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# **The Intel International Science and Engineering Fair**

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SCIENCE SERVICE would like to recognize and thank the sponsors of this year's Intel ISEF, as well as extend our deep appreciation to the San Jose Host Committee, its financial supporters, and volunteers for their dedication and hard work. In addition to **Intel**, five other organizations are presenting **Grand Awards**:

**AARP Andrus Foundation presents Gerontology**  
**Environmental Protection Agency presents Environmental Science**  
**Merck Research Laboratories presents Medicine and Health**  
**Panasonic Consumer Electronics Company presents Mathematics**  
**Science News presents Team Projects**

Special Awards are given by scientific, professional, industrial, educational, and governmental organizations in the form of scholarships, tuition grants, summer internships, scientific field trips, and equipment grants.

Pinnacle Awards

European Union Contest for Young Scientists  
Glenn T. Seaborg Nobel Prize Visit Award

Conservation International  
Cornell University  
Drexel University

Special Award Organizations

AARP Andrus Foundation  
Acoustical Society of America  
Albert B. Sabin Vaccine Institute  
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American Association for Clinical Chemistry  
American Association of Physics Teachers and  
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and College of Engineering  
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Society for Mining, Metallurgy, and Exploration, Inc.  
Society for Technical Communication  
Society for Women Engineers  
Society of Environmental Toxicology and Chemistry  
Society of Exploration Geophysicists  
Sonoma State University  
U.S. Air Force  
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U.S. Coast Guard  
U.S. Navy & Marine Corps  
United Technologies Corporation  
University of California System  
University of Missouri-Rolla

University of Southern California - School of Engineering  
University of the Pacific  
University of Sciences in Philadelphia  
Vacuum Technology Division of the  
American Vacuum Society  
Weed Science Society of America

# INTEL ISEF FINALIST DIRECTORY

Each # next to the finalist's name indicates previous ISEF participation

An \* identifies non-competing projects

T: precedes the name of the Teacher-Sponsor of the Finalist

A T after the booth ID number indicates a Team Project

## BEHAVIORAL AND SOCIAL SCIENCES

### GRAND AWARDS PRESENTED BY:

#### INTEL FOUNDATION

- BE001** **Facial Expression Recognition Develops Progressively with Age**  
Julie June Bucy, 18, Senior, The Altamont School, Birmingham, Alabama, T: Warren Kinney
- BE002** **Sexual Behavior Regulation of CREB Protein in Female Syrian Hamsters**  
Brian William Bombassaro, 18, Senior, Jefferson High School, Lafayette, Indiana, T: Joe Ruhl
- BE003** **Examination of Neuropsychological Effects of Dementia**  
# Stephen M. Ahron, 17, Junior, University School of Nova Southeastern University, Ft. Lauderdale, Florida  
T: Laura Aguilar
- BE004** **Mighty Mouse: Effects of Exercise on Memory Retention**  
## Lacey Ann Millet, 18, Senior, Lutchter High School, Lutchter, Louisiana, T: Philip Creel
- BE005** **The Sound of Music**  
Jessica Marie Brillhart, 16, Sophomore, Dallastown Area High School, Dallastown, Pennsylvania, T: Richard Cleary
- BE007** **Investigation of Bias in Binocular Rivalry**  
Zoe Alexandra Spratt, 18, Senior, Blue Mountains Grammar School, Wentworth Falls, New South Wales, Australia  
T: Chris Huxley
- BE008** **Human Perception of Image Manipulation vs. Real**  
Christopher Warren Putnam, 14, Freshman, Brunswick High School, Brunswick, Georgia, T: Polly B. Cox
- BE009** **Effects of Cellular Technology Use on the Operators of Motor Vehicles**  
Jessica Alexandria Moses, 16, Sophomore, Montclair-Kimberly Academy, Montclair, New Jersey, T: Warren Marchioni
- BE010** **Are Personality Types Related to Learning Styles?**  
## Carolyn Mary Sloane, 17, Senior, Martin County High School, Stuart, Florida, T: Thomas Speicher
- BE011** **Career Choice as an Indicator of Sex-Typing: Gender Schema Theory in Nurses**  
Caroline Ann DuLaney, 15, Freshman, H. B. Woodlawn, Arlington, Virginia, T: Susan Senn
- BE012** **Effects of Web-based Learning on Knowledge Retention Compared to Standard Textual Learning**  
Andrew Philip Levy, 16, Sophomore, Langley High School, McLean, Virginia, T: Susan Murphy
- BE013** **Cheating to Make the Grade: Analysis of Factors Affecting Academic Dishonesty**  
Johanna Beth Waldman, 17, Senior, Roslyn High School, Roslyn Heights, New York, T: Allyson Weseley
- BE014** **How Do Moral Ethics Differ Between Boys and Girls?**  
Alicia Lynn McDermott, 15, Freshman, Grace Fellowship Christian School, Broken Arrow, Oklahoma, T: Phil Jullien
- BE015** **The New Poor...Innocent or Guilty?**  
Lucila Andrea Liendo, 16, Junior, I.P.E.M. No. 150 "Juan Larrea", Cordoba, Cordoba, Argentina  
T: Maria Liliana Lagarrigue
- BE016** **Fowl Play**  
Ashley L. Henson, 15, Sophomore, Alpena High School, Alpena, Arkansas, T: David Good
- BE017** **Effect of Classical Music on Sleep Patterns of Daycare Children**  
Terri Beth Watson, 15, Freshman, Owensboro Senior High School, Owensboro, Kentucky, T: Mary Thomaskutty
- BE018** **Zinc Related to Memory in Mice**  
Erika Amanda Hess, 18, Senior, Harlingen High School, Harlingen, Texas, T: Michelle Marquette
- BE019** **Personality Types and Their Relation to Violent Crimes**  
Ivy Jo Bressler, 16, Sophomore, Happy High School, Happy, Texas, T: Leslie Philipp-Harman
- BE020** **Relationships between Color and Motion in Human Vision**  
Noam Martin Ross, 18, Senior, Ossining High School, Ossining, New York, T: Angelo Piccirillo
- BE021** **Psychosociology of Breast Cancer**  
# Shari Melissa Morris, 17, Senior, Plainview-Old Bethpage John F. Kennedy High School, Plainview, New York,  
T: Mary Lou O'Donnell
- BE022** **An Experiment on Age Discrimination in Hiring**  
Allison Beth Liebhaber, 17, Senior, Roslyn High School, Roslyn Heights, New York, T: Allyson Weseley
- BE023** **Memory: A Wonder of the Mind**  
Swalpa Udit, 15, Sophomore, Humboldt High School, Humboldt, Nebraska, T: Lynette Riemersma
- BE024** **Age & Innovations**  
Alan L. Ou, 17, Junior, Clearlake High School, Houston, Texas  
T: Barry Gray
- BE025** **The Path to Education: Right or Left?**  
Heather Louise Harrell, 16, Junior, Hilton Head Preparatory School, Hilton Head Island, South Carolina  
T: Tina Webb-Browning
- BE026** **Intelligence and Its Relationship with Stereotypical Behavior**  
Lindsay Celia Danzell, 17, Junior, Hilton Head Preparatory School, Hilton Head Island, South Carolina  
T: Tina Webb-Browning
- BE027** **The Scent that Lures Ants**  
Roxana E. Vazquez, 16, Junior, Telnhiquel and Sports School in the Olympic Shelter, Salinas, Puerto Rico, T: Yorwis Marrero
- BE028** **Relationship between Empathy and Morality**  
Jacob H. Johnston, 15, Sophomore, Montgomery Blair High School, Silver Spring, Maryland, T: Michael Kravitz
- BE029** **Temporal Constraints on Perceptual Grouping**  
Naveen Mohan Krishnan, 15, Sophomore, Torrey Pines High School, San Diego, California, T: Victoria Coordt
- BE030** **Effect of Hemispheric Dominance on Standardized Test Scores**  
Heather A. Tollander, 15, Sophomore, Port Huron Northern High School, Port Huron, Michigan, T: Nancy Hohf
- BE031** **The Eyes Have It: Visual Perception in Children with and without Dyslexia**  
Stephanie A. Williams, 15, Sophomore, Pacific Collegiate School, Santa Cruz, California, T: Daniel Welsh-Bon
- BE032** **Study of Cognitive and Language Skills of Early Bilinguals and Monolinguals**  
Renata Ann Bankowski, 16, Junior, Mercy High School, Farmington Hills, Michigan, T: Kathleen Kitzman
- BE033** **Chute Stress: Phase IV**  
## Heather May Anderson, 17, Senior, Ipswich High School, Ipswich, South Dakota, T: Harlan Heltz
- BE034** **Self-Acceptance and Your Intrinsic Motivation**  
Lindsey Ann Barnes, 18, Senior, Neosho Senior High School, Neosho, Missouri, T: David Elliott

- BE035 Enhanced Infrared Navigation for the Blind**  
Frank Gerald Aguilar, 16, Sophomore, Lane Technical High School, Chicago, Illinois, T: Michael Robles
- BE036 Social Pressure Susceptibility: Influence of Social Pressure and Musical Ability on Musical Preference in Adolescents**  
# Kathy Hsinjung Li, 18, Senior, Plano Senior High School, Plano, Texas, T: Karen Shepherd
- BE037 Physiological Response to Music Stimuli**  
Jonathan Brady Stocking, 18, Senior, Hedgesville High School, Hedgesville, West Virginia, T: Vandana Gupte
- BE038 Teenagers and Emotions**  
Yeou-Rong Jih, 15, Freshman, Mount Greylock Regional High School, Williamstown, Massachusetts, T: Michael J. Powers
- BE039 Trauma and Affective Perception in Children**  
Rebecca de Faria Slenes, 16, Sophomore, Escola Americana de Campinas, Campinas, Sao Paulo, Brasil  
T: Vivian H. Schlesinger
- BE040 Multiple Intelligences, Key to Increasing Student Performance: Phase V**  
Marian Ava Daigle, 17, Senior, Saint Pius X High School, Albuquerque, New Mexico, T: James Carrie
- BE041 Teen Depression**  
Kevin W. Hall, 17, Junior, Valley Public School, Hoople, North Dakota, T: Kathleen Melaas
- BE042 Effects of Aging on Memory**  
Brent M. Foster, 16, Sophomore, Red Mountain High School, Mesa, Arizona, T: Lorelei Wood
- BE043 An Intervention Program to Decrease Aggressive Behavior in Preschool Children**  
Eynav Nahoum, 18, Senior, Leo Baeck High School, Haifa, Israel, T: Gouri Elisson
- BE044 Archaeological Potential of the Sierra de Los Llanos**  
Jorge Atilio Ahumada, 15, Sophomore, Secundaria Tecnica y Comercial La Cocha, La Cocha, Tucuman, Argentina  
T: Adela del Carmen Fernandez
- BE045 Cognition: Is It Possible in Fish?**  
Guillermo Enrique Teran, 14, Freshman, Colegio Pablo Apostol, Yerba Buena, Tucuman, Argentina, T: Enrique Miguel Teran
- BE046 Artistic Expression and Technical Learning**  
Pablo Castro Goncalves, 19, Senior, Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo,RS, Brasil,  
T: Helio Luiz Brochier
- BE301T You Are What You Hear: The Influence of Music on Mood**  
# Sarah Elizabeth Wolff, 17, Senior  
# Brian Charles Hardy, 17, Junior  
Cheyenne Central High School, Cheyenne, Wyoming  
T: Robert Hodges
- BE302T Twin Telepathy, It Takes Two: Phase II**  
# Megan Marjorie Hicks, 16, Sophomore  
# Rachel Renae Hicks, 16, Sophomore  
Champlin Park High School, Champlin, Minnesota  
T: Sue Glennon
- BE303T Now Hear This: Effects of Various Types of Noise on Students' Performance on Reading Comprehension Tests**  
Denae Allison Mock, 18, Senior  
Jennifer Marie Snyder, 18, Senior  
Minerva High School, Minerva, Ohio  
T: Molly Winters
- BE304T Effect of Music on Problem Solving Aptitude in Adolescent Girls**  
Ceridwen Bonnell Cherry, 17, Senior  
Alison Sutton Fernandes, 17, Senior  
Sydney Girls High School, Sydney, New South Wales, Australia  
T: Debra M. Irwin
- BE305T Individual vs. Group Study for Introverts and Extroverts**  
I-rang Im, 16, Sophomore  
Emilie Ruth Sutterlin, 18, Senior  
Thomas Jefferson High School for Science and Technology, Alexandria, Virginia  
T: Pamela Hannah
- BE306T Looking for a Place: The New Poor**  
Angelica Martina Zuniga Oliva, 17, Junior  
Maria Ines Berniell, 17, Junior  
Escuela Normal Superior "Dr. Alejandro Carbo"  
Cordoba, Argentina, T: Monica Zehnder
- BE307T Animal Use in Laboratories: Necessary or Not?**  
# Marimar Rivera-Medina, 17, Senior  
# Jose Johel Monge, 18, Senior  
Colegio San Antonio, Rio Piedras, Puerto Rico  
T: Luz N. Velazquez
- BE308T Indicators of ADHD in Children 10-12 Years of Age**  
Cristal Soto, 17, Senior  
Julio Santiago, 18, Senior  
Clarimar Rivera-Mercado, 17, Senior  
Colegio Maria Auxiliadora, Carolina, Puerto Rico  
T: Mayra Santana
- BE309T Did Your Parents Select the School That Meets Your Expectations?**  
Adianeris Joanne Crespo, 15, Sophomore  
Shearly Ann Figueroa, 16, Sophomore  
Colegio San Pedro Martin, Guaynabo, Puerto Rico  
T: Lysset Morales
- BE310T Photogenic Coloration Research on *Tenebrio molitor***  
Thomas Ryan Rhodes, 14, Freshman  
Harry Nelson Werner, 19, Freshman  
The Academy at Ector Junior High School, Odessa, Texas  
T: Ron Schulze
- BE311T Emotion and Memory . . . Is There a Gender Bias?**  
Sadie Ann Tierney, 17, Senior  
Emily Jean Sweeney, 18, Senior  
Amador Valley High School, Pleasanton, California  
T: J. Eric Thiel
- BE312T Stop, Look, Listen**  
Josh Matthew Borts, 16, Sophomore  
Joseph Alexandre Lallouz, 16, Sophomore  
Saint Georges School Montreal, Montreal, QC, Canada  
T: Linda Leiberman
- BE313T The Daisy: A Tolerant Lifestyle of Young People**  
Zdenek Chmelar, 20, Senior  
Pavel Umaceny, 20, Senior  
Ekogymnazium, Prague, Czech Republic  
T: Hana Entlerova
- BE314T Batview**  
Cassio Tagliari, 17, Senior  
Guilherme Cerutti Muller, 17, Senior  
Silvio Cesar Antunes Dutra, 18, Senior  
Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo,RS, Brasil  
T: Joao Artur D'Avila Neves

## BIOCHEMISTRY

GRAND AWARDS PRESENTED BY:  
INTEL FOUNDATION

- BI002 Expression of Recombinant EV71 Capsid Protein (VP1) and Production of Antibodies Directed to It**  
Yen-Lung Lin, 17, Senior, Taipei Municipal First Girls' Senior High School, Taipei, Chinese Taipei, T: Ru-Chuan Hsueh
- BI003 Sequencing the Nitrogen Controlling (ntcA) Genes in Cyanobacteria**  
Yi Fan Guo, 18, Senior, Lakewood High School, Saint Petersburg, Florida, T: Paul Dickman
- BI004 Top Ten Uses of Peptide Nucleic Acids**  
## Karen Kay Powell, 17, Junior, Lincoln Park Academy, Fort Pierce, Florida, T: Nancy Hosie
- BI005 HIV GAG-POL Polyprotein Processing in Pediatric Patients Undergoing Protease Inhibitor Therapy**  
Minal Ahson, 18, Senior, Fort Myers High School, Fort Myers, Florida, T: Karen Connors

- BI006** **Co-factoring Antioxidants with Temperature for Free Radical Suppression in Fruit: Four Year Study**  
 Anna Nicole Hadd, 17, Senior, Baker High School, Baker, Florida, T: Tami Evers
- BI007** **Comparative Microarray Analysis of Spinocerebellar Ataxia-1 Transgenic Mice Genome**  
 Li Mei, 17, Senior, Wayzata High School, Plymouth, Minnesota, T: Jodi Nikko
- BI008** **Cysteine Reactivity in Stored and Fresh Rat Muscle Fibers**  
 Laura Elizabeth Egerdal, 17, Senior, Breck School, Minneapolis, Minnesota, T: Chelen H. Johnson
- BI009** **Role of A375 Malignant Melanoma Cell-released Proteases in Tumor Growth**  
 Shovon Sayfaldin Kasem, 16, Junior, Lake Highland Preparatory School, Orlando, Florida, T: Judith F. Legault
- BI010** **Isolation and Characterization of a (Beta) Glucuronidase Inhibitor**  
 Suba Sruti Kamarajapuram Desikan, 17, Senior, Parkview Fine Arts/Science Magnet School, Little Rock, Arkansas T: Kathleen Ramsey
- BI011** **Chemical Analysis of the Total Phosphate, Nitrate/Nitrite (NO<sub>3</sub>), and Sucrose Concentrations in Citrus Fruit Juices**  
 Christopher E. Duncan, 17, Junior, F.W. Springstead High School, Spring Hill, Florida, T: Craig Gates
- BI012** **Nitric Oxide Regulates Production of cGMP and GAP-43 Following Nerve Cord Damage in the Leech, *Hirudo medicinalis***  
 Tyler Louis Davidson, 17, Senior, Harrison High School, West Lafayette, Indiana, T: Lynnette Schneider
- BI013** **Functional Genomics of *Arabidopsis thaliana* T-DNA Knockout Mutants**  
 Zankhana S. Raval, 17, Senior, Cocoa Beach High School, Cocoa Beach, Florida, T: David Schiffert
- BI014** **Does Fat Content Emulate a More Significant Role in False Positives than the Somatic Cell?**  
 Anthony Jerome Moldan, 17, Junior, Cathedral High School, New Ulm, Minnesota, T: Judy Luker
- BI015** **Determining Quantitative Trait Loci Associated with Resistance to *Fusarium* Head Blight on Chromosome 2 of Barley Using Simple Sequence Repeat Markers**  
 A. Benjamin Suri, 18, Senior, Harding High School, Saint Paul, Minnesota, T: A. Suri
- BI016** **Effect of Temperature on the Blood Glucose Levels of the Freshwater Crawfish, *Procambarus clarkii***  
 Vaidehita Vindhya Rajamani, 15, Sophomore, Riverdale High School, Jefferson, Louisiana, T: Mary Desoto
- BI017** **DNA: Clues of Contamination**  
 Amanda Lynn Fidler, 16, Junior, Terrebonne High School, Houma, Louisiana
- BI018** **Tryptophan and Serotonin**  
 Sarah Kathleen Fayad, 15, Sophomore, Piedra Vista High School, Farmington, New Mexico, T: Ann Gattis
- BI019** **D-alpha Tocopheryl Acetate as a Possible Carrier for Methotrexate to Inhibit Tumor Growth**  
 Jesse Donald Ranney, 14, Freshman, Catholic High School, New Iberia, Louisiana, T: Donald Voorhies
- BI020** **Regulation of CD36 (Fat) Gene By PPAR-gamma in HSC**  
 Kenneth Jiro Watanabe, 17, Senior, Alhambra High School, Alhambra, California, T: Duane Nichols
- BI021** **Does the Amount of Gluten, Sugar and Yeast Affect the Conditions of Bread?**  
 Teresa Louise Dodge, 15, Sophomore, Hinckley-Finlayson High School, Hinckley, Minnesota, T: Donald Grice
- BI022** **Effects of Huperzine-A on GABA Induced Neurotoxicity in Primary Neurons**  
 Felipe Carlos Velasquez, 17, Senior, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia T: Alfred Lampazzi
- BI023** **Isolating the 5' End of the DBC2 Gene by RACE PCR and Positional Cloning Techniques**  
 Daniel Alexander King, 18, Senior, Roslyn High School, Roslyn Heights, New York, T: Holly Giordano
- BI024** **Melanoma Cells Preferentially Destroyed by Measles Virus Targeted with Recombinant  $\beta$ -Melanocyte Stimulating Hormone Surface Molecule**  
 Brandon Michael Palmen, 17, Junior, Mayo High School, Rochester, Minnesota, T: Stephen Brehmer
- BI025** **Investigation of Short Stature Homebox-Containing Gene (SHOX) in Pediatric Idiopathic Short Stature Patients**  
 Deepika Shukla, 17, Senior, Miami Palmetto Senior High School, Miami, Florida, T: Patricia Valois
- BI026** **Metabolic Changes in Hypercholesterolemic Rats Treated With Statin Type 3 CoA (HMG) Reductase Inhibitors**  
 Katherine Ann Brezina, 18, Senior, Coral Reef Senior High School, Miami, Florida, T: Barbara Zeiler
- BI027** **Peanut Butter—Everything It's Cracked Up to Be: Comparative Analysis of Aflatoxin Levels in Organic vs. Commercial Peanut Butters**  
 Natalie Anne Malek, 17, Junior, Navasota High School, Navasota, Texas, T: Ginger Torregrossa
- BI028** **The Iodide Transporter (NIS) in Hypothyroidism & Gastric Cancer**  
 Monika Paroder, 17, Senior, Brooklyn Technical High School, Brooklyn, New York, T: Phyllis Witte
- BI029** **Novel Selection System for Plant Genetic Transformations**  
 Niraj Madhav Shanbhag, 18, Senior, Liverpool High School, Liverpool, New York, T: Jeff Peneston
- BI030** **Antiproliferative Activity of G-rich Oligonucleotides Correlates with Inhibition of Enzyme Telomerase**  
 Nikhil Deepak Mirchandani, 15, Sophomore, duPont Manual Magnet High School, Louisville, Kentucky, T: Glenn Zwanzig
- BI031** **Effect of Nerve Growth Factor on Nitric Oxide Synthase Promoters in Genes of Rats and Humans in PC12 Cells**  
 Zeeshan Azeem Qureshi, 16, Junior, Upper Arlington High School, Upper Arlington, Ohio, T: Peggy Sheets
- BI032** ***Momordica charantia L.*: A Natural Alternative as a Colorant for the Confection of Foods**  
 Marivette Ortiz-Sanchez, 18, Senior, Asuncion Rodriguez High School, Guayanilla, Puerto Rico, T: Feliberto Ortiz Orengo
- BI033** **Modulating Apoptosis in Type-1 Diabetes by Lipid Metabolites**  
 Swati Mylavarapu, 17, Senior, Eastside High School, Gainesville, Florida, T: Annemarie Heller
- BI034** **Inhibition of Growth of *Pseudomonas aeruginosa* by Analogs of the Peptide Ranaturin I**  
 Emer Veronica Murphy, 17, Senior, Harry A. Burke Senior High School, Omaha, Nebraska, T: tom Gehringer
- BI035** **Role of Nitric Oxide in Epilepsy**  
 Sheila Sundaram, 16, Junior, Saint Andrew's Episcopal School, Ridgeland, Mississippi, T: Sandra Hindsman
- BI036** **Inhibition of Vascular Endothelial Cell Proliferation by Filipin**  
 Lissette A. Casas, 17, Senior, American Military Academy, Guaynabo, Puerto Rico, T: Sylvia Cortes Aquino
- BI037** **Inhibitory Effects of St. John's Wort (*Hypericum perforatum*) in the Growth of Bacteria**  
 Melixa Rivera, 15, Sophomore, Ana Roque de Duprey High School, Humacao, Puerto Rico, T: Agueda Arroyo
- BI038** **Lowering Hyperglycemia Using Custard-Apple Leaves**  
 Ruchira Bajpai, 18, Senior, St. Joseph's School, Shakti Nagar, Uttar Pradesh, India
- BI039** **Effects of Epinephrine on the Heart Rate in *Daphnia***  
 Ewa Szymanska, 15, Freshman, Donovan Middle School, Utica, New York, T: Henri Ayres
- BI040** **Saturated and Unsaturated Fatty Acid Distributions in *Penicillium notatum***  
 Christina Marie Martini, 16, Junior, Tuscarawas Valley High School, Zoarville, Ohio, T: Karl Schwenk
- BI041** **Comparison of DNA and Amino Acid Sequences from Human, Mouse and Rat T1R-1 Taste Receptor Genes**  
 Amanda Fleming Fox, 17, Junior, Spring Valley High School, Columbia, South Carolina, T: Glenda George
- BI042** **Expression of Dominant-Negative Cdc42 by Gene-Transfer Disrupts Skeletal Muscle Integrity**  
 Rushina Cholera, 17, Senior, White Station High School, Memphis, Tennessee, T: Rita Moore

