevaluation of Novel Hydroxamic Acids Incorporating 2-Oxoindoline Moiety as Histone Deacetylase Inhibitors and Anticancer Agents*

- Khue Tran, High School for Gifted Students, National University-Hanoi, Viet Nam

CHEM010 - *Copper Oxide Nanoparticles for Adsorption of Phosphate in a Novel Gel-loaded Delivery System*

- Kunal Upadya, Vanguard High School, FL, United States of America

CHEM024T - *Semiconductor Cells for Photocatalytic Decomposition of Industrial Dyes under Visible Light*

- Preeyaporn Kandeey, Princess Chulabhorn Science High School Pathumthani, Pathumthani, Thailand

COMPUTATIONAL BIOLOGY AND BIOINFORMATICS

Intel ISEF Best of Category Award Winner of \$5,000

CBIO025 - *DNALoopR: A Novel High-Performance Machine Learning Predictor to Identify Genome-Wide 3D DNA Interactions in Cancer*

- Prathik Naidu, Thomas Jefferson High School for Science and Technology, VA, United States of America

First Award of \$3,000

CBIO025 - *DNALoopR: A Novel High-Performance Machine Learning Predictor to Identify Genome-Wide 3D DNA Interactions in Cancer*

- Prathik Naidu, Thomas Jefferson High School for Science and Technology, VA, United States of America

Second Award of \$1,500

CBIO024 - *Overcoming Lung Cancer with Novel Computationally Boosted Antibody Biosensor*

- Pranav Neyveli, Mills.E.Godwin High School, VA, United States of America

CBIO045 - *Deep Learning Assessment of Tumor Proliferation in Histopathological Images for Categorical and Molecular Breast Cancer Severity Diagnosis*

- Manan Shah, The Harker School, CA, United States of America

CBIO028 - *Combating Neurovirulence of Zika and Flavivirus Epidemics Using In Silico Phylogenetic Analysis and RNAi Gene Silencing*

- Mythri Ambatipudi, Saint Francis High School, CA, United States of America

Third Award of \$1,000

CBIO038 - SiteKey: A Novel Binding Site Predictor for Ordered Proteins Interacting with Intrinsically Disordered Proteins

- Sagar Maheshwari, Unionville High School, PA, United States of America

CBIO014 - The Application of Machine Learning Algorithms on EEG Data to Predict and Detect Epileptic Seizures

- Neha Hulkund, Tesla STEM High School, WA, United States of America

CBIO050 - Engineering an Anti-Inflammatory Drug Delivery System for Islet Transplantation

- Jahizreal Aquart, BEST Academy High School at Benjamin S. Carson, GA, United States of America

CBIO010 - A Novel Pan-Cancer Approach to Quantify Tumor Mutational Burden and Clinical Data Predictors for Immunotherapy Response towards Personalized Medicine

- Aditya Jain, Westview High School, OR, United States of America

Fourth Award of \$500

CBIO008 - A Non-Invasive Diagnosis Method for Eye Cancers Using Machine Learning Algorithms

- Suraj Modi, Mountain View High School, GA, United States of America

CBIO002 - Detection of Premalignant Pancreatic Cancer via Computational Analysis of Serum Proteomic Profiles

- Shobhita Sundaram, Greenwich High School, CT, United States of America

CBIO033 - Using Machine Learning to Predict Postprandial Blood Glucose in Type 1 Diabetics

- Kimberly Stahovich, John W. North High School, CA, United States of America

CBIO032 - Towards Accurate Copy Number Calling in High Ploidy Tumors

- Jessica Frank, Riverdale Country School, NY, United States of America

CBIO031 - Computer Simulation of Genetically Modified Aedes aegypti Release Methods

- Gregory Schwartz, duPont Manual High School, KY, United States of America

EARTH AND ENVIRONMENTAL SCIENCES

Intel ISEF Best of Category Award of \$5,000

EAEV039 - Modeling the Effects of Land Use Change on Flooding in Pacific Northwest Streams to Promote Green Practices

- Adam Nayak, Cleveland High School, OR, United States of America

First Award of \$3,000

EAEV039 - Modeling the Effects of Land Use Change on Flooding in Pacific Northwest Streams to Promote Green Practices

- Adam Nayak, Cleveland High School, OR, United States of America

EAEV086 - *Radiochemistry and AI: Development of an Analytical Capability Using Machine Learning Algorithms for Early Detection of Radionuclides in the Environment*

- Anushka Nair, Lake Oswego High School, OR, United States of America

Second Award of \$1,500

EAEV068 - *Mathematically Cutting to the Bone: Solving Analytical Problems in ESR Dating the Paleolithic Site at Isimila, Tanzania*

- Neeraj Sakhrani, Bronx High School of Science, NY, United States of America

EAEV088 - *An Innovative Crowdsourcing Approach to Monitoring Freshwater Bodies*

- Sahithi Pingali, Inventure Academy, Karnataka, India

EAEV050 - *Estimating CO₂ and CH₄ Emissions from Washington DC Using Low Cost Sensors and Small Drone Technology*

- Siona Prasad, Thomas Jefferson High School for Science and Technology, VA, United States of America

EAEV035 - *Using Dropsonde Descending Speed to Determine Vertical Air Velocity in a Hurricane*

- Megan Tang, York School, CA, United States of America

EAEV063 - *Can Ants Help Save the Bees? Developing a Better Model for Screening Pesticide Effects on Honeybee Social Behavior*

- James Sappington, South River High School, MD, United States of America

Third Award of \$1,000

EAEV012 - *Use of Waste Carbon Dioxide as a Renewable Reagent to Catalytically Synthesize Commercially Useful Cyclic Carbonates*

- Meghana Bollimpalli, Little Rock Central High School, AR, United States of America

EAEV011T - *The Synthesis of High Oil Affinity Ester Macro Molecule with Renewable Resources*

- King Lun Chan, Po Leung Kuk Ngan Po Ling College, China, Hong Kong Special Administrative Region

EAEV011T - *The Synthesis of High Oil Affinity Ester Macro Molecule with Renewable Resources*

- Yu Hin Ching, Po Leung Kuk Ngan Po Ling College, China, Hong Kong Special Administrative Region

EAEV002T - *Study and Modeling of Pressure and Temperature during a Geyser Eruption*

- Elias Suvanto, Gymnase Jean Sturm, Alsace, France

EAEV002T - *Study and Modeling of Pressure and Temperature during a Geyser Eruption*

- Jean-Baptiste Flieller, Gymnase Jean Sturm, Alsace, France

EAEV030 - *Increasing the Sustainability of a Heterotrophic Algae Biomass Production System: A Six Year Study of Chlorella vulgaris*

- Alexandra Gabrielski, Viera High School, FL, United States of America

EAEV011T - *The Synthesis of High Oil Affinity Ester Macro Molecule with Renewable Resources*

- Pok Him Michael Leung, Po Leung Kuk Ngan Po Ling College, HKSAR, China, Hong Kong Special Administrative Region

EAEV075 - *America's Farming Future: The Impact of Climate Change on Crop Yields*

- Lillian Petersen, Los Alamos High School, NM, United States of America

EAEV053 - A Novel, Cost-Effective Water Filtration and Desalination Technique Based on Biodegradable Superabsorbent Polymers

- Joseph Galasso, Galasso Homeschool, AZ, United States of America

EAEV055 - Monitoring Drought Conditions in the Sequoia National Forest in California by Using Satellite Imagery

- Anthony Weng, Terre Haute South Vigo High School, IN, United States of America

Fourth Award of \$500

EAEV067 - Factors Affecting the Discharge of Micro-Plastic Fibers from Household Laundry

- Noel Lange, Auburn High School, AL, United States of America

EAEV092 - Effects of Ocean Acidification on Primary Consumers in a Marine Ecosystem

- Titus Patton, Sanger High School, CA, United States of America

EAEV058 - Detection of Built-Up Areas from ERS-2, Envisat and Sentinel-1 Synthetic Aperture Radar Data