- BI043 Cadherin Expression in Trabecular Meshwork and Schlemm's Canal Cell**  
Salma Kaochar, 17, Junior, Catalina Foothills High School, Tucson, Arizona, T: Ann-Marie Condes
- BI045 Vital Vitamins**  
Alisha Lynn Lange, 16, Sophomore, Lehman Catholic High School, Sidney, Ohio, T: Denise Stauffer
- BI046 *Bryophyllum pinnatum*, (Air Plant), A Natural Analgesic: Phase 2**  
# Juan A. Aponte, 16, Junior, Luis Munoz Marin High School, Barranquitas, Puerto Rico, T: Leticia Rodriguez-Ortiz
- BI047 Boronic Acid Inhibitors Displace the Hydrolytic Water Molecule in the Active Site of  $\beta$ -Lactamases**  
# Debarshi Mustafi, 16, Junior, Kenwood Academy, Chicago, Illinois, T: Larry Alofs
- BI048 Mutational Analysis of the CBF1 DNA Binding Domain**  
# Nathan Dale Lord, 17, Junior, Saginaw Arts and Sciences Academy, Saginaw, Michigan, T: Gary Barker
- BI049 Nutraceutical Cheese Analog Development: Its Thermo-Rheological Properties**  
Pavel Gabriel Garcia, 17, Junior, Universidad Autonoma Chapingo, Texcoco, Edo. de, Mexico  
T: Consuelo Lobato Calleros
- BI050 Kinetics Study of the Hydrolysis of Acetylcholine by Acetylcholinesterase**  
Meredith Leigh Lentz, 17, Senior, North Rowan High School, Spencer, North Carolina, T: Dana Jordan
- BI051 Signaling Pathways of Nitric Oxide Production in Muscle Cells**  
# Anna F. Wang, 17, Junior, Shawnee Mission East High School, Prairie Village, Kansas, T: Tom Heintz
- BI052 Determination of the Compounds in *Cedrela odorata***  
Cale E. Aronson, 18, Senior, Chillicothe R-II Senior High School, Chillicothe, Missouri, T: Greg Thurmon
- BI053 Identification of a Novel *Drosophila* Orthologue of the Human Casein, Kinase I Gamma I, by Genomic Analysis**  
James Wesley Fraser, 17, Junior, Lexington High School, Lexington, Massachusetts, T: Margaret Farrar
- BI054 New Genetic Mutation Discovered for Carbonic Anhydrase II Deficiency**  
Sofia Begum Chaudhry, 18, Senior, Parkway West High School, Ballwin, Missouri, T: Dixie Hoyt
- BI055 Lysophosphatidylcholine Inhibits Insulin-induced Akt/Protein Kinase B**  
# Sanket Nayyar, 18, Senior, Martin Luther King, Jr. Magnet High School, Nashville, Tennessee, T: Caye Boone
- BI056 Effects of Extracts of the *Artocarpus altilis* Bark on Chronic Myelogenous Leukemia Cells**  
Marisa Joy Kekaiui Kellest, 18, Senior, Kamehameha Secondary School, Honolulu, Hawaii, T: Lawrence J. Mordan
- BI057 Hala and Hela: Inhibitory Effects of the *Pandanus odoratissimus* on the Growth of Human Cervical Cells**  
# Kiani A.J. Arkus, 15, Sophomore, Kamehameha Secondary School, Honolulu, Hawaii, T: Lawrence J. Mordan
- BI058 Bioinformatic Analysis of Microbial Ribosome Binding Sites and Open Reading Frames**  
Alan Patrick Boyle, 18, Senior, Starkville High School, Starkville, Mississippi, T: Sherrie Wiygul
- BI059 Blue Gene Vaccine**  
Paige Schmidt, 14, Freshman, Deming High School, Deming, New Mexico, T: Steve Goodgame
- BI060 Sweeter Over Time?**  
Jessica Jo Tescher, 17, Junior, Beach High School, Beach, North Dakota, T: Kathryn LaRae Uttech
- BI061 New Fermentation Apparatus and Method for the Production of DNA-Vaccines and Other Gene Therapy Products**  
## Karen Leanne Beckman, 17, Senior, Jamestown High School, Jamestown, North Dakota, T: Susan Pfaff
- BI062 Effects of Non-lethal Doses of Malathion on the Number of Offspring Which Survive to Adulthood of *Drosophila melanogaster***  
Errol Thomas Kats, 16, Junior, West Islip High School, West Islip, New York, T: Robert Purdy
- BI063 Nuclear Progression of Bovine Oocytes Maintained at Germinal Vesicle Stage Up to 66 Hours Using Roscovitine**  
Alicia Monique Clarke, 18, Senior, Knoxville Catholic High School, Knoxville, Tennessee, T: Lisa McCann
- BI064 Fortification of Refined Palm Oil Using Vitamin E**  
Lim Fang Yun, 16, Sophomore, Sekolah Menengah Kebangsaan Sultan Ismail II, Kemaman, Terengganu, Malaysia  
T: Foo Kian Wah
- BI065 Measles Virus Nucleocapsid Gene Enhances 1,25-Dihydroxyvitamin-D<sub>3</sub> Sensitivity of Osteoclast Precursors in Paget's Disease**  
## Debra Ting Hsiung, 16, Junior, Northside Health Careers High School, San Antonio, Texas, T: G. David Roodman
- BI301T Protein Electrophoresis in Crickets**  
Issac Bassey Johnson, 16, Junior  
Richie D. Cobb, 17, Junior  
Nettleton High School, Jonesboro, Arkansas, T: Karen Ladd
- BI302T Polymorphism(s) of Fig1 Gene in Patients with Systemic Lupus Erythematosus**  
Kiran Gupta, 18, Senior  
Diana Chang, 17, Junior  
Great Neck South High School, Great Neck, New York  
T: Carol Hersh
- BI303T Beta-Amyloid-induced Migration of Monocytes across Human Brain Endothelial Cells Involving RAGE and PECAM-1**  
Huoy Juin Chen, 15, Sophomore  
Wei David Liang, 15, Sophomore  
Alhambra High School, Alhambra, California  
T: Duane Nichols
- BI304T Imprinted Gene IPL and Tumor-Suppressor PTEN**  
Raymond Michael Musalo, 16, Junior  
Nandita Gupta, 17, Junior  
Manhasset Junior-Senior High School, Manhasset, New York  
T: Peter Guastella
- BI305T Mitochondrial Genome of the Zebrafish, *Danio rerio***  
# Francesca Marie Pignataro, 17, Senior  
# Rachel Meredith Shoichet, 17, Senior  
Plainview-Old Bethpage John F. Kennedy High School, Plainview, New York  
T: Melanie Kreiger
- BI306T Comparisons of Unrelated *Musa acuminata* by Electrophoresis**  
Melissa Lynn Grabofsky, 16, Sophomore  
Mandy Lyn Baldik, 16, Sophomore  
Turner High School, Turner, Montana  
T: Kay Fjeld
- BI307T Short Term Effects of Diuron on the Variability of pH on Fraternidad Soil**  
# Robinson Seda, 16, Junior  
Ernie Xavier Perez, 17, Junior  
Leonides Morales Rodriguez High School, Lajas, Puerto Rico  
T: Lester L. Lopez
- BI308T Effects of the Sweet Cherry (*Prunus avium*) as an Inhibitor of Lipid Oxidation in Cooked Ground Beef during Storage**  
# Amy Lee Hart, 17, Junior  
Elizabeth Kathleen Schreiner, 17, Junior  
Port Huron High School, Port Huron, Michigan  
T: Robert Weiss  
Marine City High School, Marine City, Michigan  
T: John Depa
- BI309T Influence of the Cationic Peptides on Adenylyl Cyclase**  
Alexander Anosov, 16, Sophomore  
Yakov A. Bursian, 15, Sophomore  
Artem Genadiievich Shamsuarov, 15, Sophomore  
School N371, Saint-Petersburg, Russia  
T: Alexander O. Shpakov
- BI310T Titer Levels and Antibodies of Blood and Urine of *Oryctolagus cuniculus* When Given PZZP**  
Shannon Marie Murphy, 18, Senior  
Maggie Marie Dunn, 17, Senior  
Billings West High School, Billings, Montana  
T: George Grover



- BI311T Computer Aided Drug Design Based on Small Molecules**  
See Qin Yong, 16, Sophomore  
Xu Wei Zhen, 15, Sophomore  
Chong Yao Feng, 15, Sophomore  
Raffles Institution, Singapore, Singapore, T: NIL
- BI312T Base Pair Baseball: Simulations in DNA Computation**  
James Solomon Fraser, 19, Senior  
Andrew Nicholas Smith, 18, Senior  
Northern Secondary School, Toronto, Ontario, Canada  
T: Angela Vavitsas
- BI313T DNA Identification: Asian Connection**  
Sarith Ly, 19, Senior  
Nancy Tuyet Lam, 17, Senior  
Thuy Hong Thi Luong, 18, Senior  
William C Overfelt High School, San Jose, California  
T: Louise Handly
- BI314T Effect of Orifice Length in Hydrodynamic Point-sink DNA Shearing**  
Shoshana Ruth Osofsky, 16, Junior  
Julia D. Barmeier, 16, Junior  
Saratoga High School, Saratoga, California  
T: Robert Kucer

## BOTANY

### GRAND AWARDS PRESENTED BY: ENVIRONMENTAL PROTECTION AGENCY

- BO001 Potential Inoculum Reservoir for PVY in the San Luis Valley, Colorado**  
# Nathaniel Robert Davidson, 18, Senior, Monte Vista Senior High School, Monte Vista, Colorado, T: Gary Wilkinson
- BO002 Photoperiod's Effect on Productivity and Nutrient Uptake**  
# Aaron Cole Richardson, 16, Junior, Walton High School, DeFuniak Springs, Florida, T: Elizabeth G. Yates
- BO003 Amazing *Moringa*: Juvenile *Moringa oleifera* as a Growth Stimulant in Bush Beans and Mary Radishes**  
# Jennifer Ilene Johns, 15, Sophomore, Evangelical Christian School, Ft Myers, Florida, T: Stephen Morriss
- BO004 What is the Speed of Florigen up the Stem of *Xanthium strumarium*?**  
Kathleen Alice Schwarz, 16, Sophomore, James S. Richards High School, Tallahassee, Florida, T: Jane McDonald
- BO005 Control of Weed Biomass in a Realistic Field Plot Study By Using an Agronomic Mulch of *Quercus borealis* Sawdust**  
# Sarah Adeline Kessans, 17, Senior, Eastern High School, Pekin, Indiana, T: Sharon McElroy
- BO006 Rapid Vegetable Propagation Using Benzyladenine Solution**  
Tiffany Nichole Swann, 16, Sophomore, Houston County High School, Warner Robins, Georgia, T: Laura P. Byrd
- BO007 A Four Year Study of the Allelopathic Effect**  
Kathleen E. Cummings, 17, Junior, Ridgewood High School, New Port Richey, Florida, T: Johnell Hankins
- BO008 Effectiveness of Quaternium-15, Polymethoxy Bicyclic Oxazolidine and Methyl Paraben in Tissue Culture Media**  
Adam M. Pollock, 17, Junior, Osceola High School, Kissimmee, Florida, T: Nancy Evers
- BO009 Popeye the Sailor Man**  
## Matthew T. Zaleski, 18, Senior, Belleview High School, Belleview, Florida, T: Holly Cahill
- BO010 How Do DNA Instructions Affect a Corn Plant?**  
Paige Gallagher Schuette, 14, Freshman, Gibbon-Fairfax-Winthrop High School, Winthrop, Minnesota, T: Bix Baker
- BO011 Growth of Micropropagated Papaya with or without Sucrose**  
Marlon Lopez Gomez, 18, Junior, James Campbell High School, Ewa Beach, Hawaii, T: Fred E. Nakaguma
- BO012 A Comparison of Stomata in Relation to Light Intensity**  
Maria Elizabeth Breen, 15, Sophomore, Herschel Jenkins High School, Savannah, Georgia, T: Lorraine Breen
- BO013 Allelopathic Effects of Prairie Flora on Common Crop Seeds**  
Trapper John Callender, 15, Freshman, Wamego High School, Wamego, Kansas, T: Terry Callender
- BO014 Effect of Tobacco Smoke Constituents on the Growth and Development of Certain Plants**  
Monica Bhattacharya, 15, Sophomore, Ann Arbor-Huron High School, Ann Arbor, Michigan, T: Dee Drake
- BO015 Phase III: Crossbreeding Alfalfa with SAG12 Gene**  
### Scott Thomas Schuh, 18, Senior, Winona Senior High School, Winona, Minnesota, T: Ken Mann
- BO016 Enhancing Soybean Resistance to the Mexican Bean Beetle**  
Aaron Louis Iverson, 18, Senior, Buckeye Valley High School, Delaware, Ohio, T: Rose Blanchard
- BO017 Effect of Organic Matter on Toxicity of Salt to Carrots**  
# Andrew McLeod, 15, Sophomore, North Sydney Boys High School, Crows Nest, New South Wales, Australia, T: Julie Crowley
- BO018 Analysis of a Possible Aphid Toxin in Zuzuiki Taro (*Colocasia gigantea*)**  
Richard J. Roderick, 15, Sophomore, Kapa'a High School, Kapa'a, Hawaii, T: Ray D. de la Pena
- BO019 Analysis of Diatomite for Use in Commercial Epiphytic and Lithophytic Orchid Culture**  
Tara Nalee Bonilla, 14, Freshman, Kapa'a High School, Kapa'a, Hawaii, T: Ray D. de la Pena
- BO020 Fight Against *Agrobacterium tumefaciens*: Part II**  
Jeanette Marie Guenther, 16, Sophomore, De Soto High School, De Soto, Missouri, T: Christopher Joseph Woelich
- BO021 Improvement of Thermal Pulser in Several Plant Species' Transpiration Rate**  
Pengfei Cao, 16, Sophomore, No. 65 High School, Beijing, China, T: Hongchun Li
- BO022 Phosphorus Regulation of Nitrogen Fixation in *Cercocarpus montanus*: Implications for Ponderosa Forest Management**  
# Kirsten Ann Grimm, 16, Junior, Prescott High School, Prescott, Arizona, T: Doug Bunch
- BO023 Effect of Plant Hormones on Cotton Fiber Initiation *in vivo***  
Allison Melanie Capo, 17, Senior, Northport High School, Northport, New York, T: Patricia Bossert
- BO024 Algae: Pollution and Solution**  
Rosanna Virginia Graf, 15, Sophomore, Jefferson High School, Shenandoah Junction, West Virginia, T: Scott Fortney
- BO025 Computational Pre-Analysis of Chromosomal Microarrays in *Arabidopsis thaliana***  
Jonathan Abraham, 17, Senior, Springfield Gardens High Sch, Springfield Gardens, New York, T: Janice M. Sutton
- BO026 Pond Scum: Future Cheap Energy**  
Nicklas Aaron Johnson, 17, Junior, Albert P. Brewer Vocational School, Somerville, Alabama, T: Melissa C. Burney
- BO027 Arsenic in Old Lakes**  
Vera Ashley Paulson, 18, Senior, Navasota High School, Navasota, Texas, T: Ginger Torregrossa
- BO028 Biomass Production as a Function of Nutrient Input**  
Carl Augustus Pinyerd IV, 15, Freshman, Old Spanish Fort Christian School, Daphne, Alabama, T: David Bowman
- BO029 *Brassica juncea* as a Biofumigant II: Effect of Planting Date on Glucosinolates Production & Effect of Fumigation on Bacterial and Fungal Communities**  
## Heather Nicole Hannahan, 16, Junior, Clarkrange High School, Clarkrange, Tennessee, T: Dayon Taylor
- BO030 Recovery, Treatments and Applications of Natural Fibers**  
Linh Phuong Huynh, 17, Senior, Bountiful High School, Bountiful, Utah, T: Dwight G. Brown
- BO031 A System that Enhances Plant Growth in Sahara Desert**  
# Ayotunde Olumide, 18, Senior, Western High School, Baltimore, Maryland, T: Starletta Jackson
- BO032 Radiated Seeds**  
Jennifer Nicole St. Pierre, 15, Sophomore, Bellbrook High School, Bellbrook, Ohio, T: Cindy Hasler
- BO033 Use of Homemade Fertilizers in the Growth and Development of *Latuca sativa*: Phase II**  
Juan Alberto Garcia, 15, Sophomore, Hogar Colegio La Milagrosa, Arecibo, Puerto Rico, T: Rhina Elizabeth Benavides Martinez

- BO034** **Repellent Properties of *A. indica* Against *P. americana***  
Ruben R. Gonzalez-Rodriguez, 14, Freshman, Colegio De La Salle, Bayamon, Puerto Rico, T: Wanda Aviles
- BO035** **Propagation of *Chrysanthemum maximum* Plants**  
Stephanie Denise Gelner, 18, Senior, C.H. Yoe High School, Cameron, Texas, T: Toni Lafferty
- BO036** **Stomatal Density as an Indicator of Current and Past Carbon Dioxide Levels**  
Candice Natalie Weiner, 15, Freshman, Keystone School, San Antonio, Texas, T: Pamela Sobey
- BO037** **Effects of Low Magnitude Magnetic Fields on the Growth of *Brassica rapa***  
Jeffrey Scott Tucker, 16, Junior, Brookville High School, Lynchburg, Virginia, T: Cheryl Lindeman
- BO038** **Fields of Green?**  
Courtney Marie Cecil, 16, Sophomore, Tazewell High School, Tazewell, Virginia, T: Greg Deskins
- BO039** **Soybean Leachate: Potential Cancer Therapeutic Agent**  
Robert Miintzuoh Kao, 17, Senior, Thomas Sprigg Wootton High School, Rockville, Maryland, T: Lesli Adler
- BO041** **Transpiration Alteration: Phase II**  
Heather K. LeFleur, 16, Sophomore, Stuart-Menlo High School, Stuart, Iowa, T: Larry Schwinger
- BO042** **A Factor Affecting Seed Germination: Allelopathy**  
Kathryn Lyn Sanford, 15, Freshman, Wilson High School, Reading, Pennsylvania, T: Michael Gerhart
- BO043** **Increased Amounts of Carbon Dioxide on *Zea mays* and *Triticum aestivum***  
Anne Marie Brege, 15, Sophomore, Cass Technical High School, Detroit, Michigan, T: Yolanda Bullock
- BO044** **"Soft Rot" - An Attack on *Erwinia carotovora***  
Crystal Nicole Moore, 15, Sophomore, West Lauderdale High School, Collinsville, Mississippi, T: Nettie Mayatt
- BO045** **Effects of Electromagnetic Fields on Various Algal Cells**  
Bryant Darrallee McCants, 15, Sophomore, Western High School, Detroit, Michigan, T: Alan Labostrie
- BO046** **Borer Terminator: Phase II**  
Nichole Lynn Schneider, 16, Sophomore, Stuart-Menlo High School, Stuart, Iowa, T: Larry Schwinger
- BO047** **Protein and Carbohydrate Content of Rice (Rc-64) Variety Exposed to Cobalt 60 Radiation at Different Doses**  
Bernardo Bascos Mendoza, Jr., 17, Sophomore, Divisoria High School, Santiago City, Isabela, Philippines, T: Jose P. Agub
- BO048** **Characterization of Transgenic Melon Plants Altered for Ethylene Perception**  
Salafaaniusila Angelina McGuire, 17, Senior, Leone High School, Pago Pago, American Samoa, T: Otto Hansell
- BO049** **Controls for Dodder—The Parasite of Cranberries: Phase II**  
Jenna Ruth Morrison, 16, Junior, Plymouth South High School, Plymouth, Massachusetts, T: Kathryn Marks
- BO050** **Can Increasing Phosphate in Forages Decrease Occurrences of Grass Tetany?**  
Kimberly Kinder Radcliff, 18, Senior, Chillicothe R-Ii Senior High School, Chillicothe, Missouri, T: Greg Thurmon
- BO051** **Effects of Canadian Wild Thistles on Tomato Plants**  
Brandon Royce Hood, 15, Freshman, Noblesville High School, Noblesville, Indiana, T: Gary Hipes
- BO052** **Persistence of *Xanthomonas* in an Ebb/Flow Irrigation System**  
Benjamin George Fohner, 17, Junior, Bellarmine College Preparatory, San Jose, California, T: Rod Wong
- BO053** **Effects of Increased CO<sub>2</sub> Concentrations on C3 and C4 Plants**  
Anna Anita Bagwell, 18, Senior, Gaffney Senior High School, Gaffney, South Carolina, T: Wendy Tindall
- BO054** **Effects of Auxins on *Euonomus referemerous* Inoculated with *Agrobacterium tumefaciens***  
Kurt Douglas Brockman, 17, Senior, Glendale High School, Springfield, Missouri, T: Charles Rey
- BO055** **Effects of Radiation on Various Species of the Genus *Phaseolus***  
Joshua I. Santos, 16, Junior, Henry Perrine Baldwin High School, Wailuku, Hawaii, T: Barbara Huntley
- BO056** **Effects of Solar Wavelengths on Chlorophyll in Algae**  
Daniel James Concho, 14, Freshman, Barstow High School, Barstow, California, T: Suzan Kyrpiotis
- BO057** **Interactive Effects of Soil pH Natural Fertilizer and Flumetsulam on the Emergence and Maturation of Wheat, Canola and Wild Mustard: Phase IV**  
Adam Richard Wohl, 16, Sophomore, Central Campus High School, Minot, North Dakota, T: James E. Potts III
- BO058** **Using Cloning in Selecting Saline Tolerant Cultivars of Safflower**  
Brian Lee Fisher, 15, Sophomore, Mandan High School, Mandan, North Dakota, T: Kelly Rogers
- BO059** **Fungicidal Attributes of *Tagetes* on Sugar Beet Adversaries**  
Robert Michael Jentz, 18, Senior, Hankinson Public School, Hankinson, North Dakota, T: Marcus Friskop
- BO060** **Effects of Acetylsalicylic Acid on Radish Plants in a Hydroponic Setting**  
Grant Thomas Resick, 15, Freshman, Sehome High School, Bellingham, Washington, T: Vaughn Thomas
- BO061** **Effect of Water pH on *Drosera* and *Dionaea muscipula***  
McMillan E. Gaither, 15, Freshman, Myrtle Beach High School, Myrtle Beach, South Carolina, T: Beverly Cottingham
- BO062** **Human Proto-hormones: Using Exogenously Applied Dehydroepiandrosterone as an Agricultural Growth Stimulant**  
Shelly Lin, 17, Senior, Massapequa High School, Massapequa, New York, T: Mark Ballerini
- BO063** **L-Glutathione: Countering the Effects of Ultraviolet Radiation on Plants**  
Alaa A. Ishak, 17, Junior, La Cueva High School, Albuquerque, New Mexico, T: Steve Stein
- BO064** **Thermotolerance Aquisition by *Raphanus sativus* Seedlings**  
Andrea Mason, 16, Sophomore, Notre Dame Academy, Covington, Kentucky, T: Mary Ethel Parrot
- BO301T** **Effects of Allelochemicals Produced by *Kochia scoparia* on Selected Crops Grown in North Toole County (NTC), Montana**  
Daniel Ray Cox, 16, Sophomore  
Marshall Cole Overcast, 18, Senior  
North Toole County High School, Sunburst, Montana  
T: Lawrence Fauque
- BO302T** **Possible Anti-viral Properties of *Azadirachta indica* in Suppressing Tobacco Mosaic Virus**  
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#  
LaTonya Monique Little, 18, Senior  
Candace D. Tubbs, 17, Senior  
Yazoo City High School, Yazoo City, Mississippi  
T: Kimberly Patterson
- BO303T** **Pesticides and Plant Growth**  
Eric Michael Morley, 18, Senior  
Paula Rose Lopez, 18, Senior  
Elko High School, Elko, Nevada  
T: Teresa Noland
- BO304T** **Clinical Inhibition of Germination by Sunflowers**  
Darin Michael Kilcoin, 17, Junior  
Clint Michael Sandness, 17, Junior  
Woonsocket High School, Woonsocket, South Dakota  
T: Thomas Allen Foubert
- BO305T** **Which Grows Best with Lead, Hydroponic or Soil Soy Plants?**  
Anthony David Cinson, 17, Junior  
Brandon Jay Lautzenheiser, 16, Junior  
Minerva High School, Minerva, Ohio  
T: Molly Winters
- BO306T** **Tubes of the Unknown**  
Jade Yadon, 16, Sophomore  
Cassandra S. Clary, 15, Sophomore  
Deming High School, Deming, New Mexico  
T: Steve Goodgame

- BO307T Use of Local Plants and Marl in Making Water Soluble Dyes**  
Phuwanai Khechonphun, 17, Senior  
Suwannee Phalakonphaisan, 17, Senior  
Sudthisa Srisawad, 17, Senior  
Matthayom Siriwanwari 3 Chachoengsao School,  
Chachoengsao, Thailand  
T: Pin Charngthong
- BO308T Affects of Artificial Gravity on Plant Growth**  
Michael Ivan Judson, 15, Sophomore  
Nelson Bret Radmall, 16, Sophomore  
Pleasant Grove High School, Pleasant Grove, Utah  
T: Douglas Panee
- BO309T Remote Sensing and Iceplant**  
Richard Donald Johnson, 16, Sophomore  
Michael Henry Fischer, 15, Freshman  
Pacific Collegiate School, Santa Cruz, California  
T: Daniel Welsh-Bon  
T: Darrell Steely

## CHEMISTRY

### GRAND AWARDS PRESENTED BY: INTEL FOUNDATION

- CH001 Investigation of Deep Silylation of  $\gamma$ -Nitro-ketones**  
Kirill Petrovich Birin, 17, Junior, Moscow Chemical Lyceum  
No. 1303, Moscow, Russia, T: Sergey Evgenievich Semenov
- CH002 Natural vs. Synthetic Dye**  
# Samantha Diane Feldman, 18, Senior, Shades Mountain  
Christian School, Birmingham, Alabama, T: Lillie Kelly
- CH003 Attempt to Modify Honey into an Effective Pressure  
Sensitive Adhesive**  
Kathryn Jeanne Gieselman, 17, Junior, Burnsville Senior High  
School, Burnsville, Minnesota, T: Jennifer Hugstad
- CH004 Chemical Compositions of Clay Compared to Artifacts:  
Three-Year Study**  
# Mary Ellison Baars, 18, Senior, B. T. Washington High School,  
Pensacola, Florida, T: Glenda Marshman
- CH005 Effects of Capsaicin on Free Radicals and Telomerase  
Activity in J5 Human Hepatoma Cell Line**  
Yu Ting Yuan, 18, Senior, National Kaohsiung Normal  
University High School, Kaohsiung, Taiwan, Chinese Taipei  
T: Ying Fang Tzeng
- CH006 Correlation between Metal Concentrations in Solutions and  
Bottom Sediments and Salinity in a Saltwater Intrusion  
Event on a Freshwater Lake**  
Boyd Anthony Laurent, 17, Senior, Saint James High School, St.  
James, Louisiana, T: Kermit J. Gauthreaux
- CH007 Extractives vs. Burnout**  
Brian Thomas Darrith, 14, Freshman, Glynn Academy,  
Brunswick, Georgia, T: Todd Hendrix
- CH008 Drugs on United States Paper Currency**  
Casey Lynn Hughes, 16, Sophomore, Lake Crystal Wellcome  
Memorial High School, Lake Crystal, Minnesota  
T: Sue DePerno
- CH009 Synthesis of User and Eco-Friendly Hypervalent  
Iodine Reagents**  
Arun P Thottumkara, 14, Freshman, Macomb High School,  
Macomb, Illinois, T: Kim Witt
- CH010 Transesterification for Wasted Vegetable Oil**  
Susan Marie Hays, 18, Senior, Hildreth Public High School,  
Hildreth, Nebraska, T: Randall Lienemann
- CH011 Effects of X-Rays on a Crystalline Structure**  
Austin Lawson Barclay, 16, Senior, Macomb High School,  
Macomb, Illinois, T: Kim Witt
- CH012 Digging Up Elemental and Mineral Analysis: Composite  
Testing of Susquehanna Valley Ceramic**  
Courtney Anne Boehme, 17, Junior, Ephrata Senior High  
School, Ephrata, Pennsylvania, T: Patricia H. Wee
- CH013 Calculating the Degrees of Unsaturation for Organic  
Compounds**  
Yi Gai, 19, Senior, High School Affiliated to Tsinghua  
University, Beijing, China, T: Li Wenju
- CH014 Quantitative Spectroscopic Analysis of Sulfur-Oxy Anions  
Using Ellman's Reagent**  
Cameron Sadegh, 16, Junior, Academy for the Advancement of  
Science and Technology, Hackensack, New Jersey  
T: Ronald P. Schreck
- CH015 Role of Electrostatics on the Dynamics of Ionic Oligomers  
through Random Media**  
# Jayanta Fowler Mohanty, 18, Senior, Cumberland High School,  
Cumberland, Rhode Island, T: Frank Ianetta
- CH016 High Pressure and Temperature Studies in N<sub>2</sub>O**  
Parimalram Achintya Madduri, 18, Senior, Thomas Jefferson  
High School for Science and Technology, Alexandria, Virginia,  
T: Charlotte Follansbee
- CH017 Surface Morphology of Monohydride Terminated  
Silicon(115)**  
Sarah Elizabeth Bowman, 17, Senior, Thomas A. Edison High  
School, Alexandria, Virginia, T: Caryn Galatis
- CH018 Comparison of Sulfonated Biomasses to an Acidic Ion-  
Exchange Resin for the Removal of Toxic Metal Cations  
from an Environmental Water Sample**  
# Tyler Shawn Ellis, 18, Senior, Stevens High School, Rapid City,  
South Dakota, T: Jane Roseland
- CH019 Study of Type 4A Molecular Sieve: Can a Long-aging Period  
Generate Micro-crystallinity?**  
Maria Kathleen Happel, 16, Sophomore, Loudoun County High  
School, Leesburg, Virginia, T: Felicity Francis
- CH020 Calcium-Strontium Ratios in Bivalve Shells**  
Rebekah Lee Rogers, 17, Junior, Bradshaw High School,  
Florence, Alabama, T: Shannon Uptain
- CH021 Synthesis of 1-(1-Adamantyl)-3-Triphenylmethylaziridinone**  
Lin Yu, 18, Senior, Benjamin N. Cardozo High School, Oakland  
Garden, New York, T: Robert Lieber
- CH022 Vitamin C—How Much Are You Really Getting? Phase II**  
Aleshia D. Allen, 19, Senior, Happy High School, Happy,  
Texas, T: Leslie Philipp-Harman
- CH023 Effects of Varying the Composition of Catalysts Used to  
Produce Carbon Nanotubes**  
Brian Ruby, 17, Junior, John Jay High School, Katonah, New  
York, T: Douglas Bartel
- CH024 Protective Effect of Sodium Fluoride on Marble Chips**  
Ryan William Wilson Charest, 17, Senior, John Handley High  
School, Winchester, Virginia, T: Jerry Putt
- CH025 Possible Synthesis of Hydratropic Acid: Phase II**  
## Isaac E. Lloyd, 17, Junior, Ogden Senior High School, Ogden,  
Utah, T: Margaret Smith
- CH026 Fire Prevention: Study of Polyacrylate Polymers**  
Kendra LeeAnn Riddle, 17, Junior, Sikeston High School,  
Sikeston, Missouri, T: Wanda Throop
- CH027 Effect of Pigment Size on UV-related Fading of Paint**  
Emily Michele Kraft, 15, Freshman, Evansville Day School,  
Evansville, Indiana, T: Mary Ann Kraft
- CH028 Garbage to Fuel**  
Samantha A. Conroy, 14, Freshman, Conroy Learning Center  
(Homeschool), Export, Pennsylvania, T: Stephanie M. Conroy
- CH029 Phosphoric Acid Content in Soft Drinks**  
Matthew Adam Jackson, 17, Senior, Drew Central High School,  
Monticello, Arkansas, T: Dennis Thurman
- CH030 Specificity of Peroxynitrite Deliverance: Effects on 8-  
Nitroguanine Depurination**  
Samuel Thomas Gatzert, 17, Senior, Douglas MacArthur High  
School, San Antonio, Texas, T: Carolyn Pesthy
- CH031 Existence of Amino Acid Zwitterions in the Gas-phase**  
David Cheng-Ping Wang, 17, Senior, Alief Hasting Senior High  
School, Houston, Texas, T: Doug Ladd
- CH032 Improvement in the Oxidation Resistance of Tantalum  
Diboride**  
Rachel Elizabeth Maire, 16, Junior, Montgomery Blair High  
School, Silver Spring, Maryland, T: Tran Pham

## COMPUTER SCIENCE

GRAND AWARDS PRESENTED BY:  
INTEL FOUNDATION

- CH033 Contaminating Recycling**  
Kevin Michael Backfish, 18, Senior, Northview High School, Brazil, Indiana, T: Rachel Sparks
- CH034 Garlic and Lipitor: Similar or Assimilar?**  
Andra Lynn Bowman, 18, Senior, Northview High School, Brazil, Indiana, T: Rachel Sparks
- CH035 How Much Cooking Time is Needed to Extract Most of the Cooking Nitrate?**  
Bowdeya-Weah Polee Tweh, 14, Sophomore, Renaissance High School, Detroit, Michigan, T: Miriam Turner
- CH036 Essential Oils and Biological Activity of *Peperomia pellucida***  
Cristina Luiggi, 15, Sophomore, Southwestern Educational Society, Mayaguez, Puerto Rico, T: Evelyn Montalvo
- CH037 Are Natural or Commercial Shampoos Better?**  
Daniel Solomon Tofiga, 15, Junior, Samoana High School, Utulei, American Samoa, T: Joseph Stanislaus
- CH038 Electrochemical Oxidation of Aryl Alkyl Ketones**  
Alexander Sergeevich Dorofeev, 16, Junior, Moscow Chemical Lyceum, Moscow, Russia, T: Semenov Sergey Evgenievich
- CH039 Visual and Quantitative Characterization of Naturally Occurring pH Indicators in Acidic and Basic Solutions**  
Lauren Brooke Honeycutt, 16, Junior, North Rowan High School, Spencer, North Carolina, T: Dana Jordan
- CH040 It's a Trap! Anomalies of the Electrolytic Oxidation of Aluminum**  
Oleg Igorevich Shamovsky, 18, Senior, Holy Cross Secondary, Kingston, Ontario, Canada, T: Eva Waller
- CH041 Study of Polyphosphate Hydrolysis Using <sup>31</sup>P NMR: Phase II**  
Kenneth Allen Robertson, 16, Junior, Dickson County Senior High School, Dickson, Tennessee, T: Philip Chadwick
- CH042 Quantitative Study of Fluoride in Bottled and Tap Water**  
Kayla Monique Swanson, 15, Sophomore, Maddock High School, Maddock, North Dakota, T: David William Nowatzki
- CH043 Formation of Copper(II) Compounds with Hydroxide Ion**  
Hiroki Sako Hiro, 18, Senior, Hachiouji Higashi High School, Hachiouji, Tokyo, Japan, T: Fumio Hori
- CH044 *Echinacea*: A Natural Antibiotic?**  
# Dianna Blair Spence, 17, Junior, Plano Senior High School, Plano, Texas, T: Karen Shepherd
- CH045 Finding the "Mono" in Polysaccharide: Phase II**  
Marc Cody Sanchez, 16, Junior, Grants High School, Grants, New Mexico, T: Shelby Alexander
- CH046 Automatic Analysis of NMR Spectra with Genetic Algorithms**  
Michael Mueller, 18, Senior, Wilhelm-Ostwald School, Leipzig, Germany, T: Evelin Mietschke
- CH047 Protective, Transparent Layer for Goggles and Glasses**  
Woo-Young Hur, 19, Senior, Independence High School, San Jose, California, T: Stephen D. Barry
- CH301T Compatibilization of Polymer Blends Using Supercritical Carbon Dioxide**  
Edmund Francis Palermo, 17, Junior  
James W. Conlon, 16, Junior  
Bay Shore High School, Bay Shore, New York  
T: Ronald Occhiogrosso
- CH302T Sol-Gel Synthesis of Yttrium Iron Garnet Magnets**  
Michael Takbun Ng, 16, Junior  
Patrick Li, 16, Junior  
Midwood High School at Brooklyn College, Brooklyn, New York, T: Jay Touger
- CH303T Degradation of Vitamin C: Phase II**  
# Kathleen Dawn Wilkes, 15, Sophomore  
# Kristi B. Meaders, 16, Sophomore  
Weber High School, Pleasant View, Utah, T: Lareen Radle
- CH304T Emergence of Life: A Chemical Approach**  
Niels Martin Moller, 20, Senior  
Line Hjortshoj Pedersen, 19, Senior  
Grenaa Gymnasium OG HF, Grenaa, Denmark  
T: Stig Carlsson
- CS001 Discrete Simulation of Reaction-Diffusion Systems Applied to Morphological Development**  
# John James Shedletsy, 18, Senior, Brewster High School, Brewster, New York, T: Mike Mostransky
- CS002 Hacking, Cracking, Security Lacking: Which Encryption Technique Provides the Most Data Security?**  
Ronald William Hedgecock, II, 15, Freshman, Pensacola High School, Pensacola, Florida, T: Heather Dean
- CS003 Genetic Algorithm-based Program Generator**  
Tsung Hsiang Chang, 18, Senior, Provincial Taichung-First Senior High School, Taichung City, Taiwan, Chinese Taipei
- CS004 Secure Digital Music Distribution**  
Jonathan Friend, 18, Senior, King Edward's School, Birmingham, United Kingdom, T: Colin Howard
- CS005 Methods and Systems of the Decisions Acceptance in the Relative Scale Measurement Space**  
Aibol Abievich Kuandykov, 17, Junior, Physics-Mathematical Republican School, Almaty, Kazakhstan, T: Cherubayeva Aigul
- CS006 Constrictor: Development and Implementation of an Alternative Compression Algorithm**  
Bradley Jay Klingenberg, 15, Freshman, Greeley Central High School, Greeley, Colorado, T: Jerry Baver
- CS007 It's Not What You Know But Who You Know: Analyzing Networked Nodes of People and Degrees of Separation**  
# Drew V. Blas, 17, Senior, Cheyenne East High School, Cheyenne, Wyoming, T: Mike Shappell
- CS008 SEE-Secure Encryption Engine: Version II**  
# Kalim Farooq Moghul, 18, Senior, McNair Academic High School, Jersey City, New Jersey, T: Jeremy Stanton
- CS009 Internet Front-End for Educational Institutions**  
Matthew Peter Klaber, 15, Freshman, Mankato West High School, Mankato, Minnesota, T: Dale Hedlund
- CS010 Hybrid Neural Environmental Information Systems**  
## Muhammad Abdul Ali, 18, Senior, Mankato West High School, Mankato, Minnesota, T: Dale Hedlund
- CS011 Hits: How Do You Get Them?**  
Christopher Daniel Kilpatrick, 15, Freshman, Houma Junior High School, Houma, Louisiana
- CS012 Real-Time Continuous Levels of Detail Terrain Rendering with Nested Splitting Space**  
Yuanchen Zhu, 16, Sophomore, Shanghai Foreign Language School, Shanghai, China, T: Zhu Huixi
- CS013 Isomap and Neural Networks: Comparison of Frameworks for Dimensionality Reduction**  
Kevin Scott Christopher, 17, Senior, Cherry Creek High School, Englewood, Colorado, T: Steve Lantz
- CS014 Javasecure**  
# Aaron H. Finch, 16, Junior, Good Hope School, St Croix, Virgin Islands, T: Douglas McMinn
- CS015 New Polynomial Diet (Lose Pixels, Look Better!): Legendre Polynomials-based Alternative to JPEG**  
# Brian Andrew Camley, 15, Sophomore, William J. Palmer High School, Colorado Springs, Colorado, T: Bradley Bogard
- CS016 Frequency Spectrum of the Human Heartbeat in Real-Time**  
An-Kwok Ian Wong, 13, Sophomore, Lincoln Junior-Senior High School, Lincoln, Rhode Island, T: R. Andrew Viruleg
- CS017 Enigma 2000: Unbreakable Cryptography for the Internet**  
# Jason Robert Kauffman, 18, Senior, Centerville High School, Centerville, Ohio, T: Penny Valentini
- CS018 Virtual Environmental Simulations Using C++ and DirectX**  
## Jonathan Michael Joyce, 18, Senior, Hayfield Secondary School, Alexandria, Virginia, T: Doug Schuch
- CS019 NGC: A New Paradigm for Computer Architecture**  
# Hans Christiansen Lee, 18, Senior, The York School, Monterey, California, T: Nick Hart

- CS020 Computerized Pattern Recognition for Fingerprint Identification**  
## James David Rollason, 17, Junior, Isabel High School, Isabel, South Dakota, T: Lu Ann Lindskov
- CS021 Pedal Mouse**  
Qicheng Ma, 16, Junior, Shenzhen Experimental School, Shenzhen, Guangdong, China, T: Liu Haifeng
- CS022 Futbol Bit X Bit**  
# Mariano Andres Perna, 17, Senior, San Agustin Institute, San Luis, Argentina, T: Esteban Vicente Cichero
- CS023 Computer Modeling of Human Ambulatory Motion**  
Jean-Michel Mongeau, 17, Junior, R. Nelson Snider High School, Fort Wayne, Indiana, T: Barbara J. Gabet
- CS024 Data Compression Techniques to Improve Internet Throughput**  
Jesus R. Alvarez-Lopez, 15, Sophomore, Colegio San Ignacio de Loyola, Rio Piedras, Puerto Rico, T: Wilma Rivera
- CS025 Computational Evolution of Mobility**  
Andrew Seth Cantino, 18, Senior, Athens High School, The Plains, Ohio, T: Tom Stork
- CS026 Greedy Random: A Novel Algorithm for Vehicle Routing Optimization**  
# Dominik Roman Rabiej, 17, Senior, Kalamazoo Area Mathematics and Science Center, Kalamazoo, Michigan T: John Goudie
- CS027 A Program Demonstrating Digital Envelope Technology**  
Bradford Struthers Malbon, 17, Senior, Blacksburg High School, Blacksburg, Virginia, T: Julie Grady
- CS028 Development of Communications Security Software**  
Michael R. Stone, 16, Sophomore, Allegany High School, Cumberland, Maryland, T: Steve Wilson
- CS029 Development of a Voice-based Suite of Internet Software for Use by the Visually Impaired**  
Timothy Craig Chasseur, Jr., 16, Sophomore, Saginaw Arts and Sciences Academy, Saginaw, Michigan, T: Gary Barker
- CS030 Optimization of Biological Imaging Systems**  
# Jeremiah Marton Rothschild, 18, Senior, White Station High School, Memphis, Tennessee, T: Rita Moore
- CS031 Comparison and Analysis of Pathfinding Algorithms**  
Scott A. Bender, 15, Sophomore, Spring Valley High School, Columbia, South Carolina, T: Marilyn V. Senneway
- CS032 Chaos Cryptography—Protecting Data Using Chaos: Year II**  
James Holmes Lampton, Jr., 18, Senior, Mississippi School for Mathematics & Science, Columbus, Mississippi T: Mary Davidson
- CS033 Compression-based Author Recognition Algorithms**  
# Rishi Mukhopadhyay, 18, Senior, Detroit Country Day School, Beverly Hills, Michigan, T: Gene Menton
- CS034 Stereo Computer Vision—Digital Depth Perception: Phase II**  
Gallagher Donovan Pryor, 19, Senior, Lithia Springs Comp High Sch, Lithia Springs, Georgia, T: Margaret Robinson
- CS035 i-Com: An Intelligent Image Processing System**  
Young-jun Park, 17, Senior, Dae-dong High School, Pusan, South Korea, T: Kim Yui Chan
- CS036 Argos: Mobile Internet Browsing for the Blind**  
Hai-soo Shin, 18, Senior, Seoul Sejong High School, Seoul, South Korea, T: Yong-gun Oh
- CS037 Mining the Mind: Boundary Detection in MR Brain Scans**  
### Cambrian Yangshao Liu, 17, Senior, Baton Rouge Senior High School, Baton Rouge, Louisiana, T: Katy Parker
- CS038 Scientific Visualization: Conversion of Image Coordinates to World Coordinates**  
Lee Keng Siang, 18, Senior, Hwa Chong Junior College, Singapore, Singapore, T: NIL
- CS039 Effective Use or Abuse?**  
Kyle Gerald Johnson, 15, Sophomore, Redwood High School, Larkspur, California, T: Millie Hackworth
- CS040 A Computational Investigation of Wave-induced Substrate Energy in Epitaxial Processes**  
Behnood Minachi, 18, Senior, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia T: Robert Latham
- CS041 OS/X: Your Gateway into a Computer Network without Borders and with Unlimited Timelife Called Internet X**  
Tomas Hrdlicka, 19, Junior, High Technical School, Uherske Hradiste, Czech Republic, T: Vladimir Konicek
- CS042 Algorithms for Compression and Correction of Multimedia Data**  
Mikhail Svaricheuski, 17, Junior, School #60, Gomel, Belarus
- CS043 3-D Computerized-assisted Control of a Robotic Arm**  
Philippe Beauchamp, 18, Senior, College Bois-de-Boulogne, Montreal, QC, Canada, T: Jean Larocque
- CS044 Autonomous Navigation through Genetic Programming**  
# Francis Chung, 17, Senior, Lisgar Collegiate Institute, Ottawa, Ontario, Canada
- CS045 Computer Overclocking**  
Tyler James Speidel, 18, Senior, Devils Lake High School, Devils Lake, North Dakota, T: Jim Samson
- CS046 MATTsoft Boot Manager**  
Martin Hinner, 20, Senior, Gymnasium Arabska, Prague 6, Czech Republic, T: Jan Jupa
- CS047 VGML - Vector Graphics Markup Language**  
Pavel Kovalev, 15, Sophomore, Shoova High School, Jerusalem, Israel, T: Greigory Kuptchik
- CS048 Implementation of an Alternative Computing Architecture Using Fuzzy Logic**  
Roque Eduardo Dapper, 19, Senior, Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo,RS, Brasil, T: Leo Weber
- CS049 Development of an XML-based Transfer Framework for Mobile Devices**  
# Benjamin William Andrews, 16, Senior, Roanoke Valley Governors School for Science and Technology, Roanoke, Virginia, T: Fred Hoffman
- CS050 Dynamical Simulation Using Modular Approach and Efficient 3D Surface Data Accessing Technique**  
Supasak Kulawonganchai, 18, Junior, Thewphaingarm School, Bangkok, Thailand, T: Channarong Lakujitpong
- CS051 Wireless Public Information Accessibility for Disabled Persons**  
Narit Boonhaijaroen, 18, Senior, Chulalongkorn University Demonstration School, Bangkok, Thailand, T: Chaisak Changjai
- CS052 Comparison of Learning Algorithms for Autonomous Robots**  
Felix Schmaeschke, 19, Senior, Wilhelm-Ostwald School, Leipzig, Germany, T: Heink
- CS053 LZAC Lossless Data Compression: Novel Approach to Minimum Redundancy Coding**  
Allan Chu, 16, Sophomore, Saratoga High School, Saratoga, California, T: Robert Kucer
- CS054 Journey through the Past with New Technology**  
# William Johan Lave Lavesson, 19, Senior, Vaggaskolan, Karlshamn, Sweden, T: Rune Svensson
- CS301T Artificial Neural Networks as Applied to an Intelligent Alarm System**  
Bernard Willers, 16, Sophomore  
Josef Johann Vrba, 16, Sophomore  
Saint Alban's College, Pretoria, Gauteng, South Africa T: Carol Ashton
- CS302T Implementation of Parallel Processing in Tasks of Logical Deduction**  
Victor Alexandrovich Lapshin, 16, Junior  
Alexey Borisovich Komarov, 17, Junior  
Moscow Chemical Lyceum, Moscow, Russia T: Dmitrii Vitalievich Andreev
- CS303T Is Your Computer Running? You Better Go Catch It!**  
Brian Scott Cooper, 18, Senior  
Sean Matthew Flanagan, 17, Senior  
Jefferson High School, Shenandoah Junction, West Virginia T: Virginia Demchik
- CS304T Advanced Overclocking Using Thermal Variations**  
# Chance Wayne Schraeder, 17, Junior  
Dustin Ross Beier, 15, Sophomore  
Box Elder High School, Brigham City, Utah T: Ronald Cefalo