- Eva-Maria Tonson, Hugo Treffner Gymnasium, Tartumaa, Estonia

EAEV010 - Groundwater Quality of the Aquifers Underlying the Mississippi Embayment and the Gulf Coastal Plain

- Krishna Patel, Arkansas School for Mathematics, Sciences, and the Arts, AR, United States of America

EAEV005 - Improving Shade Balls

- Kenneth West, Melbourne High School, FL, United States of America

EAEV070T - Micro and Nano Engineering for Wastewater: Toxic Cr(VI) Remediation Using Biochar and Nanoparticle from Wastewater

- Pattiyage Kavishka, We/Pili/S.De.S Jayasinghe Central Collage, Wastern, Sri Lanka

EAEV018 - *Arsenic Contamination through Tsunami Wave Movement in Hawaii: Investigating the Concentration of Heavy Metals in the Soil from the 1960 Hilo, Hawaii Tsunami*

- Jared Goodwin, Hilo High School, HI, United States of America

EAEV070T - *Micro and Nano Engineering for Wastewater: Toxic Cr(VI) Remediation Using Biochar and Nanoparticle from Wastewater*

- Alujjage Perera, S.De.S.Jayasinghe Central Collage, Western, Sri Lanka

EAEV044 - *A Study of Westward Recurving Tropical Cyclone Tracks in the Atlantic*

- Abbigayle Cuomo, Commack High School, NY, United States of America

EAEV034 - *Impacts of Altered Precipitation Regimes on the Distribution of Dryland Soil Nitrogen*

- Jarek Kwiecinski, Albuquerque Institute for Math and Science, NM, United States of America

EAEV033 - *Impact of Road Salt Usage on Atmospheric Concentrations of Cl & Na PM 2.5*

- Rashad Prendergast, Cass Technical High School, MI, United States of America

EMBEDDED SYSTEMS

Intel ISEF Best of Category Award Winner of \$5,000

EBED031 - *LaserWAN - Laser Broadband Internet Connections*

- Valerio Pagliarino, I.I.S. Nicola Pellati, Asti, Italy

First Award of \$3,000

EBED031 - *LaserWAN - Laser Broadband Internet Connections*

- Valerio Pagliarino, I.I.S. Nicola Pellati, Asti, Italy

Second Award of \$1,500

EBED008 - *A Smart Bionic Leg Brace: An Electromechanically Actuated Active-Assist Wearable Orthotic Device for Comprehensive Restoration of Gait Characteristics across Everyday Mobility Scenarios*

- Syamantak Payra, Clear Brook High School, TX, United States of America

EBED042 - *Assembly of a Novel CO2 Based Heat Zone Design to Optimize Absorption during Optic Fiber Processing*

- Eric He, High Technology High School, NJ, United States of America

EBED048 - *A Low-Cost, Clutter-Cancelling Life Detection System for First Response after Natural Disasters*

- Sachin Konan, Hamilton High School, AZ, United States of America

Third Award of \$1,000

EBED022 - *Highly Sensitive E. coli Bacteria Detection through the Integration of Gold Nanodisk Plasmon Resonance and Antibody-Antigen Binding*

- Sophie Guo, James Clemens High School, AL, United States of America

EBED045 - *Paper Circuit Printer and Its Applications*

- Chia-Yu Yeh, Chung Shan Industrial & Commercial School, Taiwan, Chinese Taipei

EBED024 - *Increasing Wifi Signal Strength Using a Phased Array Helical Antenna System*

- Alisa Hathaway, Palos Verdes Peninsula High School, CA, United States of America

EBED023 - *ResQ: A Low Cost, Wearable, Automatic Fall Detection Device for Senior Citizens*

- Arya Goutam, The Nueva School, CA, United States of America

Fourth Award of \$500

EBED017 - *The Heat Free Car: Vehicular Heatstroke Prevention System (Second-Generation Prototype)*

- Scott Soifer, North Shore Hebrew Academy High School, NY, United States of America

EBED018 - *Epi-Phone Auto-Locator*

- Maya Van Houten, Covenant Christian Academy, AL, United States of America

EBED038T - *Translating Glove for the Deaf-Mute Compatible with Smartphones*

- Tan Pham, Le Hong Phong High School for the Gifted, Viet Nam

EBED038T - *Translating Glove for the Deaf-Mute Compatible with Smartphones*

- Minh Duc Chu, Le Hong Phong High School for the Gifted, Viet Nam

EBED003T - *A.T.S.P. (Autonomic Thermal Soaring Platform)*

- Florian Vahl, Johannes-Brahms-Schule, Schleswig-Holstein, Germany

EBED004 - *A Novel Anti-Interference & None Misjudgment Digital Optical Sensor*

- Chentian Li, No. 1 High School Zhuhai City, Guangdong, China

EBED003T - *A.T.S.P. (Autonomic Thermal Soaring Platform)*

- Etienne Neumann, Johannes-Brahms-Schule, Schleswig-Holstein, Germany

EBED003T - *A.T.S.P. (Autonomic Thermal Soaring Platform)*

- Friedrich Schiller, Johannes-Brahms-Schule, Schleswig-Holstein, Germany

EBED033 - *Monitoring of Arsenic in Groundwater Sources using an Innovative IoT Sensor*

- Anjali Chadha, duPont Manual High School, KY, United States of America

ENERGY: CHEMICAL

Intel ISEF Best of Category Award Winner of \$5,000

EGCH018 - *A Paper-Based Microbial Fuel Cell for Glucose Monitoring in Saliva*

- Kendra Zhang, Jericho High School, NY, United States of America

First Award of \$3,000

EGCH018 - *A Paper-Based Microbial Fuel Cell for Glucose Monitoring in Saliva*

- Kendra Zhang, Jericho High School, NY, United States of America

Second Award of \$1,500

EGCH047 - *Symbiotically Grown Algal-Fungal Cultures for Economically Feasible and Sustainable Biofuel Production*

- McKenna Loop, Arizona College Preparatory- Erie, AZ, United States of America

EGCH001 - *Potatoes Are the Ultimate Solution to our Electricity Problems in Zimbabwe*

- Pelagia Majoni, Queen Elizabeth Girls High School, Zimbabwe

EGCH008 - *Artificial Photosynthesis: Novel Visible Light Response and Formic Acid Generation from Carbon Dioxide Using Tantalum Oxide/Tantalum Plate*

- Huiyi Wu, Ichikawa Gakuen Ichikawa High School, Chiba-pref., Japan

Third Award of \$1,000

EGCH019 - *Pack More and Charge Faster: To Improve the Capacity Retention and the Rate Performance of Lithium Batteries*

- Sophia Zhou, Dutch Fork High School, SC, United States of America

EGCH017 - *A Smart Light-Tracker Using Machine Learning and Dye-Sensitized Solar Cells*

- Malini Mukherji, Notre Dame Preparatory, MI, United States of America

EGCH048T - *Enhancement of the Behavior of a Species of NiHcd HER Electrode Using a Stable Ni(OH)₂-NiOOH Phase Transformation Redox Mediator in a Developed-Two-Step Alkaline Electrolysis Process Under Variable Current Densities*

- Jaskaran Sethi, St. Columba's School, India

EGCH038 - *A Novel Approach for the Preparation of High Efficiency Water Splitting Photocatalysts*

- Dana Alkhalidi, KFUPM Schools, Eastern Province, Saudi Arabia

EGCH048T - *Enhancement of the Behavior of a Species of NiHcd HER Electrode Using a Stable Ni(OH)₂-NiOOH Phase Transformation Redox*

Mediator in a Developed-Two-Step Alkaline Electrolysis Process Under Variable Current Densities

- Aparimeya Taneja, St. Columba's School, India

Fourth Award of \$500

EGCH036T - The Feasibility of Using Bamboo as a Source of Ethanol for Fuel

- Aaron Charnay, Sycamore High School, OH, United States of America

EGCH033 - Development of a Novel Catalyst for the More Efficient Conversion of CO₂ in H₂O to Sustainably Produce Hydrocarbons as an Alternative Form of Energy