**CS305T Can an Unbeatable AI be Created for Connect Four?**

Isaac D. Bowen, 16, Junior  
Henry A. Pate, 16, Junior  
Spruce Creek High School, Port Orange, Florida  
T: Ruth Vonnieda

**CS306T Ethernet Robotic Control**

# Ian Matthew Collier, 18, Senior  
Ghassan A. Nassar, 18, Senior  
Julie M. McMillan, 17, Senior  
Divine Child High School, Dearborn, Michigan  
T: Katherine Higgins-Luthman

**CS307T Intelligent Building Management System**

Peter Salnikov, 17, Junior  
Anton D. Kachalov, 17, Junior  
Lyceum 1523, Moscow, Russia  
T: Ludmila V. Zhabina

**CS308T Cost Minimization through Flight Scheduling**

Sarah A. Omar, 18, Senior  
Elizabeth Jean Brown, 17, Senior  
Thomas Lewis Widland, 18, Senior  
Albuquerque Academy, Albuquerque, New Mexico  
T: Jim Mims

**EARTH AND SPACE SCIENCES****GRAND AWARDS PRESENTED BY:****INTEL FOUNDATION****EA002 Classical Novae Classification Expansion**

Noah L. McBurnett, 16, Junior, Stranahan High School, Fort Lauderdale, Florida, T: Georgette Treloar

**EA003 Investigation into the Orbital Periods of the Galilean Moons of Jupiter**

Kathryn Anne McLachlan, 16, Junior, Cedar House School, Cape Town, Western Cape, South Africa, T: Brian Jacoby

**EA004 Hydrology of a Hilltop Aquifer**

Jessica Lynn Parker, 18, Senior, Hernando High School, Brooksville, Florida, T: Craig Gates

**EA005 Experimental Study of the Liquefaction Potential of Different Soils**

Sarah Evelyn Brophy, 15, Freshman, Bloomington High School North, Bloomington, Indiana, T: James Gerald Brophy

**EA006 Using Sunspots to Calculate the Sun's Rotation**

Heather Ann Hills, 15, Sophomore, Burkburnett High School, Burkburnett, Texas, T: Pam Francis

**EA007 Astronaut's Salad Bar: Growing *Lactuca sativa* in Space**

Christine Gail Simone, 16, Junior, Satellite High School, Satellite Beach, Florida, T: Joe Scott

**EA008 Experimental Methods for Selection of Photometric Comparison Stars**

# Susannah Cathleen Lazar, 16, Senior, Home School, Baton Rouge, Louisiana, T: Peter Lazar

**EA009 BD+47°842: A  $\delta$  Scuti Pulsator in the  $\alpha$  Persei Cluster**

# Meagan Elizabeth Messina, 16, Sophomore, Saint Joseph's Academy, Baton Rouge, Louisiana, T: Linda Messina

**EA010 Where Have All the Beaches Gone?**

Thomas William Sweeney, 16, Junior, McCorristin Catholic High School, Hamilton, New Jersey, T: Madeline Lucuski

**EA011 Eclipsing Binary Stars—Statistical Analysis of Classification vs. Celestial Positioning: Seven-Year Study**

## Timothy Curtis Allen, 18, Senior, Union County High School, Lake Butler, Florida, T: Renae Allen

**EA012 Sailing into Space: Steering Towards Mars**

# Ulyana N. Horodyskyj, 15, Sophomore, Padua Franciscan High School, Parma, Ohio, T: Susan Sanders

**EA013 Downwelling, Shortwave Solar Radiation**

Sarah Ann Bickerstaff, 17, Junior, Alva Senior High School, Alva, Oklahoma, T: Julie Angle

**EA014 Laboratory Simulation of the Downburst in Supercell Thunderstorms**

Ashley Elizabeth Tidwell, 17, Junior, Westmoore High School, Oklahoma City, Oklahoma, T: Bradley O. Brauser

**EA015 Predicting Low-Altitude Wind Hazards**

Ryan Edward Sherrill, 15, Sophomore, Farmington High School, Farmington, New Mexico, T: Ann Gattis

**EA016 Use of Remote Sensing in the Location of Maya Caves in Belize**

Leon Yehuda Benrimon, 17, Senior, Great Neck North High School, Great Neck, New York, T: David Keith

**EA017 Stability of a Small Planet's Orbit in the Habitable Zone of a Three-Body System**

Adam G. Ginsburg, 15, Sophomore, Cherry Creek High School, Englewood, Colorado, T: Stephen W. Lantz

**EA018 Correlations Between Extreme Weather Events During Winter Months and NAO and AO**

Leon Zinger, 18, Senior, Bronx High School of Science, Bronx, New York, T: Mitchell Fox

**EA019 Effects of Light, Pollution, and Temperature on Select Plankton and Algae**

Matthew Dogle Johnston, 17, Junior, Yazoo City High School, Yazoo City, Mississippi, T: Kim Patterson

**EA020 Effects of Hind Limb Suspension on Spontaneously Hypertensive Rats and Normotensive Rats**

Tracie Diane Fitting, 18, Senior, Harlingen High School, Harlingen, Texas, T: Michele Marquette

**EA021 Effects of Acid Rain on Soil Microbial Populations**

Jodi E. Taylor, 17, Junior, Marshall High School, Marshall, Arkansas, T: Kenda Dearing

**EA022 Statistical Analysis of 10 Years of Solar Flare Data**

Matthew David McGee, 18, Senior, Lake Brantley High School, Altamonte Springs, Florida, T: Susan Behel

**EA023 Analysis of the El Niño Southern Oscillation and the Regional Variations in the Probability of U.S. Hurricane Landfall**

Jason Todd Davis, 18, Senior, Horace Greeley High School, Chappaqua, New York, T: Paul Bianchi

**EA024 Observations of a Hurricane Formation: Physico-chemical Analysis for the Possible Use of Chemical Films as Activity Suppressors**

Jose D. De Leon-Alejandro, 17, Senior, Colegio San Vicente Paul, San Juan, Puerto Rico, T: Julio C. Hernandez-Nieves

**EA025 Comparison of Slope Failure Among Climate Regions**

# Megan E. Fuller, 16, Junior, Bountiful High School, Bountiful, Utah, T: Dwight Brown

**EA026 Stress History of the Crust in Southeast Atla Regio, Venus: Test of Collapse Caldera Ellipticity for Determining Crustal Stress**

# Carolyn Morgan Tewksbury, 15, Sophomore, Clinton Senior High School, Clinton, New York, T: Jon Krawiec

**EA027 The Optical Divide**

Sabrina Curie Snell, 15, Sophomore, School Without Walls, Washington, District of Columbia, T: Kareem Monib

**EA028 Element Distribution Between Fluids and Melts in the Mantle**

Lora Shelton Armstrong, 18, Senior, Montgomery Blair High School, Silver Spring, Maryland, T: Jonetta Russell

**EA029 Heavy Elements in Metal-poor Stars**

# Regan Anna Marie Wilson, 18, Senior, Grosse Pointe South High School, Grosse Pointe Farms, Michigan, T: Ardis Maciolek

**EA030 Asteroidal Occultations of Stars**

Christina Ann Dwyer, 17, Senior, Eleanor Roosevelt High School, Greenbelt, Maryland, T: William Martin

**EA031 The Distance to the Stars**

Heather M. Hoey, 18, Senior, Arkansas School for Mathematics & Sciences, Hot Springs, Arkansas, T: Wilhelm Richter

**EA032 Mechanisms and Electromagnetics Causes of Volcanism of Io**

Roberto Alesandro Escobar, 17, Senior, Oscar Castro Zuniga, Rancagua, Region Sexta, Chile, T: Fernando Reiner Franco Blu

**EA033 Do Slope and Land Use Affect Seasonal High Water Tables?**

Jessica Louise Lenz, 15, Sophomore, Waterloo High School, Waterloo, Illinois

- EA034 Galactic Champagne**  
# Francis Boulva, 18, Senior, College Jean-de-Brebeuf, Montreal, Quebec, Canada, T: Martine Brousseau
- EA035 Influences of Soil Fungi on Hydrophobicity and Hydraulic Properties of Fargo Clay**  
Jill Marie Nieuwsma, 18, Senior, Strasburg Public High School, Strasburg, North Dakota, T: Marcia Steinwand
- EA036 Expansion of the Universe by Acceleration**  
Jorge Samuel Diaz, 18, Junior, Colegio de la Salle, Talca, Septemia Region, Chile, T: M. Angelica Riquelme V.
- EA301T Dinosaur Fossils and Footprints**  
Laura Ann Vietti, 16, Junior  
Brandon Lee Drake, 17, Junior  
Hot Springs County High School, Thermopolis, Wyoming  
T: Jeb Schenck
- EA302T Microbarometric Turbulence: Measuring Atmospheric Waves**  
# Aaron Taylor Burgess, 15, Sophomore  
Kristen L. Rasmussen, 15, Sophomore  
Fairview High School, Boulder, Colorado  
T: Michael Stanley
- EA303T Study on Solar Limb Darkening**  
Cheng Yu Yeh, 18, Senior  
Chih Fan Chen, 18, Senior  
Taipei Municipal TaTung Senior High School, Taipei, Taiwan, Chinese Taipei  
T: Che Yi Liao
- EA304T Living with a Star: On the Trends in Geomagnetic Activity and Total Amount of Ozone**  
Saule Zhaksylykovna Sakenova, 15, Freshman  
Alexandre Dmitrievich Petelin, 13, Freshman  
School No. 105, Almaty, Kazakhstan  
T: Goldayeva Elena, "Gray Stone", Saskatoon, Canada
- EA305T Comparative Evolution of Cataclysmic Variables: Study of DV Ursae Majoris and CP Eridant**  
Jacqueline Naomi Gordon, 17, Senior  
Megan Ilona Hall, 17, Senior  
Mamaroneck High School, Mamaroneck, New York  
T: Jodi Pear  
John Jay High School, Katonah, New York  
T: Douglas Bartel
- EA306T Improved System of Radio Observations of Meteors**  
Michael Barynov, 18, Junior  
Aliaksei Akulionak, 16, Junior  
Lyceum #2, Minsk, Belarus  
T: Vladzimir Bahamolav

## ENGINEERING

### GRAND AWARDS PRESENTED BY: INTEL FOUNDATION

- EN001 New Computerized Methods for Estimating Chlorinated Hydrocarbon Potencies from Patterns of Predicted <sup>13</sup>C NMR Spectra**  
Lindsay Erin Shade, 18, Senior, Gateway Baptist Schools, Memphis, Tennessee, T: David Shade
- EN002 Acoustical Engineering of the Oboe Resonator with Computer Spectral Analysis**  
## Bryce Leitner Roberts, 17, Junior, Mountain Brook High School, Mountain Brook, Alabama, T: Cissy Bennett
- EN003 Are NiCads Obsolete?**  
Jonathan Robert Todd, 17, Senior, West-Oak High School, Westminster, South Carolina, T: Michael J. Bonham
- EN004 Where the Wind Blows**  
Darby Bindel Sarason, 16, Sophomore, Sargent High School, Monte Vista, Colorado, T: Ronna Cochran
- EN005 Performance of Autonomous Robots on Varying Terrain**  
Alex P. Zalo, 18, Senior, Bradenton Christian School, Bradenton, Florida, T: Al Ter Haar
- EN006 The Sign Translator**  
## Ryan Randall Patterson, 17, Junior, Central High School, Grand Junction, Colorado, T: John R. McConnell
- EN007 Cost-effective Digital Radiography**  
Christopher Bligh Komanski, 16, Sophomore, Lake Highland Preparatory School, Orlando, Florida, T: Judith Legault
- EN008 Using Biological Behaviors as a Template for Autonomous Robotic Programming**  
Joshua Brent Miller, 16, Sophomore, Eau Gallie High School, Melbourne, Florida, T: Lisa Wall-Campeau
- EN009 Are Shape Memory Alloys Efficient in the Use of Artificial Limb Motion?**  
Wesley Inman Lewis, 17, Junior, Newberry Junior Senior High School, Newberry, Florida, T: Cynthia Holland
- EN010 Hydrodynamic Hull Designs**  
Rachel Marie Bixler, 14, Freshman, Port Saint Joe High School, Port Saint Joe, Florida, T: Tammy Owens
- EN011 Effect of Waste Ash on the Stability of Asphalt Pavements**  
Lindsey Elizabeth Potter, 16, Sophomore, Bay High School, Panama City, Florida, T: Dirk Naegle
- EN012 Effects of Drag and Buoyancy on Swimmers When Wearing the Speedo Fastskin™ Swimming Suit**  
Matthew David Barry, 15, Freshman, F.W. Springstead High School, Spring Hill, Florida, T: Craig Gates
- EN013 Cooperating Analog Robots Behaviorally Modeled on Insects**  
Ivan Tzvetanov Tzvetanov, 18, Senior, Vanguard High School, Ocala, Florida, T: Gregory Cruz
- EN014 Star In A Jar**  
Roman Garrick Eskue, 16, Sophomore, Willcox High School, Willcox, Arizona, T: Nathan Eskue
- EN015 Effect of Different Landing Device Designs That Enhance Drag Resistance on the Total Amount of Time Required for an Object to Fall**  
Erin Elizabeth Underwood, 16, Junior, James Wood High School, Winchester, Virginia, T: Jonathan Whitehead
- EN016 How Does Leading Edge Contamination Affect the Performance of Different Airfoil Shapes?**  
Taylor Craig Johnson, 15, Sophomore, Herschel Jenkins High School, Savannah, Georgia, T: Lori Breen
- EN017 Production of Analog Behavior in Stepper Systems**  
John Richard Damalas, 17, Senior, Elkhart Memorial High School, Elkhart, Indiana, T: John Taylor
- EN018 Multi-Variable Analysis of Polystyrene/Bentonite Matrices**  
Michael McKay Smith, 18, Senior, Greybull High School, Greybull, Wyoming, T: Joel M. Kuper
- EN019 Autonomous Robot: Modeling the Behavior of a Falling Dog**  
Elizabeth Baker Wood, 17, Junior, Laurel School, Shaker Heights, Ohio, T: Reza Beigi
- EN020 What a Drag?**  
Ronald Busey Garner, 16, Sophomore, Carlsbad High School, Carlsbad, New Mexico, T: Robert Cope
- EN021 Autonomous Robot Pet**  
Michael James Yurkoski, 16, Sophomore, Broomfield High School, Broomfield, Colorado, T: Nicholas Barnes
- EN022 Design and Construction of an Automated Device to Measure Piano Action Characteristics: Phase II**  
# Richard Douglas Condit, 16, Junior, Bethel Academy Home School, Lake Charles, Louisiana, T: Lane E. Miller
- EN023 Effect of the Length of the Chord Line of a Wing on the Amount of Lift**  
Belle Dean Bredehoft, 16, Sophomore, Mount Vernon High School, Alexandria, Virginia, T: Laura Hall
- EN024 Effect of Fillers on Adhesion at Polymer Interfaces**  
Anshul Ajay Shah, 17, Senior, Ward Melville High School, East Setauket, New York, T: George J. Baldo
- EN025 Biomechanical Motion and its Application in Hydrogen Fuel Cells**  
Jeremy Fryer-Biggs, 16, Junior, The Day School, New York, New York, T: Irma Jarcho
- EN026 "Tire"D of Cracking Up?**  
Rachelle Nicole Rafees, 15, Freshman, Northwest High School, Justin, Texas, T: Teresa Dameron

- EN027 Compressing Speech into a Low-bitrate Format**  
Ezra Jacob Rapoport, 17, Junior, Horace Mann School, Bronx, New York, T: Frances Pearlmutter
- EN028 Influence of an Aqueous Environment on the Solidification Behavior of Underwater Wet Welds**  
Jessica Dawn Caver, 16, Sophomore, Woodlin High School, Woodrow, Colorado, T: Nancy Gettman
- EN029 Deformation and Recovery of Shape Memory Alloy**  
Kristin Gayle Kiriluk, 18, Senior, Glen Burnie Senior High School, Glen Burnie, Maryland, T: Catherine M. Kelly
- EN030 Improving the Performance of Magnetoplasmadynamic Thrusters**  
Spencer Charles DeSanto, 17, Junior, R. Nelson Snider High School, Fort Wayne, Indiana, T: Barbara Gabef
- EN031 Nose Cone Design and the Dynamics of Model Rocket Flight ##**  
Blake Andrew Forsythe, 18, Senior, Harmony High School, Farmington, Iowa, T: LeRoy V. Pankey
- EN032 FMQ 2000**  
Hernan Lionel Cianfagna, 17, Senior, Technical School #37 "Hogar Naval Stella Maris", Buenos Aires, Buenos Aires City, Argentina, T: Alberto Rodriguez
- EN033 A Synthetic Slithering Serpent**  
Seth Russell Heltsley, 17, Junior, Tullahoma High School, Tullahoma, Tennessee, T: Frank Vanzant
- EN034 CRP - Cement and Recyclable Plastics**  
Justin D. Greiner, 17, Junior, Keota High School, Keota, Iowa, T: Christopher Wayne Parrish
- EN035 Construction of Strengthened Composites by Co-Polymerization of Styrene with Polybutadiene**  
Christopher Richard Hammen, 15, Freshman, Loyola-Sacred Heart High School, Missoula, Montana, T: Merrie Rampy
- EN036 Stirling Solar Electric Generating System ##**  
Thomas Raymond Sanders, 16, Junior, Lake Havasu High School, Lake Havasu City, Arizona, T: Joe Meli
- EN037 Improved Microarray Fabrication**  
Aaron Arthur Chevalier, 18, Senior, Oak Ridge High School, Conroe, Texas, T: Larry Walker
- EN038 NEOSOL: The Re-engineered Solar Powered Car for You #**  
Elliot A. Ortiz, 16, Junior, Colegio San Jose, San Juan, Puerto Rico, T: Amaryllis Diaz
- EN039 Effect of an Atmosphere of Carbon Dioxide on the Aerodynamics and Lift in a Low-speed Wind Tunnel**  
Sandra Neuenschwander Ottensmann, 18, Senior, Brebeuf Preparatory School, Indianapolis, Indiana, T: Claire Baker
- EN040 Vapor Exchange/Pressure Control Wheelchair Seat ##**  
Christina Lynn Adams, 16, Junior, Bartlesville High School, Bartlesville, Oklahoma, T: Betty Henderson
- EN041 Revolutionary Airfoil**  
Nicholas Lamar Creamer, 16, Sophomore, Weber High School, Pleasant View, Utah, T: Lareen Radle
- EN042 Analytical Investigation of Model Rocket Motor Design**  
Patrick Louis Carucci, 15, Freshman, Roy Junior High School, Roy, Utah, T: Kathy Ochsenein
- EN043 Electrolytic Removal of Heavy Metal Toxins from Mine Runoff Contaminated Lake Water ###**  
Anne E. Woods, 17, Senior, Ben Lomond High School, Ogden, Utah, T: Tim Smith
- EN044 Glass IV: Toward a Standard ##**  
Amanda Jeanne Busby, 18, Senior, Kennett High School, Kennett, Missouri, T: Robert Earl Gill
- EN045 Effect of Mass Gliding Ability of Paper Airplanes**  
Fung Chit Tung, 17, Senior, Joplin-Inverness High School, Joplin, Montana, T: Jeffrey Wehr
- EN046 Mikrowanderer - Articulated Bipedal Walking Platform**  
Thomas Matthew Taylor, 16, Sophomore, Hilton Head High School, Hilton Head Island, South Carolina, T: Stephanie McNulty
- EN047 An Automated System for pH Management**  
Gregory Elliot Needel, 17, Junior, Woodlawn Magnet High School, Baltimore, Maryland, T: Paul Leuthauser
- EN048 Effects of Fiber Additives on the Compressive Strength of Concrete: Two-Year Study**  
Sarah Elizabeth Gutman, 14, Freshman, Mount De Chantal Academy, Wheeling, West Virginia, T: Manetta Calinger
- EN049 Automation of Plant Watering**  
Gail Marie Siewiorek, 18, Senior, Taylor Allderdice High School, Pittsburgh, Pennsylvania, T: Catherina Didomenico
- EN050 Used Tires for the Elaboration of Rubberized Cement Construction Blocks**  
Giselle Ayala-Santana, 16, Junior, Santiago Apostol Catholic School, Fajardo, Puerto Rico, T: Ilsa G. Bonet
- EN051 Development and Testing of a Wind Tunnel to Produce Supersonic Speeds at Ground Level #**  
Randall Cody Arnold, 16, Sophomore, Tishomingo County High School, Iuka, Mississippi, T: Bobby Lowrey
- EN052 High Strength Light-Weight Concrete ##**  
Matthew Dale Langston, 18, Senior, Tishomingo County High School, Iuka, Mississippi, T: Malcolm Brown
- EN053 Effect of a Beam's Shape on its Strength**  
Kathleen Sweeney Johnston, 16, Sophomore, Georgetown Visitation Prep School, Washington, District of Columbia T: Sharon Hillery
- EN054 An Energy Saving Computer-controlled Shower #**  
Paul Alexander Treib, 17, Junior, Saginaw Arts and Sciences Academy, Saginaw, Michigan, T: Dan Sealey
- EN056 Sonic Lens: Focusing Sonic Energy Using a Matrix Array**  
Aaron Hoapili Cates, 17, Senior, Kamehameha Secondary School, Honolulu, Hawaii, T: Lawrence Mordan
- EN057 Manipulating Reptile Movement through Robotics**  
Paul Yeager Loboschfsky, 15, Freshman, Park City High School, Park City, Utah, T: Ed Mulick
- EN058 Mars in-situ Propellant Production**  
David Robert Hagen, 15, Freshman, Ayersville High School, Defiance, Ohio, T: Kathleen Lamming
- EN059 Characterizing Vibrations in Structures**  
Corbin James McFarlane, 17, Senior, Spring Creek High School, Spring Creek, Nevada, T: Daniel Mendez
- EN060 Microspheres for Drug Delivery via the Lung**  
Craig Henry Turner, 18, Senior, Baltimore Polytechnic Institute, Baltimore, Maryland, T: Sally Kutzer
- EN061 Effects of Concrete Beam Design on Stress Strength**  
John Henry Schwinger, 17, Junior, Stuart-Menlo High School, Stuart, Iowa, T: Larry Schwinger
- EN062 Cotton Gin Trash—Feasible Alternative to Wood-based Particleboard: Two-Year Study**  
Ryan Douglas Curry, 18, Senior, Tahoka High School, Tahoka, Texas, T: Betty Stennett
- EN063 Maternity Seatbelt**  
Sharon Elizabeth Matchett, 18, Senior, Grosvenor Grammar, Belfast, Northern Ireland, T: Richard Cowan
- EN064 A New Approach to Display 3-D Imaging by the Special Device**  
Shuai Hu, 18, Senior, No. 1 Middle School Affiliated to Central China Normal Univ, Wuhan, Hubei, China, T: Liu Chaomei
- EN065 High-temperature Brazing of Traction Motor Commutator Risers without Copper Recrystallization**  
Dmitry V. Pechenov, 16, Junior, Angarsk Lyceum #2, Angarsk, Russia, T: Morozova Tatyana Vladimirovna
- EN066 Combining Multiple High-pressure Flows**  
Benjamin Samuel Lloyd, 17, Junior, Tuscarawas Valley High School, Zoarville, Ohio, T: Karl Schwenk
- EN067 Effects of Chevrons on Lift**  
Jessica Lynn Gray, 18, Senior, Plano West Senior High School, Plano, Texas, T: Barbara Pittenger
- EN068 Effect of Bumper Material on the Energy Absorbed and Peak Acceleration When Impacted into a Flat Barrier**  
Orion P. Keifer, 17, Senior, Paxon School for Advanced Studies, Jacksonville, Florida, T: William Barnes
- EN069 Digital Flash Modulation for Data Transmission #**  
Ryan Joseph Bienvenu, 17, Junior, Caddo Parish Magnet High School, Shreveport, Louisiana, T: Sheryl Thomas
- EN070 Unitized Regenerative Fuel Cell**  
Bharat Guda Reddy, 17, Junior, Tuscaloosa Academy, Tuscaloosa, Alabama, T: Kim Ouderkirk
- EN071 Can Acoustical Methods Be Used to Detect and Characterize Corrosion? Phase II #**  
George Hwang, 16, Junior, Carman-Ainsworth High School, Flint, Michigan, T: Iosif Shkolnik



- EN072 Development and Implementation of an Integrated Hydrogen/Oxygen Modifier into Standardized Fuel Systems**  
Brian Pearson Shedd, 18, Senior, Middletown Senior High School, Middletown, Maryland, T: Von Mosser
- EN073 Fuel Cells**  
Rebecca L. Idell, 15, Sophomore, John Jay Senior High School, Hopewell Junction, New York, T: John Ditton
- EN074 Composite Strength: Phase II**  
# Amanda L. Corey, 18, Senior, Cahokia High School, Cahokia, Illinois, T: Barbara Vinson
- EN075 Rox-544 v.2: Walking Like an Insect**  
# Alexis Lussier Desbiens, 18, Senior, Cegep de Victoriaville, Victoriaville, Quebec, Canada, T: Christian Heon
- EN076 Degradation of Poly(Lactic Acid)-Co-Poly(Glycolic Acid)/Tetraethoxysilane Polymers Observed by Electron Microscope**  
Mauro Levi D'Ancona, 16, Sophomore, Escola Americana de Campinas, Campinas, Sao Paulo, Brasil, T: Vivian H. Schlesinger
- EN077 R.E.A.L.E. Global Warming Solutions II**  
# Geoffrey Michael Olynyk, 17, Junior, Aldershot High School, Burlington, Ontario, Canada, T: Daniel Visentin
- EN078 The Tunnel Test**  
Paul Gregory Monson, 17, Junior, Williston Senior High School, Williston, North Dakota, T: Phil Nelson
- EN079 Mechanical Properties of Metal-coated Fiber Composites**  
Lauren Hansen, 15, Freshman, Wasatch High School, Heber, Utah, T: Joan Kohler
- EN080 Which Truss Can You Trust?**  
# Robert William Hernandez, 17, Junior, Ellendale Public High School, Ellendale, North Dakota, T: Peter Sykora
- EN081 Stainless Solution to a Leaky Problem**  
# Jerome Harold Koistinen, 18, Senior, Hamlin High School, Hayti, South Dakota, T: Christine Owen
- EN082 Airflow Profile of a Wind Tunnel: Phase II**  
Brian David Boyd, 17, Senior, Bayfield High School, Bayfield, Wisconsin, T: Richard Erickson
- EN083 Effects of Metal Corrosion on Cement**  
Kimberly Natasha Mann, 16, Sophomore, Wingate High School, Fort Wingate, New Mexico, T: Michelle Eustice
- EN084 Omega MP3 Player**  
Rodolfo Pedo Pirotti, 19, Senior, Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo,RS, Brasil, T: Marcos Zuccolotto
- EN085 A Safer Ride: Controlling the Force of Airbags**  
Sarah Marie Gibson, 16, Junior, Saint Mary's High School, Phoenix, Arizona, T: Donald Galen
- EN086 Petrosilicium: A Highly Advanced Product for Building**  
Liliana de las Angeles Orellana, 18, Senior, Instituto Argentino - Arabe, SM Tucuman, Tucuman, Argentina, T: Marta Elena Dib
- EN087 Crayon Creations**  
Meghan Elizabeth Whitfield, 15, Sophomore, Glen Rose High School, Malvern, Arkansas, T: Connie Marlene Tuggle
- EN088 Signal Dissection by Repetitive Smoothing and Extraction**  
Elena Leah Glassman, 14, Freshman, Lenape Middle School, Doylestown, Pennsylvania, T: Sandra Musoleno
- EN089 MEMS: Microelectromechanical Systems—Research and Development of EM Actuators**  
## Jonathan Aaron Treitel, 18, Senior, Central High School, Philadelphia, Pennsylvania, T: Dennis Erlick
- EN090 Coefficient of Lift of an Airfoil at Different Angles of Attack**  
Michael Kollin Smith, 17, Junior, Palo Alto Senior High School, Palo Alto, California, T: Colin Quinton
- EN301T Gaseous Emissions from Char Particle Combustion in a Fluidized Bed**  
Andrew Michael Coughlin, 17, Senior  
Virginia Bess Eakin, 18, Senior  
Laramie Senior High School, Laramie, Wyoming  
T: Eric Weitzel
- EN302T Antistatic Tape Application on a Robotic Assembly**  
Richard John Davies, 18, Senior  
James Palmer, 18, Senior  
Neil Roques, 18, Senior  
Bassaleg Comprehensive School, Newport, Wales, United Kingdom  
T: Peter Harriman
- EN303T The Coolface Multi-Tray**  
Stephanie Nicole Kaszuba, 17, Junior  
Clara Yentin Tow, 16, Sophomore  
Smithtown High School, Smithtown, New York  
T: Elaine Champey
- EN304T Pressured to Work . . . Again**  
Jerry De La Huerta, 17, Senior  
Roman Ramos, 18, Senior  
Simon Rivera High School, Brownsville, Texas  
T: Miguel A. Chapa
- EN305T Special Electrical Wheelchair for Motion Incapacitated People**  
Bernardo Ariel Garcia, 15, Sophomore  
Federico Jose Tarruco, 14, Freshman  
Pedro Poveda, Montevideo, Uruguay  
T: Jose Miguel Garcia
- EN306T A Comparison of Three Modes of Applied Flow Visualization**  
John Patrick Bennett, 15, Junior  
Paul Vincent Calluzzo, 17, Junior  
Manhasset Junior-Senior High School, Manhasset, New York  
T: Peter Guastella
- EN307T Bottle Rockets: Aerodynamic Capabilities of Nose Cones and Fins**  
Katrina T. Grigsby, 15, Sophomore  
Kassie Kendell, 15, Sophomore  
Bonneville High School, Ogden, Utah  
T: Michelle Wood
- EN308T Computer Mouse Control for Quadraplegic People**  
Israel Astacio, 16, Junior  
Rafael Torres, 16, Junior  
Superior Jardines de Ponce, Coto Laurel, Puerto Rico  
T: Fernando L. Ghigliotti
- EN309T Gauss Propulsion System 3600**  
Robert Andrew Fellinger, 17, Junior  
Colin Chalupa, 16, Junior  
# Mark H. Lund, 17, Junior  
Hilton Head High School, Hilton Head Island, South Carolina  
T: Kathryn Howard
- EN310T Parabolic Reflectors for Better Utilization of Solar Energy**  
Juan Luis Acevedo, 14, Freshman  
Eli Samuel Velez Cruz, 14, Freshman  
Colegio Evangelico Capitan Correa, Arecibo, Puerto Rico  
T: Irma Velez
- EN311T The Feasibility of Peltier-based Cooling for Use with Solid State Electronics**  
# Sloan J. Lindsey, 17, Junior  
Derrick R. Olson, 16, Junior  
Richland Northeast High School, Columbia, South Carolina  
T: Ginger Foley
- EN312T Cluck-A-Doodle-Do!**  
Patrick L. Donnelly, 19, Senior  
Terence John Carmichael, 19, Senior  
Saint Patricks College, Maghera, County Derry, Northern Ireland, T: Kieran McGeown
- EN313T Auxiliary Electrical System in the Shrimp Industry**  
Jose Guadalupe Comejo, 17, Junior  
Omar Santillan, 19, Junior  
Bertin Serrano, 17, Junior  
Politecnico de Baja California, Tijuana, Baja California, Mexico  
T: Sergio David Pila
- EN314T Don't Rock the Boat: Phase III**  
## Barrett Christopher Boutte, 18, Senior  
## Julie Michelle Roy, 18, Senior  
Catholic High School, New Iberia, Louisiana  
T: Donald Voorhies

- EN315T The Robot**  
Alisha El-Amin, 14, Senior  
John Matthew Bolden, 15, Sophomore  
Amalim C. Onyia, 17, Junior  
Piney Woods Country Life Sch, Piney Woods, Mississippi  
T: Barbara Ward
- EN316T Protists and Photovores**  
Timothy A. Machado, 15, Freshman  
Scott A. McPherson, 14, Freshman  
Bellarmine College Preparatory, San Jose, California  
T: Mark Riese
- EN317T Novel Fuel Formulations to Improve Health and Safety by Reduction of Noxious Emissions**  
Adam S. Judelson, 16, Junior  
Ari A. Bencuya, 16, Junior  
Saratoga High School, Saratoga, California  
T: Robert Kucer
- EN318T Apollo's Chariot**  
Andrew Lawrence Murphy, 16, Sophomore  
Cheng-Ju Henry Wu, 16, Sophomore  
Yewkit Bernard Lo, 15, Sophomore  
Shepton Freshman High School, Plano, Texas  
T: Debbie Ferguson
- EN319T Emu Oil Lubrication/Performance Qualities Using Dynamometer, Spectrochemical/Infrared Analysis**  
Amy Ward Tasca, 18, Senior  
Brian Matthew Ness, 18, Senior  
Winona Senior High School, Winona, Minnesota  
T: Jerry Foster
- EN320T Advantages of Hybrid Composites**  
# Lesley Danielle Grimes, 16, Junior  
Staci Pack, 16, Junior  
Drew Central High School, Monticello, Arkansas  
T: Dennis Thurman
- EN321T Ice-Crawler: The Rescue Robot for Snow, Ice, and Glaciers**  
Hanna Hult Craig, 17, Junior  
Heather Hult Craig, 17, Junior  
East Anchorage High School, Anchorage, Alaska  
T: Deb Fancher
- EN322T Thermal Autospeed Fan**  
Salma Yasmin Mohd. Yusuf, 17, Senior  
Nurul Atiqah Ali, 16, Senior  
Wan Nurhayati Wan Mohammad, 17, Senior  
Tunku Kurshiah College, Seremban, Negeri Sembilan, Malaysia  
T: Jeyanathan Kandiah
- EN323T Design of Automatic Controller of Salinity in Shrimp Hatchery**  
Daniel Kurniadi Nyoto, 17, Senior  
Domingo Edy Maukaling, 17, Senior  
Christian High School of Dharma Mulya, Surabaya  
East Java, Indonesia, T: Tri Anggono Prijo
- EN324T Solar Vehicle Prototype**  
Oswaldo Mejia Bsiceno, 17, Junior  
Hugo Eunogie, 18, Junior  
Padre Iluminato, Lima, Lima, Peru

## ENVIRONMENTAL SCIENCE

GRAND AWARDS PRESENTED BY:  
ENVIRONMENTAL PROTECTION AGENCY

- EV001 Biodiversity**  
Sadie Rachelle Sweetman, 18, Senior, Liberty High School,  
Liberty, South Carolina, T: Louisa Jane Fleming

- EV002 Instrumental Neutron Activation Analysis of Fish Muscle Tissue Found in Estuarine Environments—Effects of Processing Trace Elemental Content of Shrimp, Trout and Tilapia: Two-Year Study**  
# Amit Harshad Patel, 17, Junior, Lecanto High School, Lecanto, Florida, T: Ronald Worthington
- EV003 MTBE: Can it be Found in Our Community's Water Wells?**  
Jennifer Kali Herf, 16, Sophomore, Crestview High School, Crestview, Florida, T: Julie Hurlburt
- EV004 Effects of Florida Bay's Hydrologic Restoration**  
Jenna Lyanne Lewis, 16, Sophomore, Cooper City High School, Cooper City, Florida, T: Douglas T. Ferraro
- EV005 Is Excessive Nitrogen Harmful to Grass Shrimp? Four-Year Study**  
Meredith Jean Morton, 17, Junior, Winter Haven Senior High School, Winter Haven, Florida, T: Rhea E. McKinney
- EV006 Are Pansies Pansies?**  
Moritz Rothacker, 18, Senior, Aucilla Christian Academy, Monticello, Florida, T: Bonnie F. Littlefield
- EV007 Phytoextraction of Lead from Contaminated Soils Using *Triticum aestivum***  
Marc A. Burrell, 17, Junior, Nicolet High School, Glendale, Wisconsin, T: Ron LeMay
- EV008 Development of Artificial Wetland Reclamation Project for the Removal of Excess Nitrogen and Phosphate Compounds**  
Mike Justin Schelle, 18, Senior, John Adams High School, South Bend, Indiana, T: Nevin Longnecker
- EV009 Effects of a Stimulated Thermal-Saline Discharge on the *Ulva sp.***  
Sarah Jane Tynes, 15, Freshman, Land O' Lakes High School, Land O' Lakes, Florida, T: Terry Stanley
- EV010 Remediation of Nitrate and Nitrite from Water Using Zero-Valent Iron: Phase II**  
# Ashley Eran Blazina, 18, Senior, Osceola High School, Kissimmee, Florida, T: Nancy Evers
- EV011 Physiological Effects of Heavy Metals in Runoff Water**  
## Stephen Andrew Hedges, 17, Junior, Andean High School, Merrillville, Indiana, T: Kathryn Hedges
- EV012 Haze and Ground Level Ozone**  
Anne Kelso Jensen, 16, Sophomore, York Suburban Sr High School, York, Pennsylvania, T: Rodney Martin
- EV013 A Biosurvey of the Effects of County Ditch 36 on Horseshoe Creek: Phase III**  
# Alyssa Mae Anderson, 17, Junior, Lake Crystal Wellcome Memorial High School, Lake Crystal, Minnesota  
T: Sue DePerno
- EV014 Inhibition of Germination and Growth in Dicots by VOC's in Surface Coatings**  
# Matthew David Borgen, 18, Senior, Lake Park/Audubon High School, Lake Park, Minnesota, T: Michael Wichmann
- EV015 Biodiesel Fuel from Used Cooking Oil**  
# Landon Turner Lasseter, 18, Senior, Colquitt County High School, Moultrie, Georgia, T: Tommy Hall
- EV016 Biopolymer from Shrimp Shells**  
Nigel Dane Fordham, 18, Senior, Colquitt County High School, Moultrie, Georgia, T: Tommy Hall
- EV017 A Comparative Water Quality Study of Marengo Cave National Landmark and Patoka Lake**  
Denise Nicole Duke, 18, Senior, Paoli Junior-Senior High School, Paoli, Indiana, T: Angela Blevins
- EV018 Can Rooftops Be Used To Reduce Global Warming?**  
Elise Rosamunde Williams, 18, Senior, Griffin High School, Griffin, Georgia, T: George Braman
- EV019 Effects of Salicylic Acid on *Closterium* Algae in Poultry Litter Runoff Water**  
# Lindsey Diane Fimple, 17, Junior, Vinita High School, Vinita, Oklahoma, T: Steven Kirby
- EV020 Environmental Behavior of Methyl tert-Butyl Ether**  
## Tanner M. Callender, 17, Junior, Wamego High School, Wamego, Kansas, T: Terry Callender
- EV021 Fresh Water Mussel Growth Dynamics Resulting from Reattachment of Zebra Mussels**  
# Noelle Joan Oas, 16, Sophomore, Winona Senior High School, Winona, Minnesota, T: Ken Mann

- EV022 A Better Barrier**  
Kyle Robert Head, 17, Senior, MacArthur Senior High School, Lawton, Oklahoma, T: Celia Hawk
- EV023 Understanding Wildfires: Study in Wood Pyrolysis and Fire Spreading Rates**  
## Ann Lai, 16, Senior, Hathaway Brown School, Shaker Heights, Ohio, T: Patricia K. Hunt
- EV024 Relationship between Buffer Zones and Fertilizer Runoff into Surface Water from Alfalfa Crops**  
Darcy Ann Daggy, 16, Sophomore, Mecosta Osceola Math, Science and Technology Center, Big Rapids, Michigan, T: Matthew Williams
- EV025 Study of Competition between Native and Non-Native Oysters**  
# Katherine Frances Holt, 17, Junior, Bruton High School, Williamsburg, Virginia, T: Emil Davis
- EV026 VIRIL Rum Waste Product**  
Marianna Nicole Hagbloom, 17, Senior, Good Hope School, St Croix, Virgin Islands, T: Douglas McMinn
- EV027 Design of an Internet-based Soil Hydration Sensor System**  
Michael Beroen Hart, 15, Freshman, Alfred M. Barbe High School, Lake Charles, Louisiana, T: M. Soileau
- EV028 Environmental Hormones: Testing PVC Extract on Fruit Flies**  
Betsy Christine Taylor, 17, Senior, William J. Palmer High School, Colorado Springs, Colorado, T: Ann Bernhard
- EV029 Genetic Diversity in Ecologically Distinct Populations of Chemoautotrophic Bacteria**  
Natalie Bloom Muren, 18, Senior, McNary Senior High School, Keizer, Oregon, T: Steven Holman
- EV030 Implication of Phosphate Supplementation on a Typical Food Chain**  
Christine Elizabeth Thompson, 15, Freshman, Northwestern High School, Kokomo, Indiana, T: Patricia Arnett Zeck
- EV031 Harnessing the Ocean's Movements**  
Gary Kenneth Oxner, 16, Sophomore, Americas High School, El Paso, Texas, T: Andrew Werner
- EV032 Comparing the Effectiveness of Marine Antifouling Paints**  
Elizabeth Van Cortlandt Varela, 15, Sophomore, West Potomac High School, Alexandria, Virginia, T: Betsy Claassen
- EV033 Evaluation of C.P.B. to Host Plant Resistance in Potatoes**  
Erica Fran Smolow, 18, Senior, Great Neck North High School, Great Neck, New York, T: Alan Schorn
- EV034 Seventeen Weeks on the Duncan Canal**  
Raeanna Lee Poplus, 14, Freshman, Destrehan High School, Destrehan, Louisiana, T: Shannon McKeon
- EV035 Biosolids: The N of the Future? Phase II**  
Jennifer Elizabeth Nuest, 16, Sophomore, Kouts Junior-Senior High School, Kouts, Indiana, T: James Stone
- EV036 Hellgrammite Abundance as a Function of Froude Number and Particle Size Distribution in Several Smaller Tributaries of the Rivanna River System**  
Heather Lara Austin, 17, Junior, Renaissance School, Charlottesville, Virginia, T: Catherine Stewart Coffman
- EV037 Study of the Riparian Ecosystem along the Rio Grande Bosque**  
# Nathan Thomas Tooker, 17, Junior, Los Lunas High School, Los Lunas, New Mexico, T: Rick Cole
- EV038 An Evaluation of Modified *C. reinhardtii* to Sequester Metals**  
Alexandra Hope Antonioli, 16, Sophomore, Butte High School, Butte, Montana, T: Maureen Driscoll
- EV039 Grasslands vs. Woodlands: Change during the Last Century Using Remote Sensing**  
Sue Andra White, 18, Senior, Manzano High School, Albuquerque, New Mexico, T: Ellen Loheman
- EV040 Spectrophotometric Inductively-coupled Plasma**  
Russell Douglas Goode, 17, Senior, Brooks High School, Killen, Alabama, T: Vicki Farina
- EV041 Effects of 60 Hz Magnetic Fields on the Mitotic Rate of *E. coli***  
Timothy Christopher D'Auria, 17, Senior, Staten Island Technical High School, Staten Island, New York  
T: Karen Ladley
- EV042 Bioremediation of Heavy Metals in Contaminated River Water**  
Jordan Thomas Farina, 16, Junior, Brooks High School, Killen, Alabama, T: Wanda Phillips
- EV043 Effect of Toll Booth Enclosure on Concentration of Vehicular-produced Carbon Monoxide**  
Benjamin J. Cole, 16, Sophomore, Coral Reef Senior High School, Miami, Florida, T: Virginia Sward
- EV044 Hazards of Biocide Transport**  
Jennifer K. Messina, 15, Sophomore, Gulliver Preparatory School, Miami, Florida, T: Ariana Garcia
- EV045 Mosquito Control via Acoustic Larvicide: Pesticide-free Solution**  
# Michael H. Nyberg, 15, Sophomore, Lyme-Old Lyme High School, Old Lyme, Connecticut, T: William Cerino
- EV046 Hydraulic Conductivity Analysis to Determine the Presence of a Possible Clogging Layer at the Island-Estuary Margin**  
Sarah Michelle Wilhoit, 18, Senior, Arkansas School of Mathematics & Sciences, Hot Springs, Arkansas  
T: Alecia Castleberry
- EV047 Effects of Polychlorinated Biphenyls on Cancer Cells**  
# Jillian Lee Werbeck, 17, Senior, Liverpool High School, Liverpool, New York, T: Jeff Peneston
- EV048 Biotic Bloating: Effect of Gas on Mass**  
Jennifer Lee Stovall, 18, Senior, Smith Valley High School, Smith, Nevada, T: Randi Hunewill
- EV049 Could Antacids be a Cure for Acid Rain?**  
Lindsay Marie Featherston, 17, Junior, White Pine County High School, Ely, Nevada, T: Chalise Crookshanks
- EV050 Study of the Microorganisms of the Ouachita River**  
Kate Lillian Riggs, 17, Junior, Camden Fairview High School, Camden, Arkansas, T: Dennis Miller
- EV051 Invisible Piranha III: Effect of Bacteriophage Therapy on Ballast Water**  
Scott Bailey Zeglin, 16, Sophomore, Oak Ridge High School, Conroe, Texas, T: Larry Walker
- EV052 Localization of Bioremediated Zinc and Lead in *Elodea sp.*: Phase VII**  
Jay E. Morgan, 19, Senior, Benjamin E. Mays High School, Atlanta, Georgia, T: Leon Sanders
- EV053 *In situ* Phytoremediation of Petroleum Contaminated Soil: Phase III**  
# Amanda Teresa Chavez, 17, Senior, Taos High School, Taos, New Mexico, T: Agapito Griego
- EV054 Oil Absorbency of Natural Fibers**  
Rebecca Suzanne Allen, 18, Senior, duPont Manual Magnet High School, Louisville, Kentucky, T: Glenn Zwanzig
- EV055 Household Chemicals Impact the Environment**  
Amanda Cruz Martinez, 16, Sophomore, Mason High School, Mason, Texas, T: Bonnie Schmidt
- EV056 Study of Wind Turbine Efficiency in Counter-rotating Series**  
Scott Emerson Bean, 15, Freshman, Fremont High School, Plain City, Utah, T: Kathleen Ochsenbein
- EV057 Surfactant-enhanced Aquifer Remediation of DNAPLs**  
# Tanner John Brunsdale, 17, Junior, Bountiful High School, Bountiful, Utah, T: Dwight Brown
- EV058 Complications of the Greenhouse Effect: The Effect of an Increase of  $H_2O^+$  in the Seawater in the Amount of Chlorophyll in *Ulva lactuca***  
Enrique J. Rivera-Sosa, 15, Freshman, Dr. Maximo Donoso Sanchez, Juana Diaz, Puerto Rico, T: Roberto Rodriguez Rodriguez
- EV059 Comparative Study of Water Purification Systems**  
Jennifer Lynn Tonioli, 14, Freshman, Fremont High School, Plain City, Utah, T: Kathy Ochsenbein
- EV060 Impact of Elevated Carbon Dioxide on Water-use Efficiency of Wheat**  
Allison Ann Jochim, 18, Senior, Joplin-Inverness High School, Joplin, Montana, T: Jeffrey Wehr
- EV061 Release of Xenoestrogenic Compounds into Water Stored in Different Plastic Containers**  
Susan Kathrene Gray, 17, Junior, South Carolina Governor's School for the Arts and Humanities, Greenville, South Carolina, T: Michael Farmer