- Aditi Kumar, Timberline High School, WA, United States of America

EGCH036T - The Feasibility of Using Bamboo as a Source of Ethanol for Fuel

- Ben Charnay, Sycamore High School, OH, United States of America

EGCH043 - Carbon Coatings on a Copper Antimonide Anode for Enhanced Performance and Lifetime in Rechargeable Metal-Ion Batteries

- Jay Chandra, Fossil Ridge High School, CO, United States of America

EGCH002 - Ultra-Thin Asymmetric Supercapacitor: Utilizing Nano-Porous Nickel and Graphene-Copper for a High Energy Density

- Alexander Mancevski, Liberal Arts and Science Academy High School, TX, United States of America

EGCH010 - Analyzing Algal Lipid Content to Optimize Biofuel Production

- Katherine Beadle, Bishop Feehan High School, MA, United States of America

ENERGY: PHYSICAL

Intel ISEF Best of Category Award Winner of \$5,000

EGPH001 - *Thermoelectric Generator Powered Tracking Concentrated Photovoltaic System*

- Camille Miles, Niceville High School, FL, United States of America

First Award of \$3,000

EGPH001 - *Thermoelectric Generator Powered Tracking Concentrated Photovoltaic System*

- Camille Miles, Niceville High School, FL, United States of America

Second Award of \$1,500

EGPH004 - *Novel Fabrication of Thin Film Luminescent Solar Concentrators*

- Bryan Chun, Oregon Episcopal School, OR, United States of America

EGPH021 - *Localizing Heat with Carbon Foam for Efficient Solar Desalination*

- Oliver Leitner, The Davidson Academy of Nevada, NV, United States of America

Third Award of \$1,000

EGPH040T - *Multi Axial Motion Unifying Gear Arrangement to Capture Wave and Other Random Run Away Energy*

- Sacheth Sathyanarayanan, National Public School, Tamil Nadu, India

EGPH040T - *Multi Axial Motion Unifying Gear Arrangement to Capture Wave and Other Random Run Away Energy*

- Sairandri Sathyanarayanan, National Public School, Tamil Nadu, India

EGPH025T - *Utilization of Rosoideae rosa Nanostructures for Optimization of Solar Cell Light Management*

- Benjamin Li, Jasper High School, TX, United States of America

EGPH025T - *Utilization of Rosoideae rosa Nanostructures for Optimization of Solar Cell Light Management*

- Anthony Jiang, Jasper High School, TX, United States of America

EGPH013 - *Development of a Non-Tracking Solar Thermal Concentrator Using the Simultaneous Multi-Surface Design Method*

- Anthony Zhou, Mission San Jose High School, CA, United States of America

Fourth Award of \$500

EGPH022 - *Smart Self-Sustaining Lighting System*

- Karlos Lenniel Miranda Garces, Adela Rolon Fuentes, Puerto Rico, Puerto Rico

EGPH009 - *Increased Tidal Barrage Energy Output through Pumping*

- Peter Menart, Carroll High School, OH, United States of America

EGPH038 - *Waste Heat Recovery to Reduce Engine Emissions*

- Eric Spilman, Mandan High School, ND, United States of America

EGPH037 - *The Converter of Three-Dimensional Oscillations into Electrical Energy*

- Valeriia Tyshchenko, Kherson Physical and Technical Lyceum of Kherson City Council Affiliated to National University of Dnipropetrovsk, Ukraine

ENGINEERING MECHANICS

Intel ISEF Best of Category Award Winner of \$5,000

ENMC003 - A Wing Is Enough: An Improved Flying Wing Based on a Bell-Shaped Lift Distribution

- Ivo Zell, Internatsschule Schloss Hansenberg, Hessen, Germany

First Award of \$3,000

ENMC039 - LifeSpin: Comprehensive Water Purification and Transportation via Induced Turbulent Flow in Conjunction with Faraday's Law of Induction

- Shane Tomaino, Rye Country Day School, NY, United States of America

ENMC003 - A Wing Is Enough: An Improved Flying Wing Based on a Bell-Shaped Lift Distribution

- Ivo Zell, Internatsschule Schloss Hansenberg, Hessen, Germany

Second Award of \$1,500

ENMC019 - Single and Simple Groove Addition Improves Propeller Efficiency

- Kotaro Tabuchi, Nanzan Boys' Senior High School, Aichi-pref., Japan

ENMC027 - Development of a Hybrid Direct Ink Write 3D Printer: A Novel Approach to 3D Printing Multi-Material Functional Devices and Flexible Electronics

- Joshua Jacob, Saint Xavier High School, KY, United States of America

ENMC034T - *Analysis of Airborne Wind Energy Systems in a Wind Tunnel to Enhance Electricity Generation Efficiently*

- Theo Guerin, Falmouth Academy, MA, United States of America

ENMC034T - *Analysis of Airborne Wind Energy Systems in a Wind Tunnel to Enhance Electricity Generation Efficiently*

- Charles Fenske, Falmouth Academy, MA, United States of America

ENMC069 - *Engineering a Laser Technique to 3D Print Robust Hydrogels for Extracellular Matrices*

- Joshua Dong, North Carolina School of Science and Mathematics, NC, United States of America

Third Award of \$1,000

ENMC021T - *Cost-Effective Remotely Operated Vehicles (ROVs) for Ecological Analysis*

- Eric Schlitzkus, Pearl City High School, HI, United States of America

ENMC021T - *Cost-Effective Remotely Operated Vehicles (ROVs) for Ecological Analysis*

- Alex Yamada, Pearl City High School, HI, United States of America

ENMC005 - *Gaze: A Low Cost, Digital Optical Device Supporting Education in Developing Countries*

- Gareth Reid, Grosvenor Grammar School, Northern Ireland, United Kingdom

ENMC026 - *Can Machines Learn to Design Better than Humans?*

- Robert van Zyl, McIntosh High School, GA, United States of America

ENMC020 - *Composites: Transforming T-Beams*

- Danika Louw, Holy Spirit Catholic High School, AL, United States of America

ENMC070T - *Calculation and Visualization of Bicycle Traffic Flows*

- Gustav Lidberg, Lugnetgymnasiet, Dalarna, Sweden

ENMC070T - *Calculation and Visualization of Bicycle Traffic Flows*

- Martin Tjern, Lugnetgymnasiet, Dalarna, Sweden

ENMC076 - *Thermoelectric-Evaporative Cloud Chamber*

- Finlay Cuffe, Sutton Grammar School, Surrey, United Kingdom

Fourth Award of \$500

ENMC067 - *You're Out! An Electronic Baseball Umpire*

- Elias Andersen, Pretty River Academy, Ontario, Canada

ENMC066 - *A Novel Approach to Prevent Damage from Earthquakes and Tsunamis with the Utilization of a Proportional Surface Hexagonal Structure and Modified Underground Two-Part Hexagonal Damping Rubber Bearing Base Isolator*

- Daniel Noon, Brophy College Preparatory, AZ, United States of America

ENMC046T - *Algae Energy*

- Seifeldin Mohamed, Suez Advanced Industrial School, Egypt

ENMC045 - *Real-Time 3D Printing Error Detection and Correction*

- William Makinen, West Potomac High School, VA, United States of America

ENMC002 - *Design and Production of an Innovative, Interactive Augmented Reality Projector*

- Tobias Gerbracht, Carl-Fuhlrott-Gymnasium, Nordrhein-Westfalen, Germany

ENMC007T - *Construction of an Electric Reel to Collect a Strand of Electric Shepherd*

- Sabrina Cornu, Agrarian School of Rosario, Colonia, Uruguay

ENMC007T - *Construction of an Electric Reel to Collect a Strand of Electric Shepherd*

- Lucia Fuentes, Agrarian School of Rosario, Colonia, Uruguay

ENMC017 - *Cryogenic Thermosuit for Manned Mission to Titan*

- Wittiker Schlauch, Clear Brook High School, TX, United States of America

ENMC046T - *Algae Energy*

- Dina Abdelaal, Suez Advanced Industrial School, Egypt

ENMC054 - *Systematic Wall Constructing Tool*

- Gangodawila Kankanamalage Gangodawila, Mayurapada Central College, North Western Province, Sri Lanka