- EV062 Comparative Study of the Nutrients and Bulk Density in Areas of Secondary Forests Previously Devoted to the Cultivation of Tobacco and Coffee in Naranjito**  
## Angel L. Santiago, 17, Senior, Superior Francisco Morales, Naranjito, Puerto Rico, T: Aurea Berrios Saez
- EV063 Effects of Air Pollution on Plants**  
Christina Grace Rivera, 18, Senior, Keystone Oaks High School, Pittsburgh, Pennsylvania, T: Elizabeth Jones
- EV064 On the Ecology of the Red Mangrove *Rhizophora mangle*: Forest Morphology and Densitometry vs. Species Colonizing Success**  
# William Vazquez-Claudio, 17, Senior, Casiano Cepeda High School, Caguas, Puerto Rico, T: Angel L. Diaz-Rosario
- EV065 Selection of Methods of Acid Mine Drainage Remediation Using Specific Criterion**  
# Natalie Alyssa Kruse, 16, Senior, Athens High School, The Plains, Ohio, T: Andrea Anderson
- EV066 Wetlands—Industrial Strength Cleaner: Year III**  
# Evan Phillip Peschel, 17, Senior, Seguin High School, Seguin, Texas, T: Donna Boelter
- EV067 Effects of Electromagnetic Fields on *Drosophila melanogaster*: Three-Year Study**  
## Rocio Moya, 18, Senior, Martin High School, Laredo, Texas T: Lizzy Newsome
- EV068 Trends in Mangrove Canopy Growth and Decline from 1948 to 1998 on the Robert's Bay Islands**  
Kristi Anne Yutzy, 17, Senior, Sarasota High School, Sarasota, Florida, T: Wallace Black
- EV069 Reprocessing of Plastic Wastes at Place of Generation**  
Yash Vasant Joshi, 14, Freshman, St. Xavier High School, Mumbai, Maharashtra, India
- EV070 Potential of Natural Sediments to Remove Metal Ions from Waters**  
Zachary David Benson, 17, Junior, Colstrip High School, Colstrip, Montana, T: Bernerd Smith
- EV071 Effect of Poultry Litter on Lead-contaminated Soil**  
Robert Raymond Hart, 18, Senior, Cole R-V High School, Eugene, Missouri, T: Doug Farris
- EV072 Carbon Sequestration**  
Ryan Lynn Brunner, 17, Junior, Newell High School, Newell, South Dakota, T: Frances Olson
- EV073 Buffer Zones as a Method of Controlling Waste Runoff**  
Sarah Marie Brown, 18, Senior, Mansfield R-IV High School, Mansfield, Missouri, T: Pamela Sue Probert
- EV074 Effects of Oil on *Elodea densa***  
Charles J. Lenze, 17, Junior, Stuart-Menlo High School, Stuart, Iowa, T: Larry Schwinger
- EV075 Comparative Study of Standard #1 Diesel Fuel vs. Rapeseed**  
# Nicholas Robert Oberlin, 17, Junior, Stryker High School, Stryker, Ohio, T: Doneen Dyess
- EV076 Where Have All the Tires Gone?**  
David Alban Joseph, 16, Sophomore, The Linsly School, Wheeling, West Virginia, T: John Bisbocci
- EV077 Improving Bioavailability of Lead for Absorption by Sunflowers**  
## Kyle F. Usbeck, 17, Junior, Wilson High School, Reading, Pennsylvania, T: Ann Bolek
- EV078 Uses of FenuGreek in Water Purification and Food Preservation**  
Kavita Misra Shukla, 16, Junior, Centennial High School, Ellicott City, Maryland, T: Michelle Bagley
- EV079 Contaminations across the Nations**  
Felicia Ann Haynes, 17, Junior, Cass Technical High School, Detroit, Michigan, T: Gwendolyn Hamilton
- EV080 How Fiery is Fiery? The Effects of Capsaicin on Aquatic Life**  
Candace Lynn Roller, 15, Sophomore, West Lauderdale High School, Collinsville, Mississippi, T: Nettie Mayatt
- EV081 Air Purification and Effectiveness of Filters of Various Composition Operating at Variable Airflow**  
Oliver Colic, 18, Senior, Green Valley High School, Henderson, Nevada, T: Joan Taylor
- EV082 Sulfide Tolerance of *Atriplex*, *Phragmites australis*, *Spartina alterniflora* and *Spartina patens***  
Kristen Elizabeth Smart, 17, Senior, Oak Grove High School, Hattiesburg, Mississippi, T: Kathy Smart
- EV083 Bioremediation—Second Year Study: Investigating Improved Organismal Clean-up of Oil Spills**  
Timothy Ian Brox, 18, Senior, Clovis West High School, Fresno, California, T: Wayne Garabedian
- EV084 Return to Eastman Lake—Determining of Residual Cu 2+ and Effects in Post-application Aquatic Environments: Five-Year Study**  
### Clifton Wayne Garabedian, 18, Senior, Clovis West High School, Fresno, California, T: Charles L. Chortanian
- EV085 Use of Phosphate Binders to Combat Eutrophication in Fresh Water Lakes**  
Vijay Yanamadala, 15, Sophomore, Palos Verdes Peninsula High School, Rolling Hills Estates, California, T: Peter Starodub
- EV086 Phytoplankton Productivity Forecasting in the South China Sea Using Neural Networks**  
Reinabelle C. Reyes, 17, Sophomore, Philippine Science High School, Quezon City, Metro Manila, Philippines T: Helen Caintic
- EV087 It's Hard to Digest Soil**  
Christian Sanchez, 16, Sophomore, Southwestern Educational Society, Mayaguez, Puerto Rico, T: Evelyn Montalvo
- EV088 Heat Transfer Rate of Zein Diaper Film and Its Stability After Urine Exposure**  
## Rishi Sahai Vasudeva, 17, Senior, Roswell High School, Roswell, Georgia, T: Larry Chappell
- EV089 *Drosophila* Susceptibility when Exposed to an Insecticide during Different Phases of the Circadian Rhythm**  
Sonya Victoria Iverson, 17, Junior, North Toole County High School, Sunburst, Montana, T: Lawrence Fauque
- EV090 Using Stabilizers to Prevent the Erosion of Soil Lining Inland Waterways**  
Stephanie Michelle Vanelli, 18, Senior, Victoria High School, Victoria, Texas, T: Sara Wayne
- EV091 Ecology of the Sevier River: Relationship of Water Chemistry and Aquatic Life**  
## Cara Olson, 18, Senior, Millard High School, Fillmore, Utah T: Richard Probert
- EV092 Regional Acid Rain and Cranberries**  
Carl Morrison Harper, 17, Junior, Wachusett Regional High School, Holden, Massachusetts, T: Carol Sullivan
- EV093 Mutagenicity of Orthene Pesticide and Its Degradate**  
Jane Alexandra Casey, 16, Junior, Lynn English High School, Lynn, Massachusetts, T: David R. Vito
- EV094 Reclaiming the Land: Experimental Method of Removing Salt Build-up from Irrigated Soil**  
## Laura Renee Baker, 18, Senior, Hartville R-II High School, Hartville, Missouri, T: Glen Boyer
- EV095 Effects of Enhanced Solar UV Radiation on Phytoplankton**  
## Tamra Laraine Ward, 17, Junior, Childersburg High School, Childersburg, Alabama, T: Joyce Taylor
- EV096 Effects of Temperature on Absorbency of Petroleum in Soil**  
Jennifer Lauren Ogg, 18, Senior, Westview High School, Martin, Tennessee, T: Rosemary A. Neville
- EV097 Fecal Coliform and Nitrogen Content of Livestock-affected Creeks in Northern Marengo County, Alabama**  
# Mary Elizabeth Cole, 15, Sophomore, Demopolis High School, Demopolis, Alabama, T: Terry Sprinkle
- EV098 Evaluation of Plant Succession after the 24-Command Wildfire**  
Alexandra Bamberger Napier, 17, Senior, Hanford High School, Richland, Washington
- EV099 The Rio Grande River—Good to the Last Drop?**  
# Paul Daniel Rossman, 16, Junior, Deming High School, Deming, New Mexico, T: Steve Goodgame
- EV100 Effect of Electromagnetic Fields on the Growth of *Eremosphaera* Algae Cells**  
Lee Ann Hauck, 18, Senior, Beach High School, Beach, North Dakota, T: Kathryn LaRae Uttech

- EV101 Limnological Study of Lake Water Pollution and Restoration**  
Landon Lowell Bladow, 18, Senior, Hankinson Public School, Hankinson, North Dakota, T: Marcus Friskop
- EV102 Can a Bioassay Be Used to Determine the Concentration of Salt in Water?**  
Abigail Eyring, 17, Junior, American Fork High School, American Fork, Utah, T: Don Bastian
- EV103 Influence of Thermoclines on Larval Cod and Haddock**  
David Ethan Leiberman, 16, Junior, Great Neck North High School, Great Neck, New York, T: Tom Elkins
- EV104 Dendritic Salt: An Effective New Preparation to Eliminate Ferrocyanide**  
Nathaniel Neil Carter, 15, Freshman, Roy Junior High School, Roy, Utah, T: Kathy Ochsenbein
- EV105 Corporate Pollution**  
Roxanne Freda Shepherd, 18, Senior, Wingate High School, Fort Wingate, New Mexico, T: Mitchell Eustice
- EV106 Matryoshka: Recycling Agricultural Wastewater and Pulp and Paper Industry Waste to Create a Bio-engineered Soil Supplement**  
Gibson W. Gervais, 16, Junior, Sandwich Secondary School, LaSalle, Ontario, Canada
- EV107 Ecoepidemiological Study of Leishmaniosis in Yanima, Tucuman Argentine**  
Iris Carolina Valdez, 16, Junior, Escuela de Educacion Integral Sarmiento, Juan B. Alberdi, Tucuman, Argentina  
T: Hugo Celestino Valdez
- EV108 Are You Safe?**  
Sara Dorothea Edie, 18, Senior, Sherman High School, Seth, West Virginia, T: Joan C. Banks-Miller
- EV109 Factors Controlling Forest Litter Decomposition: Phase IV**  
## Emmalisa Bautista Sparrow, 18, Senior, Monroe Catholic High School, Fairbanks, Alaska, T: Gregory Kahoe
- EV110 Sediment Toxicity at Five Sites along the Mississippi Gulf Coast**  
Meredith K. Drake, 16, Sophomore, Ocean Springs High School, Ocean Springs, Mississippi, T: Rene Hill
- EV111 Effect of Diesel and Oil on a Simulated Marsh Environment**  
# Sarah Brittany Bounds, 15, Sophomore, Mercy Cross High School, Biloxi, Mississippi, T: Deborah Worrell
- EV112 Wind Power**  
Jessica Stephanie Aquino, 15, Freshman, United Magnet of Engineering & Technology, Laredo, Texas, T: Belinda L. Lozano
- EV113 Noise Pollution: A Proof of Noise Solution**  
# Gladys Quijano Chavez, 16, Junior, Albert Einstein School, Lima, Peru, T: Nicolas Herencia
- EV114 Solar Distillation of Ocean Water**  
Ricardo Aracena Pastrian, 19, Junior, Escuela Militar Libertador General Bernardo O'Higgins, Las Condes, Santiago, Chile  
T: Sergio Alcaino Reyes
- EV115 Eichhornia crassipes: Heavy Metal Content Following Biological Wastewater Treatment**  
# Adam Douglas Smith, 17, Junior, Pearl River Central High Sch, Carriere, Mississippi, T: Stacey Britton
- EV116 O<sub>3</sub>? Oh No! Does Ozone Affect World Food Supply?**  
Jared Robert Vandenbark, 16, Sophomore, Fleming High School, Fleming, Colorado, T: Linda Niccoli
- EV117 Structural Characteristics of Hair as Determiners of Oil Absorbing Ability**  
Marguerite Blignaut, 16, Sophomore, Notre Dame Academy, Covington, Kentucky, T: Mary Ethel Parrott
- EV301T Daphnia magna Biochemiluminescence: A Bioindicator of Toxicity**  
Avi Melech Robbins, 18, Senior  
Jessica Elizabeth Chiafair, 18, Senior  
Lake Brantley High School, Altamonte Springs, Florida  
T: Susan N. Behel
- EV302T Wholly Macros: Is Hester Dendy, Leaf Bag, or Scoop Net the Most Effective Method of Sampling in Order to Correlate Macroinvertebrates with Water Quality?**  
# Lauren Elizabeth McQuiston, 18, Senior  
# Allyson T. Ponsock, 18, Senior  
# Rachel Lynn Troyer, 17, Senior  
Saint Joseph's Academy, Baton Rouge, Louisiana  
T: Linda Messina
- EV303T Study of Seagrass Beds Along the Central Texas Coast**  
David Michael Ho, 18, Senior  
Samuel Scott Keyburn, 16, Junior  
John B. Connally High School, Austin, Texas  
T: Pat Merkord
- EV304T Cultivars or Accessions: Comparative Study on the Ability of Certain Grass Species to Occupy Mining Waste Sites**  
Coralynn Louise Jones, 17, Junior  
Nora Nell Hanson, 16, Junior  
Stevensville High School, Stevensville, Montana  
T: George D. Wasser
- EV305T Nitrification Inhibitors**  
Bryan Christopher Tomm, 16, Junior  
Erin Joy Lewis, 17, Junior  
Delavan High School, Delavan, Illinois  
T: Mary Kay Wonders
- EV306T Phytoremediation of Crude Oil-contaminated Mediums Using Alfalfa & Hybrid Poplar: Phase III**  
Nicholas Ronald Mattila, 17, Junior  
Matthew Thomas Dimich, 17, Junior  
Lincoln Senior High School, Thief River Falls, Minnesota  
T: Patti Johnson
- EV307T Effects of Genetically-engineered Bt Zea mays on Soil Organisms**  
Sonja Jeanne Riddle-Ford, 16, Sophomore  
Jaime Elizabeth Jirele-Borleske, 16, Junior  
Laura Jean Jirele-Borleske, 18, Senior  
Winona Senior High School, Winona, Minnesota  
T: Carol Jefferson
- EV308T Assessment System of Urban Eco-Environment Based on 3-D VQ**  
Zi Ye, 18, Senior  
Yifan Zhou, 15, Sophomore  
Yinfei Zhang, 16, Junior  
No. 2 Secondary School Attached to East China Normal Univ., Shanghai, China  
T: Chen Shengqing
- EV309T Affection of Students' Tiredness Caused by the Air Environment**  
Huanhuan Dai, 17, Junior  
Wei Yue, 17, Junior  
Demin Shen, 15, Junior  
Affiliated Middle School of Beijing University, Beijing, China  
T: Qinglin Zhou
- EV310T Effects of Prosopis glandulosa on the Nitrate (NO<sub>3</sub><sup>-</sup>) Concentration in Top Soil**  
# Tonya Pickett, 18, Senior  
Priscilla VanDyke, 18, Senior  
Burkburnett High School, Burkburnett, Texas  
T: Pamela Francis  
T: Connie Marshall
- EV311T Environmental Toxicology: Effects of Point and Non-Point Sources on Stream Quality**  
Katherine L. Welch, 17, Senior  
William A. Paddock, 18, Senior  
Dayton Christian High School, Dayton, Ohio  
T: Tom Minor
- EV312T Effects of Increasing Salinity in Lac Des Allemands on Lead Fractionation in Surrounding Soils**  
Janie Elizabeth Reulet, 17, Senior  
Lee Michael Granier, 18, Senior  
Christie Lynn Duet, 17, Senior  
Saint James High School, St. James, Louisiana  
T: Kermit J. Gauthreaux

- EV313T Effects of Polymer Crystals on Nitrates and Plant Growth**  
# Kendal Wallis Bauman, 16, Junior  
# Ashley Rochelle Chapin, 17, Junior  
Pawnee High School, Grover, Colorado  
T: Carrie Erickson
- EV314T What Are the Effects of EDTA on the Availability of Cadmium for the Phytoremediation of *Agropyron cristatum*?**  
# Janelle Lorna Booth, 17, Junior  
# Erin Belinda Enright, 17, Junior  
Timber Lake High School, Timber Lake, South Dakota  
T: Chris Bohlander
- EV315T Comparative Analysis of Oregon White Oak Trees in Treated and Untreated Areas**  
Nicole Renee Blalock, 16, Junior  
Benjamin Tommo Price, 18, Senior  
Gold Beach High School, Gold Beach, Oregon  
T: Mary L. Omberg
- EV316T Urban Impact on the Quality of Water in the Trajectory of a River**  
Pablo D. Duarte, 15, Sophomore  
Sergio L. Sierra, 16, Sophomore  
University Gardens High School, San Juan, Puerto Rico  
T: Maria R. Rivera
- EV317T What Are the Effects of Different Intensities of Light on Zoanthid Polyps?**  
Andrew Michael Hare, 15, Freshman  
Ryan Addison Meany, 15, Freshman  
Hilton Head Preparatory School, Hilton Head Island, South Carolina, T: Jayne Matney
- EV318T The Organic Myth**  
Jose Alberto Davis, 16, Sophomore  
Manuel Fernando Mas, 15, Sophomore  
Jorge Rafael Aviles, 15, Sophomore  
American Military Academy, Guaynabo, Puerto Rico  
T: Sylvia Cortes Aquino
- EV319T Don't Forget to Wipe**  
Jared Allen Cordell, 17, Senior  
John Edward Chapuis, 18, Senior  
Muskogee High School, Muskogee, Oklahoma  
T: Karla Ford
- EV320T Comparison of the Management of Waste Landfills in Humacao and Juncos: Phase II**  
# Vivian Marie Lebron, 15, Sophomore  
# Sonaris Molina, 15, Sophomore  
Ana Roque Senior High School, Humacao, Puerto Rico  
T: Nelson Velazquez
- EV321T Noise: Destructor Sound in School**  
Surey Santini, 16, Junior  
Sheila M. Gonzalez, 16, Junior  
Bonifacio Sanchez Jimenez High School, Aibonito, Puerto Rico  
T: Reinaldo G. Rosado
- EV322T Tree...XACO, Our Fuel for the Future?**  
Leandro L. Pena-Merheb, 16, Sophomore  
Luis Gabriel Velez-Del Rosario, 15, Sophomore  
Colegio La Piedad, Carolina, Puerto Rico  
T: Pedro Martinez
- EV323T Phytoremediation: Phytoextraction, Rhizofiltration**  
Renee Lang, 17, Senior  
Brandy Renee Bennett, 17, Senior  
Grenada High School, Grenada, Mississippi  
T: Sherry Cook
- EV324T Oil Spill Collector for the Control of Marine Pollution**  
Amit Kiran Sowani, 16, Junior  
Bharat Suresh Mhatre, 16, Junior  
Ramnivas Ruia Junior College, Mumbai, Maharashtra, India  
T: V.G. Karandikar
- EV325T Effects of Platinum-Palladium Mining on Surrounding Surface Water**  
Andrew Max Wilson, 17, Junior  
Erin Elizabeth Leonard, 16, Junior  
Billings West High School, Billings, Montana  
T: George Grover
- EV326T Pharmaceuticals in the Las Vegas Wash**  
Rachel Maureen Morin, 16, Sophomore  
Robert H. Stauffer, 16, Sophomore  
Basic High School, Henderson, Nevada  
T: Robert H. Stauffer, Jr.  
T: Robert Stauffer
- EV327T Trash Our Worms Again**  
Matthew R. Lamb, 18, Senior  
Matthew E. Dahms, 16, Junior  
Central Lee High School, Donnellson, Iowa  
T: Ernest Schiller
- EV328T An Agricultural Approach to the Hydrogen Economy**  
Phoung-Lan Thi Nguyen, 14, Freshman  
Angela Raquel Beach, 15, Sophomore  
California Academy of Mathematics and Science, Carson, California, T: Thomas Jett
- EV329T Deriving Ideal Conditions for a *Pseudomonas sp.* Bioreactor**  
## Krisda Chaiyachati, 18, Senior  
## Emem Inyang Adolf, 18, Senior  
Columbia High School, Decatur, Georgia  
T: Diane Copeland
- EV330T Effects of Cricket Saliva and Purified Epidermal Growth Factor on *Little Marvel* Pea Plants**  
Todd Andrew Hofmann, 17, Senior  
Sarah Layne Shelby, 17, Senior  
Arkansas School of Mathematics & Sciences, Hot Springs, Arkansas, T: James Njengere
- EV331T Ultracentrifuge for Our Environment: A Turn for the Better**  
Karen Hazel Yen Jie Sam, 18, Senior  
Esther Elisabeth Margretha Kuhn, 17, Senior  
Sledlgh Gymnasium Leiden, Leiden, Z-Holland, Netherlands  
T: Ingeborg Marie Konradt-Booi
- EV332T The Possibilities of Recycling Are Growing**  
Michael Lee Mulder, 17, Junior  
Micky Isaac Sneider, 17, Junior  
Unity Christian High School, Orange City, Iowa  
T: Tim Kamp
- EV333T Water Purifying Plant through Microbubbles and Ultraviolet Radiation**  
Simon Andres Briell, 16, Sophomore  
Matias Francisco Herrera, 16, Sophomore  
Liceo Nuestra Senora del Rosario, Linares, Septima Region, Chile, T: Alejandro Antonio Vasquez V.
- EV334T The Alisos Woods (*Alnus acuminata* H.B.K. ssp. *acuminata*) and Their Importance on the Preservation of the Ecology Equilibrium**  
Mariela Noelia Gonzalez, 15, Junior  
Griselda Alejandra Soria, 17, Junior  
Escuela Republica de Panama, Concepcion, Tucuman, Argentina  
T: Silvia Patricia Soria

## GERONTOLOGY

### GRAND AWARDS PRESENTED BY: AARP ANDRUS FOUNDATION

- GN001 Effect of Various Antioxidants on the Superoxide Dismutase Activity of *Drosophila melanogaster***  
Jamie Elyce Rubin, 14, Freshman, Canterbury School, Fort Myers, Florida, T: Mary Glass
- GN002 Correlation of apoE Allele Expression with Severity and Onset of Alzheimer's Disease**  
Peter M. Williams, 16, Sophomore, Lake Highland Preparatory School, Orlando, Florida, T: Judith Legault
- GN003 Effects of Sildenafil Citrate and Various Vitamins on LNCaP Proliferation *in vitro***  
# Paul Andrew Jansen, 18, Senior, East Noble High School, Kendallville, Indiana, T: Harold Sollenberger

- GN004 Stress and Age on APE Neuro-protein Correlated Base Excision DNA Repair**  
# Korri Ayn Thiessen, 15, Sophomore, Oregon Episcopal School, Portland, Oregon, T: William Lamb
- GN005 Rage and Cellular Perturbation in Alzheimer's Disease**  
Alan Robert Stern, 16, Sophomore, Great Neck South High School, Great Neck, New York, T: Carol Hersh
- GN006 Effect of Aging on Peripheral Visual Perception of Color**  
Kendra Janice Jarrett, 14, Freshman, Byng High School, Ada, Oklahoma, T: Deborah Cornelison
- GN007 Deadly Impact: Linking Severe Head Trauma and Alzheimer's Disease**  
Jo Ellen Lomax, 18, Senior, Arkansas School of Mathematics & Sciences, Hot Springs, Arkansas, T: Alecia Castleberry
- GN008 Operation Coordination**  
Ashlee Danielle Collins, 18, Senior, Alpena High School, Alpena, Arkansas, T: Mark Welch
- GN009 Synthetic Hormones and Plants**  
Emily Elizabeth Alleman, 15, Freshman, Carbon High School, Price, Utah, T: Terry Bikakis
- GN010 Correlation of Tear Lactoferrin Levels with Physiological Conditions**  
Pauline Lillian Sein, 17, Senior, Muskogee High School, Muskogee, Oklahoma, T: Karla Ford
- GN011 Neuroprotection and Neurotransmitter Release by a Dopamine D3 Receptor Agonist**  
## Eugenia Chu, 17, Senior, Evans High School, Evans, Georgia T: Claudia Mahaffie
- GN012 The Impact of Technology in the Golden Age**  
Bernice Bernier, 17, Senior, Luis Munoz Marin High School, Yabucoa, Puerto Rico, T: Carmen Ortiz Reyes
- GN013 Role of Nitric Oxide (NO) in the Pathogenesis of Neurodegenerative Disorders**  
# Nadia Beatriz Rivera, 16, Junior, Colegio Marista, Guaynabo, Puerto Rico, T: Isabel Perez
- GN014 What Affects Reactions? Does Age? Does Gender?**  
Hadley Beale Kemp, 14, Freshman, Park City High School, Park City, Utah, T: Kevin King
- GN015 Effect of Ethanol on Longevity: A *Drosophila* Mortality Model**  
Claire Lianne Robertson, 15, Freshman, Byng High School, Ada, Oklahoma, T: Deborah Cornelison
- GN016 Photoaging: Using the Retinoid Tazorac to Eradicate the Growth of Actinic Keratosis**  
# Jeannette Monique Bentley, 18, Senior, Victoria High School, Victoria, Texas, T: Sarah Wayne
- GN017 Effects of Melatonin on Lifespan and Superoxide Dismutase Levels of *Drosophila melanogaster***  
Adam R. Finkbeiner, 17, Junior, Saginaw Arts and Sciences Academy, Saginaw, Michigan, T: Gary Barker
- GN018 Computers and the Golden Years: Will They Accompany Me?**  
Jonathan Martinez, 14, Freshman, Colegio Radians, Cayey, Puerto Rico, T: Juan Martinez
- GN019 Effect of the PHR Gene on Repairing UV Damage in the Bacterium *Escherichia coli***  
## David A. Knorr, 17, Junior, Velva Public School, Velva, North Dakota, T: Wendy Peterson
- GN301T Oxidative Stress Resistance is Enhanced by Limited Hypergravity Treatment**  
Ross Bartlett Clements, 16, Junior  
Sean Patrick Leonard, 16, Junior  
Keystone School, San Antonio, Texas  
T: Glen Sobey
- GN302T Does *Gingko biloba* Affect the Learning and Behavioral Patterns of Old Aged *Rattus norvegicus*?**  
Humberto Frausto, Jr., 18, Senior  
Jose Gerardo Contreras, Jr., 18, Senior  
Martin High School, Laredo, Texas  
T: Lizzy Newsome
- GN303T How Personality and Age Affect Gait**  
Melissa Neuwirth, 16, Sophomore  
Cynthia Crowers, 15, Sophomore  
Francis Howell North High School, Saint Charles, Missouri  
T: Mary Hennenfent
- GN304T All Shook Up: Postural Stability under Perturbation**  
Christina Nichole Hobson, 15, Sophomore  
Nachelle Diane Brown, 15, Junior  
Red Mountain High School, Mesa, Arizona  
T: Lorelei Wood
- GN305T Intergenerational Relationships as Lowering Factor of the Sociogenic Aging Process**  
Sandra Melissa Ybrahim, 16, Junior  
Dorys Leonor Rodriguez, 17, Junior  
Commercial School "La Trinidad", La Trinidad, Tucuman, Argentina, T: Ricardo Guillermo Rodriguez

## MATHEMATICS

### GRAND AWARDS PRESENTED BY: PANASONIC CONSUMER ELECTRONICS COMPANY

- MA001 Realization of Graphs and Surfaces in the Book with Three Pages**  
Yuri Georgievich Kudryashov, 15, Sophomore, Moscow, Kolmogorov College, Moscow, Russia, T: Anatoli Alexandrovich Chasovsky
- MA002 Taking Pick's Theorem into Another Dimension**  
Neha Mahendra Patel, 16, Sophomore, DeSoto County High School, Arcadia, Florida, T: Marlou Zolkos
- MA003 Is There an Easy Solution to Find the Result of the Summation of Integers N to the K Power?**  
Peter Quoc Nguyen, 18, Senior, Lakewood High School, Saint Petersburg, Florida, T: Paul Dickman
- MA004 Geometric Probability of Segment Decomposition**  
Yi Hsin Jou, 16, Junior, National Hsin-Chu Senior High School, Hsin-Chu, Taiwan, Chinese Taipei, T: Jen-Chung Chuan
- MA005 Exploration into Well-known Integer Sequences in Number Theory**  
Mark C. White, 15, Sophomore, Lake Highland Preparatory School, Orlando, Florida, T: Judith Legault
- MA006 Probably Monopoly: Who's Winning Now?**  
Timothy Adam Whitman, 15, Sophomore, South Sumter High School, Bushnell, Florida, T: Dennis Lippert
- MA007 Probability of Monopoly**  
John Berry Guthrie, 16, Sophomore, James S. Richards High School, Tallahassee, Florida, T: Jane McDonald
- MA008 On the Hamiltonian Decompositions of  $Z_m \times Z_n$**   
# Jason Wah Lone Chiu, 15, Senior, Laramie Senior High School, Laramie, Wyoming, T: Les Shader
- MA009 Are There Mathematical Patterns in the Music of J.S. Bach?**  
Jooho Chung, 15, Sophomore, Ann Arbor-Huron High School, Ann Arbor, Michigan, T: Dee Drake
- MA010 "Be Poked" Regular Polyhedra**  
Zhoulu Yao, 18, Senior, High School Attached to Fudan University, Shanghai, China, T: Jieliang Wang
- MA011 Reflect on This: A Study of Symmetry Group Theory**  
Matthew Aaron Tesch, 15, Sophomore, Northwest High School, Justin, Texas, T: Brenda G. Orth
- MA012 The Many Powers of 2**  
Brian Edward Gatewood, 17, Senior, Poteau Senior High School, Poteau, Oklahoma, T: David Stone
- MA013 Proving Pots**  
Lindsey Jo Cable, 17, Junior, De Soto High School, De Soto, Missouri, T: Joan Drake
- MA014 Exploring the Mandelbrot Set**  
Daniel Edwin Bliss, 15, Sophomore, Seton School, Manassas, Virginia, T: Peter Sheetz

- MA015 Determinantal Sequences**  
Matthew Bryan Satriano, 17, Senior, Oceanside High School, Oceanside, New York, T: David Wayne
- MA016 Presence of the Golden Ratio in Facial Proportions of Ancient Egyptian Mummies: Study of Beauty and Math**  
# Leslie Erin Cohen, 16, Junior, Great Neck South High School, Great Neck, New York, T: Carol Hersh
- MA017 How Can the Turbidity Tube be Calibrated?**  
Brian Robert Epling, 16, Sophomore, Owensboro Senior High School, Owensboro, Kentucky, T: Mary Thomaskutty
- MA018 Algebraic and Number Theoretic Properties of the Perrin Sequence**  
Daniel Wicks, 18, Senior, Yeshivah of Flatbush, Brooklyn, New York, T: Joyce Fruchtey
- MA019 He Loves Me, He Loves Me Not: Statistical Analysis and Fibonacci Numbers with *Chrysanthemum leucanthemum***  
Julie Jong-eun Sun, 16, Junior, Washington High School, Tacoma, Washington, T: Steven K. Ufer
- MA021 Discovery and Applications of New Non-euclidean Geometries**  
# James Y. Zou, 16, Sophomore, Upper Arlington High School, Upper Arlington, Ohio, T: Peggy Sheets
- MA022 Problem of Removing a Digit**  
Alexey P. Dolgalyov, 14, Sophomore, School No 1134, Moscow, Russia, T: Alexander I Galochkin
- MA023 What's the Mean of This?**  
Lauren Lee Brunt, 17, Junior, Grenada High School, Grenada, Mississippi, T: Jack Holliday
- MA024 Knots Embedding in Graph G with Base Formed by Pyramids**  
Lisandra Colon-Jimenez, 17, Senior, University Gardens High School, San Juan, Puerto Rico, T: Loyda Rodriguez-Quinonez
- MA025 New Venn Diagrams in Structural Engineering**  
# Jose R. Pizarro-Colon, 17, Senior, University Gardens High School, San Juan, Puerto Rico, T: Loyda Rodriguez-Quinonez
- MA026 Solutions of Polynomials by Means of Iterations**  
# Guillermo J. Colon Villafane, 16, Junior, Immaculate Conception Academy, Mayaguez, Puerto Rico, T: Agustín Ayala
- MA027 Formulas and Other Findings in Pascal's Triangle**  
# Milton Miranda, 17, Senior, Eladio Tirado Lopez, Aguada, Puerto Rico, T: Hilda Rosa Garcia
- MA028 Application of Differential Evolution to the Solution of Differential Equations**  
# Hasuk Francis Song, 17, Junior, La Jolla High School, La Jolla, California, T: Martin Teachworth
- MA029 Comparison Products of Arithmetical Means**  
Erlan Ermekovich Babazhanov, 16, Junior, Lyceum School No. 20, Taldikorgan, Kazakhstan, T: Pak Oleg
- MA030 Soap Hyperfilms**  
## Craig Allen Schroeder, 18, Senior, Wessington Springs High School, Wessington Springs, South Dakota, T: Kim Borkowski
- MA031 Separators in Planar Graphs as a New Characterization Tool**  
## Serge A. Tishchenko, 16, Junior, Vtoraia Shkola, Moscow, Russia, T: Maksim A. Volchkevich
- MA032 Invariance of the Liquid Crystal Digits under the Plane Symmetric Group**  
Chong Qiu, 16, Sophomore, Hubei Wuchang Experimental High School, Wuhan, Hubei, China, T: Liu Chuzhao
- MA033 Revision of a Correction Factor for Uneven Bottomed Ponds**  
Jonathan Andrew Goldsmith, 16, Junior, Doddridge County High School, West Union, West Virginia, T: Tracy K. Stutler
- MA034 Fractally Perfect**  
Megan Leigh Scheffer, 17, Senior, Banquete High School, Banquete, Texas, T: Michael Reichle
- MA035 Analysis of the Snake Game**  
David Jack Sprehn, 14, Freshman, Home Sweet School, Livermore, California, T: Susan Morris
- MA036 Fractal Dimension: Relating the Borax Crystal to the Sierpinski Triangle**  
Katie May Eng, 17, Junior, Joseph Case High School, Swansea, Massachusetts, T: Christel Torres
- MA037 An Improved Mathematical Model of Populations**  
Christopher Ryan Bruner, 15, Freshman, Wewoka High School, Wewoka, Oklahoma, T: Janis Brooks
- MA038 Integral Products of Laguerre Polynomials and Their Discrete Analogues**  
Abdur Rasheed Sabar, 18, Senior, Parkway West High School, Ballwin, Missouri, T: Dixie Hoyt
- MA039 On the Forming of Pascal's N-simplex Using Multinomial Expansion**  
Jesse Scott Trana, 16, Sophomore, Johnson Corners Christian Academy, Watford City, North Dakota, T: Ron Dazell
- MA040 An Analysis of Elliptical Coordinate Systems**  
Jennifer Shyamala Sayaka Balakrishnan, 16, Junior, Harvest Christian Academy, Guam Main Fcty, Guam, T: Karen Abels
- MA041 Geometric Inversion**  
Heng K. Tang, 15, Sophomore, Julia R. Masterman High School, Philadelphia, Pennsylvania, T: Ranjini Weerasooriya
- MA042 On the Use of Skein Relationship in the Construction of New Knot Polynomial Invariants**  
## Sheel Chandrakant Ganatra, 16, Junior, The Charter School of Wilmington, Wilmington, Delaware, T: Beenu Gupta
- MA302T The Soundwaves of Music**  
Xinning Liu, 16, Junior  
Heather Jennifer Rosenfeld, 17, Junior  
Dr. Michael M. Krop Senior High School, Miami, Florida  
T: Allyn Pond
- MA303T Compound Rules in an Iterated Prisoner's Dilemma**  
Edward Thomas Hinson, 18, Senior  
Victor Kostyuk, 17, Senior  
Arkansas School of Mathematics & Sciences, Hot Springs, Arkansas, T: George Connor
- MA304T Daedalus' Box: A Three-dimensional Parabola**  
Michael Harry Kaleta, 19, Senior  
Matthew Howard Stemm, 18, Senior  
Heon Joon Choe, 18, Senior  
Marquette University High School, Milwaukee, Wisconsin  
T: Elizabeth Morrell
- MA305T Isothermal Equilateral Triangle Formed by Different Places in the World**  
Aurea Maria Auiles-Gaudier, 18, Senior  
Ana Maria Auiles-Gaudier, 18, Senior  
University Gardens High School, San Juan, Puerto Rico  
T: Loyda Rodriguez
- MA306T The Mosaic Behavior**  
Caban Jozabed, 16, Junior  
Miranda B. Walkiria, 15, Freshman  
Eladio Tirado Lopez, Aguada, Puerto Rico  
T: Hilda Rosa  
T: Hilda Rosa Garcia
- MA307T Mathematics Is Not Yet Ready for Such Problems**  
Curtis James Larimer, 15, Freshman  
Dave Hubbell Wacker, 14, Freshman  
William J. Palmer High School, Colorado Springs, Colorado  
T: Rata Clarke
- MA308T New Curriculum for the Elementary Logic, Algorithms and Scheme-models for Problem Solving in Math**  
Areg Ara Avetisyan, 14, Junior  
Yerevan Secondary School #4, Yerevan, Armenia  
T: Ara Avetisyan

## MEDICINE AND HEALTH

GRAND AWARDS PRESENTED BY:  
MERCK RESEARCH LABORATORIES

- ME001 What Makes Your Blood Boil?**  
Brittney Jo LaFarlette, 16, Sophomore, Nettleton High School, Jonesboro, Arkansas, T: Jana Hudspeth



- ME002 Recalcitrance Levels of *Staphylococcal* Biofilms to Antibiotics and Formulation of an Anti-infective Coating to Prevent Biofilm Formation on Biomaterials**  
# Ibraheem M. Mohammed, 15, Sophomore, Niceville Senior High School, Niceville, Florida, T: Regina Gaskin
- ME003 Efficacy of Omega-3 Polyunsaturated Fatty Acids (PUFA) in Decreasing Chance of Coronary Heart Disease (CHD)**  
Danny John Eapen, 17, Senior, Cooper City High School, Cooper City, Florida, T: Doug Ferraro
- ME004 Beneficial Effect of Dietary Potassium on Cold-induced Hypertension**  
Cheryl Lynne Tatum, 18, Senior, Astronaut High School, Titusville, Florida, T: Scott McCord
- ME005 Cardiovascular Stents with Shape Memory Alloys**  
Mark Mohan Mazumder, 16, Sophomore, Little Rock Central High School, Little Rock, Arkansas, T: Melissa Donham
- ME006 Kinetics of Blood Coagulation Induced by Tissue Factor**  
# Alysson Miriam Zerkowitz, 18, Senior, Lake Brantley High School, Altamonte Springs, Florida, T: Susan N. Behel
- ME007 Relationship between CD34+ Cell Counts and Colony Forming Units (CFU's) in Human Cord Blood**  
Louis M. Mione, 17, Junior, F.W. Springstead High School, Spring Hill, Florida, T: Craig Gates
- ME008 Factors Affecting Wound Healing: Computational Study**  
# Monica Rose Magnan, 16, Sophomore, James S. Richards High School, Tallahassee, Florida, T: Rick Davies
- ME009 A Picture is Worth 1000 Words<sup>3</sup>**  
Christian Pichler, 18, Senior, Cheyenne East High School, Cheyenne, Wyoming, T: Mike Shappell
- ME010 Effects of Alternative Medicines on Murine Oocytes and Embryos**  
Emily E. Rosene, 17, Junior, Nicolet High School, Glendale, Wisconsin, T: Ron LeMay
- ME011 The Caffeine Craze: Do Beverages that Contain Caffeine Affect Your Blood Pressure?**  
Ryan Walter McCuskey, 15, Freshman, Saint Albans High School, St Albans, West Virginia, T: Jennifer Stover
- ME012 Effects of Exposure to Sub-inhibitory Doses of Antibiotic on the Development of Resistance in the bacterium *Micrococcus luteus***  
David Jason Szerlip, 14, Freshman, Benjamin Franklin High School, New Orleans, Louisiana, T: Colleen Fiegel
- ME013 The Production of Glutathione by Inducing MRP Expression**  
# Keri Jean Propst, 17, Senior, Merino High School, Sterling, Colorado, T: Darrell Albrandt
- ME014 Effects of Genetic Engineering on Antibiotic Resistance**  
April M. Mertens, 17, Junior, Merino High School, Merino, Colorado, T: Penny Propst
- ME015 Substance-like Comparison in the "Stop" and "Fast" Test: Who Is at Risk?**  
Joel Evan Morgan, 18, Senior, Hildreth Public High School, Hildreth, Nebraska, T: Randall Liennemann
- ME016 Aldosterone-induced Growth of Cardiac Fibroblasts: A Potential Role in Cardiac Fibrosis?**  
Sharon Elizabeth Mase, 17, Senior, Tuscarawas Valley High School, Zoarville, Ohio, T: Karl Schwenk
- ME017 How Autostereograms Are Seen by the Eye**  
Audrey Jo Waldron, 15, Sophomore, Mecosta Osceola Math, Science and Technology Center, Big Rapids, Michigan, T: Matthew Williams
- ME018 Effects of Honeybee Stings on Multiple Sclerosis**  
David Lawrence Walton Jr., 16, Junior, Lew Wallace High School, Gary, Indiana, T: Carl Marfurt
- ME019 Iron Bioavailability of Infant Formula in an *in vitro* Digestion: Caco-2 Cell Culture Model**  
Jessica Ann Wissler, 18, Senior, Ephrata Senior High School, Ephrata, Pennsylvania, T: Patricia H. Wee
- ME020 Role of SMAD in the Inhibition of the TGFB Response in Lipocyte Cells**  
Susan Michelle Lamb, 18, Senior, Menchville High School, Newport News, Virginia, T: Danny Peters
- ME021 Cytotoxic Effects of Active Sunscreen Ingredients on *Mus musculus***  
Tricia Lynn Padilla, 18, Senior, Grants High School, Grants, New Mexico, T: Shelby Alexander
- ME022 Association of ADH<sub>3</sub> Genotype with Colon Cancer Risk**  
Ronald Martin Solorzano, 18, Senior, Alhambra High School, Alhambra, California, T: Duane Nichols
- ME023 That's a Wrap: Are Standard Microwaving Times Long Enough to Leak Harmful Amounts of Chemicals into Food?**  
Nora Elizabeth Gray, 17, Senior, Yorktown High School, Arlington, Virginia, T: Michael Zito
- ME024 Potential of Factor V Leiden as a Genetic Screen for Cleft Lip and Palate**  
# Una Au, 17, Senior, Manhasset Junior-Senior High School, Manhasset, New York, T: Peter Guastella
- ME025 *Momordica charantia* and Food-spoiling Agents**  
Zao Mike Huang, 15, Sophomore, Fairfax High School, Fairfax, Virginia, T: Michael John McKinstry
- ME026 Radiofrequency Percutaneous Myocardial Revascularization: Early Histology and Immunohistochemistry for bFGF and Cell Proliferation with Angiogenesis**  
Jonathan Galloway Schwartz, 18, Senior, Mayo High School, Rochester, Minnesota, T: Steve Brehmer
- ME027 Comparative Study of the Sensitivity of Antibiotics and Vitamins in *Escherichia coli***  
Darla Kay Pfaff, 18, Senior, Isabel High School, Isabel, South Dakota, T: Lu Ann Lindskov
- ME028 Cellular Stimulation on Selected Leukocytes Treated with Isolates: Phase III**  
## Jessica Elizabeth Ann Kaae, 16, Junior, Charles M. Russell High School, Great Falls, Montana, T: Josy McLean
- ME029 Analysis of HIV-1 Dynamics Using Mathematical Modeling that Incorporates Latently Infected CD4+ T Cells, Immune Response, Apoptosis, Mutation, and Drug Therapy Including Integrase Inhibitors**  
Stephanie Killian, 17, Senior, Great Neck South High School, Great Neck, New York, T: Carol Hersh
- ME030 Induction of Cardiomyocyte Differentiation Following Stimulation**  
Nelson Moussazadeh, 17, Senior, Great Neck North High School, Great Neck, New York, T: Alan Schorn
- ME031 Comparison of *M. cerebralis* Infection in Three Species of Salmonid Fishes**  
Frank Lamar Bauer, 17, Junior, Brush High School, Brush, Colorado, T: Judy Florian
- ME032 Apoptosis in the Treatment of Murine Transgenic Retinoblastoma**  
Liana Sun Wyler, 17, Senior, Mast Academy, Key Biscayne, Florida, T: Wafa Khalil
- ME033 Use of Microwave Irradiation for Rapid Intraoperative Frozen Section Tumor Diagnosis**  
# Rowena Mittal, 18, Senior, Greenwich High School Clark, Greenwich, Connecticut, T: A. Ray Hamilton
- ME034 *In vitro* Anticancer Effects of *Mangifera indica* Extracts on DHL Lymphoma**  
# Alexander C. Mittal, 16, Sophomore, Greenwich High School Clark, Greenwich, Connecticut, T: A. Ray Hamilton
- ME035 Group I Metabotropic Glutamate Receptors in Epilepsy**  
Angela Catherine Lee, 17, Senior, Midwood High School at Brooklyn College, Brooklyn, New York, T: Jay Touger
- ME036 Effect of Color on Peripheral Vision**  
Christina Marie Matthews, 14, Freshman, South River High School, Edgewater, Maryland, T: Jean Wilcox
- ME037 Two-Year Study of Black Tea and Beta-carotene in Suppressing NPV in Selected Organisms**  
# Miranda Davis, 17, Junior, Yazoo City High School, Yazoo City, Mississippi, T: Kim Patterson
- ME038 Diffraction Patterns of Cells**  
Ted Lee, 17, Junior, Tullahoma High School, Tullahoma, Tennessee, T: Harold Liner
- ME039 Effect of *Echinacea* on Bacterial Resistance: Phase Two**  
# Stephanie Diane Feese, 18, Senior, Marshall High School, Marshall, Arkansas, T: Kenda Dearing