ENVIRONMENTAL ENGINEERING

Intel ISEF Best of Category Award Winner of \$5,000

ENEV074 - *Biodegradation of Chlorpyrifos and Soil Remediation Using Native Soil Bacteria and Triton X-A Novel Approach*

- Prashaant Ranganathan, Carmel Junior College, Jharkhand, India

First Award of \$3,000

ENEV072 - *Unleading the Way! Remediation of Lead Contaminated Water with Coriandrum sativum (Cilantro) Biochar*

- Manashree Padiyath, Woodbury High School, MN, United States of America

ENEV074 - *Biodegradation of Chlorpyrifos and Soil Remediation Using Native Soil Bacteria and Triton X-A Novel Approach*

- Prashaant Ranganathan, Carmel Junior College, Jharkhand, India

Second Award of \$1,500

ENEV035 - *Addressing Global Water Scarcity: Novel Dewatering Techniques for Hydrophilic Saponified Starch-Grafted-Polyacrylamide Hydrogel Based Desalination Using UV Light, Ca(OH)₂, and Dry Ice to Improve Reusability of Super-Absorbent Polymers*

- Chaitanya Karamchedu, Jesuit High School, OR, United States of America

ENEV032 - *Crowd-Sourced Detection and Mapping of Nitrate Water Pollutants via a Mobile Web-Based Image Analysis System*

- Luca Barcelo, Greenwich High School, CT, United States of America

ENEV047T - *The Development of a Mechanized Approach to Rapidly and Sensitively Detect and Purify Water Contaminated with Shigella, E. coli, Salmonella, and Cholera through the Use of Carbon-Based Biosensors in Conjunction with Arduino-Controlled Micropipettes*

- Ryan Thorpe, Manhasset High School, NY, United States of America

ENEV047T - *The Development of a Mechanized Approach to Rapidly and Sensitively Detect and Purify Water Contaminated with Shigella, E. coli, Salmonella, and Cholera through the Use of Carbon-Based Biosensors in Conjunction with Arduino-Controlled Micropipettes*

- Rachel Chang, Manhasset High School, NY, United States of America

ENEV037 - *Functionalizing Biochar with Layered Double Hydroxides for Removal of Phosphate and Nitrate from Aqueous Solutions*

- Stefan Wan, Alexander W. Dreyfoos School of the Arts, FL, United States of America

Third Award of \$1,000

ENEV056 - *Bio-Accumulation of Oil by Aurelia aurita Mucus*

- Karina Bjazevic, Palos Verdes Peninsula, CA, United States of America

ENEV081 - *Single Chamber MFC: Filtration of Arsenic with an Exoelectrogenic Biofilm*

- Nathan Tidball, Wilsonville High School, OR, United States of America

ENEV057 - *Chocolate Garden*

- Amber Kraczkowska, Pembroke School, South Australia, Australia

ENEV071 - *Reinventing Photobioreactors: Eliminating Industrial Emissions While Producing Energy*

- Kevin Matos, The Villages Charter School, FL, United States of America

ENEV064T - *Smart Pleco: A Multi-Functional Eco-Friendly Unmanned Craft for Waterbodies Protection*

- Chon Hou Leong, Pui Ching Middle School Macau, Macau, China, Macao Special Administrative Region

ENEV064T - *Smart Pleco: A Multi-Functional Eco-Friendly Unmanned Craft for Waterbodies Protection*

- Chon Hin Ho, Pui Ching Middle School Macao, Macao, China, Macao Special Administrative Region

ENEV028 - *Engineered Environmental Containment: Using Lemna minor L. to Reduce Nitrate Levels in Aquatic Environments*

- Aaron Wills, Central Lee High School, IA, United States of America

ENEV048 - *Slick and Clean: An Investigation Into How Magnetite Can Be Used with Organic Sorbents in Oil Spill Clean-Up*

- Rebekah Kang, Presbyterian Ladies' College, Sydney, New South Wales, Australia

Fourth Award of \$500

ENEV012 - *Effective Remediation of Air Pollution and Sustainable Electricity Production using an Algal Bio Photo-Voltaic Fuel Cell (BPFC), Phase III*

- Sai Sameer Pusapaty, Liberal Arts and Science Academy, TX, United States of America

ENEV068 - *Filtration of Copper-Contaminated Water Using Crescentia kujete's Shell Based Activated Carbon*

- Jose Ramirez-Colon, Escuela Secundaria Especializada en Ciencias, Matematicas y Tecnologia, Puerto Rico

ENEV003 - *Development of a Less Expensive Method for Radon Measurements*

- Jose Ocegueda Sanchez, Centro de Ensenanza Tecnica Industrial, Jalisco, Mexico

ENEV005 - *Do Herbicides and Fertilizers Found in Surface Runoff Affect the Oyster (Crassostrea virginica) and Clam (Mercenaria mercenaria) Ability to Naturally Filter and Improve the Overall Water Quality of the Indian River Lagoon?*

- Kyle Bramblett, Titusville High School, FL, United States of America

ENEV075T - Activated Carbon: Houseplant System as a Low Cost Method of Air Purification for Improving Indoor Air Quality in Urban and Sub Urban Areas in Kenya

- Priyen Pindoria, Shree Cutchi Leva Patel Samaj School, Nairobi, Kenya

ENEV041 - Low-Cost Gravity Driven Filtration System Designed Using Iron Oxide Nanoparticle-Loaded PU Foam for Arsenic Removal from Polluted Water in Developing Countries

- Arundhati Pillai, University School of Milwaukee, WI, United States of America

ENEV036 - Development of a Novel Biodegradable Plastic Film with Passiflora edulis' Byproduct

- Juliana Davoglio Estradioto, Instituto Federal de Educacao, Ciencia e Tecnologia do Rio Grande do Sul - Campus Osorio, RS, Brazil

ENEV040 - Waste Embraced 2.0: A Novel Study of the Effects of Optimized Struvite Precipitation on Biogas Production and Resource Recovery from Municipal Landfill Leachate and Wastewater Centrate

- Tanisha Martheswaran, Waterford School, UT, United States of America

ENEV075T - Activated Carbon: Houseplant System as a Low Cost Method of Air Purification for Improving Indoor Air Quality in Urban and Sub Urban Areas in Kenya

- Zeel Patel, Shree Cutchi Leva Patel Samaj School, Nairobi, Kenya

ENEV052 - Powerless Desalination: The Development of a Novel PEGylated Membrane to Exploit Ambient Thermal Energy Gradients of the Ocean

- Hyrum Diesen, Pleasant Grove High School, UT, United States of America

MATERIALS SCIENCE

Intel ISEF Best of Category Award Winner of \$5,000

MATS050 - Cellulose Nanocrystals for Security Applications: Embedding Non-Optical Signatures Provided by Nanoparticles into Cellulose Nanocrystal Chiral Nematic Films

- Nicky Wojtania, Plano West Senior High School, TX, United States of America

First Award of \$3,000

MATS050 - Cellulose Nanocrystals for Security Applications: Embedding Non-Optical Signatures Provided by Nanoparticles into Cellulose Nanocrystal Chiral Nematic Films

- Nicky Wojtania, Plano West Senior High School, TX, United States of America

MATS053 - Molecular Dynamics Simulation and Experimental Fabrication of Nanoporous Graphene Membranes for Optimal Water Permeability in Reverse Osmosis Desalination

- Apoorv Khandelwal, Nikola Tesla STEM High School, WA, United States of America

Second Award of \$1,500

MATS039 - Nanofabrication and Electroanalysis of Carbon-MEMS: A Suspended Nanometric Gap for Sensitive Biosensing

- Suryaprakash Vengadesan, Irvine High School, CA, United States of America

MATS049 - Multifunctional NGF-Au-SPIO Nanoparticles: Magnetically Directing Neurite Extension and Orientation

- Grace Hu, Jericho High School, NY, United States of America

MATS018T - *Enhancement of Magnetorheological Fluids for Prosthetic Knee Applications*

- Clara Keng, Raffles Institution, Singapore

MATS077 - *The Development of an Efficient Space Radiation Shielding Fabric*

- Hannah Steele, Liberty High School, VA, United States of America

MATS018T - *Enhancement of Magnetorheological Fluids for Prosthetic Knee Applications*

- Kit Mun Chow, River Valley High School, Singapore

Third Award of \$1,000

MATS038 - *Development and Testing of 45S5 Bioglass via Acid and Base Sol-Gel Polymerization and Fusing onto Gallus gallus domesticus Cervical Bones for Bone Grafting Treatment*

- Aditi Bawa, Loudoun County High School, VA, United States of America

MATS012 - *Collisions of a Buckyball with Graphene and SiC Sheets at Supersonic Speeds*

- Emily Liu, duPont Manual High School, KY, United States of America

MATS003 - *Ion-Solid Interactions on the Nanoscale*

- Julia Graupner, Carl-Zeiss-Gymnasium, 7743, Germany

MATS024 - *Investigating the Design of Nanoparticles to Target Difficult-to-Reach Tumors*

- Isha Lele, Hathaway Brown School, OH, United States of America

MATS048 - *A Novel Methodology to Assemble Organic Nanomaterials via Magnetophoretic Alignment*

- Vera Zarubin, The Bronx High School of Science, NY, United States of America

MATS067 - *Enhancing LiFi and Lighting: CsPbBr₃ Zero-Dimensional Perovskite and Quantum Dot Based Color Converters*

- Nadia Almutlak, AlTarbyah Allslamiya Schools, Saudi Arabia

Fourth Award of \$500

MATS054 - *Using Specific Heat Capacity to Engineer a Thermal Evacuation Suit to Address Heat Transfer Processes*

- Nick Perez, Temescal Canyon High School, CA, United States of America

MATS069T - *A Composite Material Made from Wastes of Glass, Polymers and Industrial Rubber as a Waste Management Initiative in Urban and Sub-Urban Areas in Kenya*

- Mitesh Varsani, Shree Cutchi Leva Patel Samaj School, Nairobi, Kenya

MATS061 - *The Role of Materials and Surfaces in the Transmission of Bacteria in Public Places*

- Camilla Hurst, European School Luxembourg 1, Luxembourg

MATS064 - *Biocompatible Gold Nanorod-Embedded, Crosslinked Collagen Composites for Surgical Applications: Synthesis and Characterization*

- Sachin Subramanian, BASIS Chandler, AZ, United States of America

MATS079 - *Carbon Fiber Chain Mail Protective Armor*

- Carson Weidman, West Salem High School, OR, United States of America

MATS068 - Improving Resistive RAMs' Performance by Using Single Crystal MAPbBr₃ Perovskite

- Sara Alrabiah, AlTarbya Allslamyah Schools, Saudi Arabia

MATS056 - Eye-Readable Life Saver, Development of Palladium Tungsten Oxide (Pd-WO₃) Nano-Sheet as Gasochromic Hydrogen Sensor

- Jaewoo Heo, Seoul International School, Gyunggi-Do, South Korea

MATS019 - Emergent Properties from WS₂ Empowered by Laser Sculpting and Au Nanoparticles Landscaping

- Belle Sow, NUS High School of Mathematics & Science, Singapore

MATS069T - A Composite Material Made from Wastes of Glass, Polymers and Industrial Rubber as a Waste Management Initiative in Urban and Sub-Urban Areas in Kenya

- Bilhah Ontiriah, Shree Cutchi Leva Patel Samaj School, Nairobi, Kenya

MATHEMATICS

Intel ISEF Best of Category Award Winner of \$5,000

MATH048 - The Homotopy Theory of Parametrized Objects

- Karthik Yegnesh, Methacton High School, PA, United States of America

First Award of \$3,000

MATH048 - The Homotopy Theory of Parametrized Objects

- Karthik Yegnesh, Methacton High School, PA, United States of America

Second Award of \$1,500

MATH008T - *Motivic Symbols and Classical Multiplicative Functions*

- Torstein Vik, Fagerlia Videregaende Skole, More og Romsdal, Norway

MATH008T - *Motivic Symbols and Classical Multiplicative Functions*

- Ane Espeseth, Fagerlia Videregaende Skole, More og Romsdal, Norway

MATH025T - *Bounds on the Metric Dimensions for Families of Planar Graphs*

- Carl Joshua Quines, Valenzuela City School of Mathematics and Science, Manila, Philippines

MATH025T - *Bounds on the Metric Dimensions for Families of Planar Graphs*

- Michael Sun, Shanghai American School Puxi, China

MATH030 - *Discrete Ricci Flow on Discrete 3-Manifolds*

- Anton Wu, Half Hollow Hills High School East, NY, United States of America

Third Award of \$1,000

MATH042 - *Mapping Edges to Nodes by Utilizing Morton Codes in Stochastic Kronecker Graphs*

- Arjun Ramani, West Lafayette Jr./Sr. High School, IN, United States of America

MATH024 - *Which Maps Are 4-list Colorable?*

- Juei-Yin Lin, Taipei First Girls High School, Chinese Taipei

MATH038 - *Orthogonal Polynomials and the Two Dimensional Nevai Condition*

- Gonen Zimmerman, Kfar Hayarok High School, Center, Israel

MATH040 - *Efficient Point-Counting Algorithms for Superelliptic Curves via the Cartier Operator and the Hasse-Weil Bound*

- Matthew Hase-Liu, Lynbrook High School, CA, United States of America

Fourth Award of \$500

MATH022 - *Safer Security: A Novel Algorithm for Detecting Carmichael Numbers*

- Sathwik Karnik, Massachusetts Academy of Mathematics and Science, MA, United States of America

MATH041 - *Looking into the Past for Insight on the Future: Predictive Analytics and Machine Learning for Time Series Data*

- Dahlia Dry, Fort Myers High School, FL, United States of America

MATH013 - *Generalized Problem of Apollonius*

- Egor Morozov, Lyceum "Second School", Russian Federation

MATH015 - *Generalized Jacobi Identities and Jacobi Elements of the Group Ring of the Symmetric Group*

- Savelii Novikov, School 564, Russian Federation

MATH003 - *On the Distortion of Embedding Perfect Binary Trees into Low-Dimensional Euclidean Spaces*

- Dona-Maria Ivanova, Baba Tonka Upper Secondary High School, Bulgaria

MATH043T - *A 6-Chromatic Unit Distance Graph in Space*

- Stephanie Li, Horace Mann School, NY, United States of America

MATH043T - *A 6-Chromatic Unit Distance Graph in Space*

- Thomas Lee, Stuyvesant, NY, United States of America

MICROBIOLOGY

Intel ISEF Best of Category Award Winner of \$5,000

MCRO029 - *An Early Warning System for Zika Virus in Mosquito Populations Based on Real-Time Field Detection of Viral RNA in Mosquito Saliva*

- Rahul Subramaniam, Greenwich High School, CT, United States of America

First Award of \$3,000

MCRO029 - *An Early Warning System for Zika Virus in Mosquito Populations Based on Real-Time Field Detection of Viral RNA in Mosquito Saliva*

- Rahul Subramaniam, Greenwich High School, CT, United States of America

MCRO068 - *Cell Membrane-Coated Nanodevice for Anti-Virulence Therapy Against Antibiotic Resistant Bacteria*

- Maggie Chen, Canyon Crest Academy, CA, United States of America

Second Award of \$1,500

MCRO032 - *Saving the North American Ash Tree, Year Two: Establishing *Metarhizium anisopliae* as an Endophyte in *Fraxinus uhdei**

- Nicolas Wamsley, Timber Ridge Scholars Academy, MO, United States of America

MCRO017 - *To Floss, or Not to Floss: An Oral Microbiome Investigation*

- Vivek Gopalakrishnan, Lexington High School, MA, United States of America

MCRO014 - *Identification, Pharmacological Screening, and Antivirulent Mechanistic Determination of Fractions and Compounds Isolated from Chondrus crispus and Laminaria digitata Extracts*

- Beau Bingham, Cascia Hall Preparatory School, OK, United States of America

MCRO067 - *Rescue of Nucleotide DNA Repair Deficiencies to UVB and Solar-Simulated Irradiation by Pyrimidine Dimer Glycosylases and UV Endonucleases*

- Stuti Garg, Westview High School, OR, United States of America

Third Award of \$1,000

MCRO034 - *The Effects of Nitazoxanide on Chaperone/Usher Pathway Assembled Virulence Factors in Gram-Negative Bacteria*

- Raphael Iskra, Commack High School, NY, United States of America

MCRO025 - *Bacteria Hysteria: The Antibacterial Activity of Ginger*

- Baotram Nguyen, Berks Catholic High School, PA, United States of America

MCRO001T - *Use of Phosphorus Solubilizing Bacteria with Application in Agriculture*

- Ana Valenzuela Cervantes, Colegio de Bachilleres del Estado de Sinaloa "Prof. Hermes Gonzalez Maldonado", Sinaloa, Mexico

MCRO001T - *Use of Phosphorus Solubilizing Bacteria with Application in Agriculture*

- Misael Valenzuela Zuniga, Colegio de Bachilleres del Estado de Sinaloa, Plantel 69 "Prof. Hermes Gonzalez Maldonado", Sinaloa, Mexico

MCRO053 - *Next-Gen Sequencing Analysis of Dental Biofilm Microbiome upon Gifts Nano Charcoal Cleaning*

- Pranav Chhaliyil, Maharishi School, IA, United States of America

MCRO050 - *A Novel Method to Induce and Upregulate the Production of Stable Antistaphylococcal Compounds via the Combined-Cultivation of S. salivarius and Streptomyces*

- Arjun Jain, Westwood High School, TX, United States of America

Fourth Award of \$500

MCRO062 - *Engineering of Fusion Protein Constructs to Efficiently Combat Neurological Damage Caused by E. coli K1 Meningitis*

- Sepehr Asgari, Carmel High School, IN, United States of America

MCRO010 - *Nano Today, Huge Tomorrow: Improving Antibiotic Drug Delivery for S. epidermidis Strains with a Novel CNT Dispersion*

- Afeefah Khazi-Syed, Harmony School of Innovation - Fort Worth, TX, United States of America

MCRO012 - *Applied Bacterial Biomineralization: Increasing Magnetosome Formation within Magnetospirillum magneticum through Genetic Recombination of Genes Essential to Magnetosome Formation and Mutation Mediated by UV Radiation*

- Seth Young, The Classical Academy, CO, United States of America

MCRO027 - *Construction and Mutational Analysis of a Heavy Metal Biosensor in E. coli*

- Anthony Eckdahl, Central High School, MO, United States of America

MCRO041 - *Pyrimidine Derivatives Conjugated to Gold Nanoparticles to Combat Antibiotic Resistance*

- Titash Biswas, Crescenta Valley High School, CA, United States of America

MCRO022 - *Elucidating the Mechanism of Virulence in E. coli O104:H4: Identification of the Role of Biofilms in Stx-Phage Induction*

- Neehal Tumma, Port Huron Northern High School, MI, United States of America

MCRO060 - *The Effects of Silver Nanoparticles on the Ionic Silver Resistance Plasmid (pMG101)*

- Adam Martinez, Waterloo Collegiate Institute, Ontario, Canada

PHYSICS AND ASTRONOMY

Intel ISEF Best of Category Award Winner of \$5,000

PHYS021 - *Multi-Orbit Space Debris Cloud Tracking Using Iterative Closest Points Registration with Machine Learning*

- Amber Yang, Trinity Preparatory School, FL, United States of America

First Award of \$3,000

PHYS003 - *Behind a Wisp of Smoke: Study of the Morphology of Airflow and the Cause of Stripes Formed by Smoke Particles Over a Heat Source of Constant Temperature*

- Xunjing Wei, Shanghai High School, Shanghai, China

PHYS021 - *Multi-Orbit Space Debris Cloud Tracking Using Iterative Closest Points Registration with Machine Learning*

- Amber Yang, Trinity Preparatory School, FL, United States of America

Second Award of \$1,500

PHYS058 - *Case Study of Data Mining in Observational Astronomy: The Search for New OB Stars in the Small Magellanic Cloud*

- Cormac Larkin, Colaiste an Spioraid Naoimh, Munster, Ireland

PHYS026T - *Using a Novel Methodology to Constrain the Supermassive Black Hole-Galaxy Coevolution and Analyze the Selection Bias*

- Sahil Hegde, Prospect High School, CA, United States of America

PHYS026T - *Using a Novel Methodology to Constrain the Supermassive Black Hole-Galaxy Coevolution and Analyze the Selection Bias*

- Shawn Zhang, Amador Valley, CA, United States of America

PHYS034 - *Swift XRT and UVOT Investigation of Low-Mass X-Ray Binary 1RXS J180408.9-342058*

- Audrey Saltzman, Byram Hills High School, NY, United States of America

Third Award of \$1,000

PHYS011T - *Earthshine Spectrum: Earth as an Exoplanet*

- Jongjun Park, Daegu-il Science High School, South Korea

PHYS011T - *Earthshine Spectrum: Earth as an Exoplanet*

- Juhong Bae, Daegu-il Science High School, GyeongSangbuk-do, South Korea

PHYS011T - *Earthshine Spectrum: Earth as an Exoplanet*

- Jeongin Park, Daegu-il Science High School, South Korea

PHYS024T - *Muon Scattering Tomography: Utilizing Silicon Photomultiplier Arrays to Trilaterate Muon Multiple Coulomb Scattering Events*

- Trevor Daino, Marvin Ridge High School, NC, United States of America

PHYS024T - *Muon Scattering Tomography: Utilizing Silicon Photomultiplier Arrays to Trilaterate Muon Multiple Coulomb Scattering Events*

- Michael Kronovet, Marvin Ridge High School, NC, United States of America

PHYS024T - *Muon Scattering Tomography: Utilizing Silicon Photomultiplier Arrays to Trilaterate Muon Multiple Coulomb Scattering Events*

- Arpad Voros, Marvin Ridge High School, NC, United States of America

PHYS033 - *Extra Radial Muon Orbit Distortion with E821 Beta Function*

- Rushabh Mehta, Syosset Senior High School, NY, United States of America

PHYS028 - *On T-Reflection via Analytic Continuation in Quantum Mechanics*

- Sambuddha Chattopadhyay, Montgomery Blair High School, MD, United States of America

PHYS040 - *Deciphering the Sedimentary Record of Galle Crater, Mars*

- Alida Schott, Baltimore Polytechnic Institute, MD, United States of America

Fourth Award of \$500

PHYS047 - *A Novel Spectroscopic-Chemical Sensor Using Photonic Crystals*

- Sulekh Fernando-Peirís, Mount Vernon High School, OH, United States of America

PHYS037 - *On the Stability of Bahcall-Wolf Cusps of Dark Matter Orbiting Supermassive Black Hole Binary Systems*

- Josef Zimmerman, Academy of Science, VA, United States of America

PHYS018 - *The Mathematical Identification of Exoplanet Candidates through N-body Simulations*

- Ana Humphrey, T.C. Williams High School, VA, United States of America

PHYS006T - *Numerical Methods of Raytracing in Curved Spacetimes According to Einstein's Theory of General Relativity*

- Jakub Szewczyk, II Liceum Ogólnokształcące im. Generalowej Zamoyskiej i Heleny Modrzejewskiej w Poznaniu, Wielkopolska, Poland

PHYS006T - *Numerical Methods of Raytracing in Curved Spacetimes According to Einstein's Theory of General Relativity*

- Grzegorz Uriasz, I Liceum Ogólnokształcące im. Mikołaja Kopernika w Krosnie, Wielkopolska, Poland

PHYS043 - *Deviation Patterns of the Orbital Trajectories of the Galilean Satellites*

- Benjamin Breer, The Gwinnett School of Mathematics, Science, and Technology, GA, United States of America

PHYS051 - *A Linked Learning Approach to Automated Galaxy Morphology Classification*

- Zhengdong Wang, Hamilton High School, AZ, United States of America

PLANT SCIENCES

Intel ISEF Best of Category Award Winner of \$5,000

PLNT013 - *Bad Altitude: Climate Change in the Alpine May Alter Beneficial Relationships between Plants and Their Fungal Symbionts*

- Isabella Bowland, Fairview High School, CO, United States of America

First Award of \$3,000

PLNT013 - *Bad Altitude: Climate Change in the Alpine May Alter Beneficial Relationships between Plants and Their Fungal Symbionts*

- Isabella Bowland, Fairview High School, CO, United States of America

PLNT053 - *The Effects of Mycorrhizal Fungi on Ustilago maydis*

- Amanda Wilson, Northwestern High School, IN, United States of America

Second Award of \$1,500

PLNT028T - *Insecticidal Activity of Acacia (Samanea saman) Bark Extract Against Adult Rice Black Bug (Scotinophora sp.)*

- Rubeliene Chezka Gloria, Davao City National High School, Davao Del Sur, Philippines

PLNT028T - *Insecticidal Activity of Acacia (Samanea saman) Bark Extract Against Adult Rice Black Bug (Scotinophora sp.)*

- Nadine Antonette Obafial, Davao City National High School, Davao del Sur, Philippines

PLNT028T - *Insecticidal Activity of Acacia (Samanea saman) Bark Extract Against Adult Rice Black Bug (Scotinophora sp.)*

- Myrelle Angela Colas, Davao City National High School, Davao del Sur, Philippines

PLNT004 - *Identification of dsRNA Mycoviruses in Plant-Pathogenic Fungus Fusarium oxysporum*

- Martin Matl, Gymnazium Brno, Trida Kapitana Jarose, Prispevkova Organizace, Jihomoravsky Kraj, Czech Republic

PLNT046 - *The Effect of Sodium Chloride on Hybrid Taxodium Species*

- Anna Koonce, St. Joseph's Academy, LA, United States of America

Third Award of \$1,000

PLNT060 - *Novel Methods of Augmenting Plant Pollination*

- Paul Gauvreau, Canyon Crest Academy, CA, United States of America

PLNT026 - *Investigation of the Disparity between the Abundance of Tamalia spp. Galls on Arbutus unedo and Arctostaphylos spp.*

- Kaden Agha, York School, CA, United States of America

PLNT017 - *Up the Creek*

- Mary-Anne Poyitt, Redeemer Baptist School, New South Wales, Australia

PLNT048 - *Modeling the Spatio-Temporal Dynamics of Late Blight: Optimization, Validation, and Applications*

- Benjamin Firester, Hunter College High School, NY, United States of America

PLNT057T - *Optimization of Cellobiase Function in Breakdown of Cellulosic Material Using Co-Enzymes: A Model for Biofuel Enhancement*

- Pranav Sriram, Carmel High School, IN, United States of America

PLNT057T - *Optimization of Cellobiase Function in Breakdown of Cellulosic Material Using Co-Enzymes: A Model for Biofuel Enhancement*

- Jay Maturi, University High School of Indiana, IN, United States of America

Fourth Award of \$500

PLNT051 - *Fabulous Molecular Markers: Preventing Favism by Identifying Faba Bean Mutants*

- Melody Song, Evan Hardy Collegiate Institute, Saskatchewan, Canada

PLNT039 - *The Reversal of Harms Done by the Drought: How the Carbon and Nitrogen Levels Affect Fusarium oxysporum f.sp. Lycopersici Race 3 in Soils to Impact Solanum lycopersicum (Tomato) Plant Growth*

- Teevyah Yuva Raju, Mira Loma High School, CA, United States of America

PLNT050 - *Developing Rapid Technologies to Access Root Cell-Type Specific Gene Regulation in Rice (Oryza sativa L.)*

- Yushan Su, Martin Luther King High School, CA, United States of America

PLNT002 - *BioPatriam: Biodiversity Preservation with Brazilian Native Plant*

- Maria Eduarda de Almeida, Instituto Federal de Educacao, Ciencia e Tecnologia do Rio Grande do Sul (IFRS) - Campus Osorio, Rio Grande do Sul, Brazil

PLNT014 - *Creating a Model System for Micronutrient Fortification*

- Sedra Khan, Niles Township West High School, IL, United States of America

PLNT027 - *A Study of Circadian Genetics and Abiotic Stress towards Sustainable Agriculture*

- Maya Geradi, Wilbur Cross High School, CT, United States of America

PLNT044 - *Molecular Characterization and Enhanced Efficacy in the Development of a Novel Host-Specific Bioherbicide Candidate for Cyperus rotundus*

- Haniya Shareef, Lincoln Park Academy, FL, United States of America

ROBOTICS AND INTELLIGENT MACHINES

Intel ISEF Best of Category Award Winner of \$5,000

ROBO001 - *Drone Defense System: Detection, Tracking, Classification and Targeting of Flight Objects in 3D and Real Time*

- Tassilo Schwarz, Johannes-Heidenhain-Gymnasium Traunreut, Bayern, Germany

First Award of \$3,000

ROBO001 - *Drone Defense System: Detection, Tracking, Classification and Targeting of Flight Objects in 3D and Real Time*

- Tassilo Schwarz, Johannes-Heidenhain-Gymnasium Traunreut, Bayern, Germany

Second Award of \$1,500

ROBO032 - *Deep Learning-Based Automated Tool Detection and Analysis of Surgical Videos to Assess Operative Skill*

- Amy Jin, The Harker School, CA, United States of America

ROBO031 - *Unlocking History: An Algorithm to Virtually Unfold 3D Computed Tomography Scans of Unopened Historical Documents*

- Holly Jackson, Notre Dame High School San Jose, CA, United States of America

ROBO028T - *Mitosis Detection and Tumor Grading Using Deep Convolutional Neural Networks*

- Nikhil Cheerla, Monta Vista High School, CA, United States of America

ROBO028T - *Mitosis Detection and Tumor Grading Using Deep Convolutional Neural Networks*

- Anika Cheerla, Monta Vista High School, CA, United States of America

Third Award of \$1,000

ROBO035 - *Prosthetic Arm Controlled by Legs' Transmitter for Disabled People*

- Huy Pham, Quang Tri Town High School, Viet Nam

ROBO024 - *An Early Myocardial Infarction Detection System Using Complex Artificial Intelligence*

- Abhinav Gundrala, Olympia High School, WA, United States of America

ROBO020 - *Autonomous Off-Road Vehicle Using Computer Vision for Surveillance Applications*

- Guadalupe Bernal, Folsom High School, CA, United States of America

ROBO015 - *Safecopter: Developing a Collision Avoidance System Based on an Array of Time-of-Flight 3D Cameras*

- Robert Tacescu, Clovis North High School, CA, United States of America

Fourth Award of \$500

ROBO025 - *Utilizing Machine Learning Techniques to Identify Cancerous Skin Lesions*

- Christopher Kang, Hanford High School, WA, United States of America

ROBO010 - *Mars Habitation Constructor: An Autonomous Device Capable of Printing Structures on the Surface of Mars Using Native Materials*

- Cole Tucker, Thomas Worthington High School, OH, United States of America

ROBO005T - Self-Adapting Machines on Basis of Microcontroller

- Tamar Korkotashvili, LPPL Vladimer Komarovi Tbilisi Physics and Mathematics No. 199 Public School, Tbilisi, Georgia

ROBO005T - Self-Adapting Machines on Basis of Microcontroller

- Dimitri Korkotashvili, LPPL Vladimer Komarovi Tbilisi Physics and Mathematics № 199 Public School, Georgia

ROBO005T - Self-Adapting Machines on Basis of Microcontroller

- Aleksandre Khokhiashvili, LPPL Vladimer Komarovi Tbilisi Physics and Mathematics No. 199 Public School, Georgia

ROBO047 - Braille Reading and Training System

- Maggie Ford, Mississippi School for Mathematics and Science, MS, United States of America

ROBO041 - Cyclos - Preventing Low Back Pain Among Cyclists Using the Autoregressive Model with a Real-Time Feedback Mechanism

- Kunj Dedhia, Dhirubhai Ambani International School, Maharashtra, India

SYSTEMS SOFTWARE

Intel ISEF Best of Category Award Winner of \$5,000

SOFT042 - MFT: Improving Convolutional Object Tracking with Feed Separated Learning

- Michael Lee, Manhasset High School, NY, United States of America

First Award of \$3,000

SOFT014 - *Adding Data-Aware Sort Optimizations to the Python Interpreter*

- Elliot Gorokhovskiy, Fairview High School, CO, United States of America

SOFT042 - *MFT: Improving Convolutional Object Tracking with Feed Separated Learning*

- Michael Lee, Manhasset High School, NY, United States of America

Second Award of \$1,500

SOFT030 - *Edison Vein ID (EVID) System: User Authentication through Peripheral Vein Biometrics*

- Ritik Patnaik, Plano East Senior High School, TX, United States of America

SOFT056 - *Scin: An Application to Detect and Diagnose Plant and Skin Diseases Utilizing a Feed Forward Convolutional Neural Network*

- Neil Deshmukh, Moravian Academy, PA, United States of America

SOFT023 - *PrediMed: Predicting Health with a Custom-Built Machine Learning Ensemble*

- Alexander Zlokapa, Golden Hills Academy, CA, United States of America

Third Award of \$1,000

SOFT022 - *Temporal Amplification of Photoplethysmographic and Biometric Signals Hidden in Video Streams for Contactless Monitoring of Cardiovascular Health and Identity Authentication*

- Eshika Saxena, Interlake High School, WA, United States of America

SOFT010 - *Variable Density Cubic Infill for Fused Filament Fabrication*

- Martin Boerwinkle, Arkansas School for Mathematics, Sciences, and the Arts, AR, United States of America

SOFT001 - *Applying Machine Learning to WiFi Channel State Information for Smart, Safe, Energy Saving Buildings*

- Emily Wang, William G. Enloe High School, NC, United States of America

SOFT008 - *AirPhone: Cloud Generation Smartphones*

- Uladzislau Hadalau, State Institution of Education "Secondary School No 11 the Town of Slutsk", Minsk Region, Belarus

SOFT052 - *Language Identification Based on the Variations in Intonation Using Multi-Classifer Systems*

- Shinjini Ghosh, South Point High School, West Bengal, India

Fourth Award of \$500

SOFT039 - *Chemoscope: An Android Application Integrated Augmented Reality and Mixed Reality to Assist Chemistry Learners*

- Thu Tran Thi, Bao Loc High School for the Gifted, Lam Dong, Viet Nam

SOFT026 - *Lumos: Automated Smartphone-Based Ophthalmic Screening for Glaucoma Using Computer Vision and Deep Learning Algorithms through Low-Cost and Non-Mydriatic Retinal Fundus Imaging*

- Shalin Shah, Tesoro High School, CA, United States of America

SOFT005 - *Mutasd! - Interactive Software for Learning and Practicing Sign Language*

- Roland Horvath, Szechenyi Istvan High School, Hungary

SOFT050 - *Mobile Real-Time OCR for Visually Impaired Individuals*

- Divya Amirtharaj, Westview High School, OR, United States of America

SOFT024 - *Optimizing Supercomputer Topologies: Developing Probabilistic Algorithms to Construct More Efficient Node Networks to Increase Supercomputer Speed*

- Talia Blum, Plainview-Old Bethpage John F. Kennedy High School, NY, United States of America

SOFT025 - *3D Computer Vision: Human/Machine Interaction via Kinect*

- Benjamin McDonough, McCallie School, TN, United States of America

TRANSLATIONAL MEDICAL SCIENCE

Intel ISEF Best of Category Award of \$5,000

TMED058 - *Ameliorating Alpha-Synuclein Aggregation in Parkinson's Using Optimized Chaperones: An in silico Approach*

- Jeremiah Pate, BASIS Oro Valley, AZ, United States of America

First Award of \$3,000

TMED016 - *SMART ARMOR - Improving Outcomes for Radiotherapy Breast Cancer Patients*

- Macinley Butson, The Illawarra Grammar School, New South Wales, Australia

TMED058 - *Ameliorating Alpha-Synuclein Aggregation in Parkinson's Using Optimized Chaperones: An in silico Approach*

- Jeremiah Pate, BASIS Oro Valley, AZ, United States of America

Second Award of \$1,500

TMED033 - *Reinventing the Catheter: Inhibiting UTIs by Creating a Novel Material Integrated with Castanea sativa to Inhibit Quorum Sensing among Nosocomial Infection Causing Bacteria*

- Devina Thapa, Academy of Science, VA, United States of America

TMED042 - *The Structural, Mechanistic, and Clinical Applications of NT5C2 in Drug Resistance and Relapse of T-ALL*

- Sarah Romanelli, Oceanside High School, NY, United States of America

TMED046 - *ABT263 (Navitoclax) and the IPF-Treatment Drugs for a Healthier Aging*

- Hemant Srivastava, Alabama School of Fine Arts, AL, United States of America

Third Award of \$1,000

TMED034 - *An Early Tri-Biomarker Sputum Diagnostic for Cystic Fibrosis in the Developing World*

- Zoe Weiss, Lakeside High School, GA, United States of America

TMED015 - *A Novel Approach to the Engineering of a Gold Nanorod Based Multiplex Biosensor*

- Grace Ranft-Garcia, Robert E. Lee High School, TX, United States of America

TMED037 - *Development of a Rapid, Low-Cost Assay Based on ZIKV NS1 Protein Functionalized Gold Nanorods on a Plasmonic Paper Substrate for ZIKV Diagnosis*

- Yatin Chandar, The Davidson Academy of Nevada, NV, United States of America

TMED028 - *Early Detection of Malaria Infection with Portable and Electricity Free Isothermal Loop Amplification (LAMP)*

- Nikhil Gopal, The Lawrenceville School, NJ, United States of America

TMED036T - *Inexpensive Mobile Diagnosis of Diabetic Retinopathy Using Deep Learning*

- Justin Zhang, Thomas Jefferson High School for Science and Technology, VA, United States of America

TMED036T - *Inexpensive Mobile Diagnosis of Diabetic Retinopathy Using Deep Learning*

- Kavya Kopparapu, Thomas Jefferson High School for Science and Technology, VA, United States of America

TMED036T - *Inexpensive Mobile Diagnosis of Diabetic Retinopathy Using Deep Learning*

- Neeyanth Kopparapu, Thomas Jefferson High School for Science and Technology, VA, United States of America

Fourth Award of \$500

TMED055T - *Illegal Substance Biodetectives: Apta-Liposomes*

- Dilara Alev Ortel, Takev Fen Lisesi, Narlidere, Turkey

TMED022 - *Predicting Lung Cancer Onset Using Segmentation and Classification*

- Neelay Trivedi, Watchung Hills Regional High School, NJ, United States of America

TMED019 - *Machine Learning Tool for Accurate, Cost-Effective, and Rapid Prediction of Small Cell Lung Cancer Stage: Significantly Increase Patient Survival in One Minute*

- Jessika Baral, Mission San Jose High School, CA, United States of America

TMED012 - *Developing a High-throughput Platform for Drug Toxicity Screening*

- Andrea Teo, Raffles Institution, Singapore

TMED055T - *Illegal Substance Biodetectives: Apta-Liposomes*

- Dilge Kocabas, Takev Fen Lisesi, Narlidere, Turkey

TMED011 - *Label-free Immunosensors for Early and Expeditious Diagnosis of Multi-Organ Failure*

- Paula Nazarene Evangelista Say, National Junior College, Singapore

TMED006 - *Repelling What Bugs You: Creating an All Natural, Antiseptic, Safe, and Effective Biopesticide Mosquito Repellent*

- Matthew Fangué, Catholic High School New Iberia, LA, United States of America