- ME040** **Cisplatin Varies Cochlear Marginal Cell Width in Rat Tissue**  
Sarah D. Kocher, 17, Senior, Glenwood High School, Chatham, Illinois, T: Rita Singer
- ME041** **Improved Pulmonary Function by Hypoxic Preconditioning Involves eNOS and MCT1**  
Effie M. Wang, 16, Junior, duPont Manual Magnet High School, Louisville, Kentucky, T: Robert Gilbert
- ME042** **Modeling Disease Outbreaks: When Should Schools be Closed?**  
Andrew Joseph Semmes, 16, Junior, Cookeville High School, Cookeville, Tennessee, T: Dennis Tennant
- ME043** **Can A More Compact Spacer be Created for Use with Aerosol Inhalers?**  
# Julie Elizabeth Banasiak, 15, Sophomore, Bartlesville High School, Bartlesville, Oklahoma, T: Colleen Bennett
- ME044** **Therapeutic Horseback Riding: Three Case Studies of Balance Improvement**  
Laura Ann Davis, 18, Senior, Francis Howell North High School, Saint Charles, Missouri, T: Mary Hennenfent
- ME045** **Sphingolipids and the PI-3 Kinase Pathway: Novel and Synergistic Approach to Defeating HER-2/Neu Chemoresistance**  
# Samuel Yen-En Chang, 18, Senior, Lyndon B. Johnson High School, Austin, Texas, T: David Journey
- ME046** **Artificial Sweeteners and Their Effects on the Health of Their Consumers**  
Delannie Rodriguez, 14, Freshman, Hemeterio Colon y Warrens, Ponce, Puerto Rico, T: Gilberto Rodriguez
- ME047** **Obesity in Boys and Girls of 5-12 Years Old Who Visit Fast Food Restaurants**  
Ana Michelle Yvonne Paredes-Vazquez, 14, Freshman, Colegio Congregacion Mita, Hato Rey, Puerto Rico  
T: Lissette Lopez Carlo
- ME048** **Inhibition of Human Leukemia Cell Growth**  
# Megan Clarke Roberts, 16, Sophomore, Carlisle Area High School, Carlisle, Pennsylvania, T: Ralma Fry
- ME049** **Teratogenic Effects of Alcohol on Embryogenesis of *Gallus domesticus***  
Lisa Hoang Nguyen, 17, Junior, Bishop McDevitt High School, Harrisburg, Pennsylvania, T: Marilyn McCusker
- ME050** **Effects of EtOH, H<sub>2</sub>O and DMSO Extracts of Cinnamon on Human Buccal Epithelial Cells in Culture**  
Ayesha Rafiqul Alam, 17, Junior, Murrah High School, Jackson, Mississippi, T: Cynthia Cook
- ME051** **Comparative Effect of Black Walnut Extract (*Juglans nigra* L.) on Human Breast and Cervical Cancer Cell Lines**  
## John Bennett Ball Korman, 17, Junior, Riverside High School, Greer, South Carolina, T: Karen Gillespie
- ME052** **CT Medical Image Set Similarity Study Using Hard Disk Space**  
Jorge E. Ortiz, 17, Senior, Miguel Melendez Munoz High School, Cayey, Puerto Rico, T: Rafael Feliciano
- ME053** **Xylitol Gel for the Prevention of Early Childhood Caries**  
# Lydia C. Ocasio, 17, Junior, Colegio Marista, Guaynabo, Puerto Rico, T: Isabel Perez
- ME054** **Enhancement of the Radiation Effect on DU-145 Cancer Cells Using Curcumin**  
David N. Meigooni, 14, Freshman, Paul Lawrence Dunbar High School, Lexington, Kentucky, T: Mansoor Ahmed
- ME055** **Synchronizing Cycles**  
Lacey Dawn Vaculin, 18, Senior, C.H. Yoe High School, Cameron, Texas, T: Toni Lafferty
- ME056** **B-Cell Chronic Lymphocytic Leukemia: Pilot Study in Computer Aided Diagnostic Systems Employing a Fractal Algorithm**  
Adam Grant Georgas, 17, Sophomore, UMS Wright Preparatory School, Mobile, Alabama, T: Tim Burgess
- ME057** **Effect of CD14 Phenotype on Cytokine Production and Inflammation of the Normal Gastrointestinal Tract**  
Danielle Chantal Bouchard, 16, Junior, The Altamont School, Birmingham, Alabama, T: Mr. Kristensen
- ME058** **Isolation and Identification of Novel Genes Linked to Heart Failure**  
Megan Leigh Bailey, 18, Senior, Breck School, Minneapolis, Minnesota, T: Chelen H. Johnson
- ME059** **Happy Hearts: Microalgal Antioxidant Effects on an *in vitro* Model of Atherosclerosis**  
Kawika Analu Mortensen, 17, Senior, Kamehameha Secondary School, Honolulu, Hawaii, T: Lawrence Mordan
- ME060** **Effects of Glucose on G6PDH Transcription**  
Bhooma Raja Aravamuthan, 16, Junior, Kalamazoo Area Mathematics and Science Center, Kalamazoo, Michigan  
T: John Goudie
- ME061** **Identification of the Functional Domain of a Mammalian Gene that Controls Aneuploidy and Cancer**  
Suvarna K. Murti, 16, Sophomore, Lausanne Collegiate School, Memphis, Tennessee, T: Jackie Kays
- ME062** **Diabetes and Bone Density Loss: Is There a Connection?**  
Richard Edwin Taylor, 15, Sophomore, Port Huron High School, Port Huron, Michigan, T: Terry Parks
- ME063** **Comparing Facial Acupressure to Other Acne Treatments**  
Heidi Heather Hackney, 17, Junior, Park City High School, Park City, Utah, T: Kevin King
- ME064** **Dietary Effects on the Presence of Acid-resistant *E. coli* 0157:H7 in Cattle Fed Grain Compared to the Acid-resistance *E. coli* in Cattle Fed Hay**  
Kristin M. Kolsch, 17, Senior, Elko High School, Elko, Nevada, T: Teresa Noland
- ME065** **Disproportionate Dizziness in Adolescent Migraine**  
Farah A Mansoor, 17, Junior, Detroit Country Day School, Beverly Hills, Michigan, T: Gene Menton
- ME066** **Shrimp & Humans - See the Light!**  
Jennifer Lauren Leggett, 17, Senior, Andrews High School, Andrews, Texas, T: Linda Lawrence
- ME067** **General Analysis of the Effect of the Quantitative Duration of BST on Holstein Cattle: Phase III**  
# Jay Vincent Odland, 18, Senior, Sisseton High School, Sisseton, South Dakota, T: Elizabeth Ebert
- ME068** **Brain MRI Volume and Spectra in Children Exposed *in utero* to Cocaine**  
Amruta Vijay Kulkarny, 16, Junior, Palos Verdes Peninsula High School, Rolling Hills Estates, California, T: Peter Starodub
- ME069** **Effect of Thyroid Hormone on Bone Morphogenetic Protein Expression in UMR-106 Osteoblastic Cells**  
Sara Tarjan, 15, Sophomore, Lincoln Park High School, Chicago, Illinois, T: James Galinski
- ME070** **Effects of Tylenol, Aspirin, and Ibuprofen on Prostate Cancer Cells**  
John Paul Andrews, 15, Freshman, McLean High School, McLean, Virginia, T: Demby Banbury
- ME072** **Investigation of Regulations Specific at Cardio-Respiratory System of Russian-Nath Citizen**  
Valery V. Eskov, 16, Sophomore, Gymnasiun #4, Surgut, Tymen Region, Russia, T: Eskov Valery Mateevich
- ME073** **A Succulent Solution to a Burning Problem: Phase IV**  
### Kimberly Jane Buehring, 17, Senior, Banquete High School, Banquete, Texas, T: Michael Reichle
- ME074** **Development of a Novel Treatment for Multiple Sclerosis**  
Tevis Alden Howard, 17, Junior, Menlo School, Atherton, California, T: Tanya Buxton
- ME075** **Effects of Methylphenidate on Cardiac Smooth Muscle Cells**  
Justin Michael Lerman, 16, Junior, Saratoga High School, Saratoga, California, T: Bob Kucer
- ME076** **Cholesteryl Ester Transfer Protein (CETP) in Humans with Various Degrees of Glucose Tolerance**  
Alexandra Soroceanu, 18, Senior, Seminaire de Sherbrook, ordre Collegial, Sherbrook, Quebec, Canada, T: Marcel Cote
- ME077** **Bacterial Interference: A New Approach to Fighting Bacterial Infections**  
Janet W. Wan, 16, Junior, A B Lucas Secondary School, London, Canada, T: Kirk Taylor
- ME078** **The Effects of Copaxone (Noninterferon) Compared to Betaseron (Interferon) in the Treatment of Multiple Sclerosis**  
# Mary Roxey Kingsbury, 17, Junior, Grafton High School, Grafton, North Dakota, T: Cheryl Kingsbury

**ME079 Attaining a Base pH for Parasite Control**  
# Joel Andrew Snyder, 18, Junior, Calvary Baptist Academy, Huntsville, Alabama, T: Andrew V. Fogle

**ME080 ACL Reconstruction**  
Brittany Baker, 15, Freshman, Midvale Middle School, Midvale, Utah, T: Karen Ward

**ME081 Relative Effectiveness of Native American Antibiotics and Prescription Medications**  
Kimberly Thomas Yazzie, 17, Junior, Wingate High School, Fort Wingate, New Mexico, T: Michelle Eustice

**ME082 Resveratrol for the Prevention of Cancer**  
## Romina Perri, 17, Junior, Sacred Heart School of Montreal, Montreal, Quebec, Canada, T: J. Thomas

**ME083 In the Cyclin A1 Gene a Marker for Cancer of the Ovary in Humans**  
Sarah Elizabeth Griffing, 17, Junior, O'Donnell High School, O'Donnell, Texas, T: Rubeth Griffing

**ME084 A Molecular Analysis of Pediatric Rhabdoid Tumors**  
Diane theresa Dalo, 18, Senior, Bensalem High School, Bensalem, Pennsylvania, T: Katherine Gallagher

**ME085 Anti-cancer of Efficacy of Garlic: Cellular and Genetic Mediators**  
## Ahmed Shaker Mousa, 17, Junior, Avon Grove High School, West Grove, Pennsylvania, T: Robin Fought

**ME302T Role of Microglia in Neuronal Injury**  
Reed Hobby Shaffner, 16, Junior  
Anant Ramesh Patel, 16, Sophomore  
Astronaut High School, Titusville, Florida  
T: Scott McCord

**ME303T 2001: A School Odyssey-Is There More to Carrying Your Books to Class Than You Think?**  
Mia Ramona Hebert, 17, Junior  
Kenneth Paul Hebert, 16, Sophomore  
Catholic High School, New Iberia, Louisiana  
T: Donald Voorhies

**ME304T Does Inulin Enhance Ca Dissolution from OTC Supplements?**  
Jacqueline Marie Savage, 16, Junior  
Kyle William Soller, 17, Junior  
Mount Vernon High School, Alexandria, Virginia  
T: Joy McManus

**ME305T Does Exposure to High Levels of Glucose Cause Insulin Resistance in Adipose Cells?**  
Ananth S. Ranganathan, 15, Sophomore  
Edward Hunter Benson, 17, Junior  
Little Rock Central High School, Little Rock, Arkansas  
T: Ms. Cole

**ME306T The Pressure's On: The Healing Effects of Hyperbaric Oxygen**  
# Tyler Jordan Morehart, 16, Sophomore  
# Devin Randall Harper, 16, Sophomore  
Northside High School, Ft Smith, Arkansas  
T: Nancy Cardwell-Scamardo

**ME307T Functional Analysis of the Merlin Tumor Suppressor Deletion Variance in Cells**  
# Matthew William Sand, 16, Sophomore  
# Christopher J. Lauten, 16, Sophomore  
Lake Highland Preparatory School, Orlando, Florida  
T: Judith Legault

**ME308T Modulation of Vascular Smooth Muscle Cell Adhesion to Polytetrafluoroethylene (PTFE) Vascular Graft Material**  
David Johnson Hiller, 18, Senior  
John-Paul Moore Young, 18, Senior  
Caddo Parish Magnet High School, Shreveport, Louisiana  
T: Kris Clements

**ME309T At First Sight**  
Traci Lynn Waller, 16, Sophomore  
Leonard M. Green, 16, Sophomore  
Liberty Eylau High School, Texarkana, Texas  
T: Mike Dale

**ME310T Effects of Carnitine on the Glycation of Proteins in Diabetic Rats**  
# Shelly Kate Collins, 16, Junior  
# Rebecca Ann Taylor, 16, Junior  
John S. Davidson Fine Arts School, Augusta, Georgia  
T: Barbara Howerton

**ME311T Inside Iholena: Anticancer Effects of Floral Extracts**  
Kalikolehua Kilia Hurler, 17, Senior  
Nicole K. Shishido, 17, Senior  
Kamehameha Secondary School, Honolulu, Hawaii  
T: Lawrence Mordan

**ME312T Civil War Wounds That Glowed**  
William Richard Martin, 17, Senior  
Jonathan Daniel Curtis, 18, Senior  
Bowie High School, Bowie, Maryland  
T: Godfrey Rangasammy

## MICROBIOLOGY

### GRAND AWARDS PRESENTED BY: INTEL FOUNDATION

**MI001 Application of a Hammerhead Ribozyme Library for Targeted Cleavage of mRNA to Identify Mouse Tumor Suppressor Genes**  
# Samir Kamalesh Amin, 17, Junior, Lecanto High School, Lecanto, Florida, T: Ron Worthington

**MI002 Effect of HIV-6 on the Brown Citrus Aphid**  
James A. Rees, 17, Junior, Lincoln Park Academy, Fort Pierce, Florida, T: Hollis Hoier

**MI003 Skin Applications on *Staphylococcus epidermidis***  
# Anne Marie Luna, 17, Senior, Faith Temple Christian School, Portales, New Mexico, T: Kim Lavon Luna

**MI004 Investigation of Antibiotic Resistance through Conjugation**  
Marion Hundley Suber, 15, Freshman, Wildwood High School, Wildwood, Florida, T: Emily Keeler

**MI005 Sweet Solutions: Honey's Effect on Selected Bacteria**  
Katherine Elizabeth Sherwood, 17, Junior, Vero Beach Senior High School, Vero Beach, Florida, T: Carol Ann Haffield

**MI006 How Harmful is Diesel Fuel?**  
Sophy Hem, 16, Sophomore, Warren Central High School, Bowling Green, Kentucky, T: Linda L. Walker

**MI007 Stuttering in Viral Replication**  
## Mark Kaganovich, 16, Junior, Bloomington High School North, Bloomington, Indiana, T: John Portle

**MI008 Ultrasonics and Bacteria Susceptibility to Tetracycline**  
Sabrina Augustina Bradley, 17, Junior, Burkburnett High School, Burkburnett, Texas, T: Conni Marshall

**MI009 Antibiotic Resistance of *Enterobacteriaceae* from Effluents and Native Macroinvertebrates**  
Kevin Kuan Gao, 16, Junior, John B. Connally High School, Austin, Texas, T: Pat Merkord

**MI010 Novel Study Investigating the Effect of Formula 409, Commercial Fantastic, Bolex, and Bravo HD on the Growth of *Escherichia coli* K-12 after Prolonged Exposure**  
William Bennett Hartley, 18, Senior, Timberland High School, Saint Stephen, South Carolina, T: Maja G. Fickett

**MI011 Acquisition of Antibiotic Resistance in Gram-positive *Bacilli* Collected along the Minnesota River**  
Wendy Grace Halterman, 17, Junior, Montevideo Senior High School, Montevideo, Minnesota, T: Richard Halterman

**MI012 Antibiotic Resistance Due to the Use of NSAID's**  
Jennifer Lynn Dale, 17, Senior, Climax High School, Climax, Minnesota, T: Dean Strand

**MI013 Can RT-PCR Detect CABMV in Brazilian Peanut Seeds and Leaves?**  
Ashley Elizabeth Askew, 17, Junior, Griffin High School, Griffin, Georgia, T: Grace Mosley Hiers

- MI014 Time and Temperature on a Bacterial Gene Transformation**  
LaQuitha Shonta Williams, 17, Senior, MacArthur Senior High School, Lawton, Oklahoma, T: Celia Hawk
- MI015 Are We Over-vaccinating Our Dogs?**  
Jeremiah Paul Schley, 18, Senior, Fairland High School, Proctorville, Ohio, T: Jayshee Shah
- MI016 Searching for BLIS (Bacteriocin-like Inhibitory Substances)**  
# Jessica Ann Burtness, 17, Junior, Coon Rapids Senior High School, Coon Rapids, Minnesota, T: Gary Alexander
- MI017 Garlic and Its Antimicrobial Activities Against *E. coli* DH5a**  
Anne Van-Vi Pham, 17, Senior, Classen School of Advanced Studies, Oklahoma City, Oklahoma, T: Shelley Hunter
- MI018 Effects of Gravity on *E. coli***  
## Beverly Lynn Lotts, 18, Senior, Buena High School, Sierra Vista, Arizona, T: Virginia Bealer
- MI019 Effects of the Cabbage Leaf Curl Virus on Genetic Expression in Rapid-Cycling *Brassica rapa***  
David Zychinski, 16, Sophomore, Lake Brantley High School, Altamonte Springs, Florida, T: Susan Behel
- MI020 Transformation of Adhesion Gene into *L. acidophilus***  
Matthew Donald Kelly, 17, Junior, High Tech High School, North Bergen, New Jersey, T: Dmitri Lavlinski
- MI021 The Frog Solution: Anionic vs. Cationic Compounds of *Xenopus laevis* and *Rana pipiens***  
Marissa Leigh Champagne, 14, Freshman, Catholic High School, New Iberia, Louisiana, T: Donald Voorhies
- MI022 Is Your Feline *Strep*-free?**  
William Zachary Alexander, 18, Senior, Grants High School, Grants, New Mexico, T: Robert Schafer
- MI023 Aluminum Enhancement by a Recently Discovered Thermoacidophile, Phase III: Study of Siderophore Production**  
Terri Katherine Myers, 18, Senior, Northwestern High School, Kokomo, Indiana, T: Patricia Zeck
- MI024 Investigating the Role of a Common Respiratory Pathogen, *Chlamydia pneumoniae*, as a Causative Agent of Atherosclerosis via Stimulating Elevated Inducible Nitric Oxide Levels and Testing of a Possible Antibiotic Treatment for Atherosclerosis**  
## Linda Arnade, 18, Senior, Palm Bay High School, Melbourne, Florida, T: Michael O'Donnell
- MI025 Detection of Anti-*O. volvulus* Antibodies in Sera of Onchocerciasis Patients that are Cross-reactive with Self Antigen, gClq-R**  
Christopher Robert Palma, 17, Senior, Kings Park High School, Kings Park, New York, T: Jane Schoch
- MI026 Sangre de Grado's Key Ingredient: To Be or Not to Be a Plant Defensin**  
Brandon Scott Pruett, 17, Junior, Parkway High School, Bossier City, Louisiana, T: Tom Daniel
- MI027 Waging War on Biofilms: Phage(φ92)-Borne Endo-N-Acetylneu-Raminidase as a Means of Eradicating Bos 12 (*E.coli*) Biofilms**  
## Ross Bradley Reule, 18, Senior, Saint Joseph Central High School, Saint Joseph, Missouri, T: Dennis Douglas Reule
- MI028 Biosulfurization of Coal via Sulfur Oxidation: Novel Use for Extremophilic Bacteria**  
Matt Stephen Jeletic, 18, Senior, Park View High School, Sterling, Virginia, T: Denise Wingfield
- MI029 Analytic Identification and Cross Reactivity of Oral Biofilm and Chemotherapeutic Agents: Multiphase Investigation**  
# Samantha Megan Feingold, 15, Sophomore, Dr. Michael M. Krop Senior High School, Miami, Florida, T: David Buncher
- MI030 Kinetochore and Smt3p Pathway Interactions in *S. cerevisiae***  
Christopher David Velez, 17, Senior, Stuyvesant High School, New York, New York, T: Anne deSostoa Manwell
- MI031 Can Antioxidants Prevent Radiation-induced Damage in the Maturation of *E. coli*?**  
# Mansi Devang Patel, 17, Senior, Martin County High School, Stuart, Florida, T: Jan Speicher
- MI032 Designer Antibodies: Utilizing the Phage Displayed Antibody Technology**  
Mark David Herman, 16, Junior, John Jay High School, Katonah, New York, T: Douglas Bartel
- MI033 Getting to Grow You**  
Mary Allison Milford, 15, Freshman, Magnolia High School, Magnolia, Arkansas, T: Kaye Minter
- MI034 Differential Regulation of the LAC and ARA Operons in *E. coli***  
# Nadia Shakoor, 18, Senior, Glenwood High School, Chatham, Illinois, T: Rita Singer
- MI035 Drug-resistant Enterococcal Infections: A New Method for Control**  
## Erik Nels Oberg, 17, Junior, Weber High School, Pleasant View, Utah, T: Lareen Radle
- MI036 Effect of Colloidal Silver on Resistant/Non-resistant *B. subtilis* and *E. arogenes* Compared to Tetracycline**  
Ryan Douglas Waller, 16, Sophomore, Francis Howell North High School, Saint Charles, Missouri, T: Mary Hennenfent
- MI037 Antimicrobial Effect of Commercial Extracts of *Allium sativum* and *Allium cepa* on *Staphylococcus aureus* and *Escherichia coli* Bacteria**  
Victoria C. Justiniano Quinones, 15, Freshman, Academia Presbiteriana de San German, San German, Puerto Rico, T: Zahira Sanoguet
- MI038 Micrological Analysis in a Metropolitan High School**  
Hector S. Almonte Lora, 14, Sophomore, University Gardens High School, San Juan, Puerto Rico, T: Maritza Betancourt
- MI039 Comparative Study of the Existence of Microorganisms in Water of Different Towns Before and After a Chemical Treatment**  
Ileana Rodríguez Nazario, 15, Sophomore, Fernando Collejo High School, Manati, Puerto Rico, T: Maritzie Catala
- MI040 Comparing Fungi Concentrations in Gypsum Board-walled Houses to Concrete-walled Houses**  
Jose Jorge Echeagaray, 16, Sophomore, Academia Del Perpetuo Socorro, Miramar, Puerto Rico, T: Maribel Garcia
- MI041 Passage of *Escherichia coli* through *Fragaria chiloensis***  
Phung Ngoc Luong, 18, Senior, Douglas MacArthur High School, San Antonio, Texas, T: Carolyn Pesthy
- MI042 Characterizing the Growth Curve of *Leishmania mexicana***  
Caitlin Eileen Stainken, 16, Sophomore, Douglas MacArthur High School, San Antonio, Texas, T: Carolyn Pesthy
- MI043 Effect of Anthraquinone on *Thiobacillus denitrificans***  
# Christopher David Hunniford, 18, Senior, Sarasota High School, Sarasota, Florida, T: Wallace Black
- MI044 Genetic Transformation of Tomato Plant Using *Agrobacterium tumefaciens***  
Anjali Puri, 17, Junior, Baldwin High School, Milledgeville, Georgia, T: Cathy Grimes
- MI045 Bacteria Elimination by Worldwide Treatment Facilities**  
Rebecca Callan Stanislaw, 14, Freshman, Park City High School, Park City, Utah, T: Kevin King
- MI046 Gene Expression Analysis of *Salmonella* Using Microarray**  
Ankita C. Baxi, 15, Sophomore, Houston High School, Germantown, Tennessee, T: Mark Polk
- MI047 Antimicrobial Resistance to Triclosan**  
Ryan Paul Thompson, 17, Junior, Carl Junction High School, Carl Junction, Missouri, T: Paul Foster
- MI048 Making a Deadlier Pathogen: Biofilms**  
Sana Sultana Gafoor, 16, Sophomore, Lincoln Park High School, Chicago, Illinois, T: Judith Ditkowsky
- MI049 Macrophages in SHIV Infection**  
Andrey Christopher Hicks, 17, Senior, Shawnee Mission Northwest High School, Shawnee Mission, Kansas T: Albert Frisby
- MI050 Effects of Antibacterial and Antifungal Agents on Extremely Halophilic Archaic**  
Zachary Louis Newman, 14, Freshman, Greencastle High School, Greencastle, Indiana, T: John Garner
- MI051 Hybridization Analysis of *tet(Q)* Transposons in *B. forsythus* and Related Species**  
# Ryan Joseph Montoya, 17, Senior, Boston Latin School, Boston, Massachusetts, T: Robert Akeson
- MI052 Is *E. coli* or *P. putida* a More Effective Host for a Plasmid?**  
Herbert Mason Hedberg, 15, Freshman, North Attleboro High School, North Attleboro, Massachusetts, T: David Vito

- MI053** **Ascorbic Acid Increases the Survival Rate of an Irradiated UV-sensitive Yeast Strain of *Saccharomyces cerevisiae***  
Shannon Michelle Sorenson, 17, Junior, Big Sky High School, Missoula, Montana, T: James Harkin
- MI054** **Effects of Colloidal Silver on *Staphylococcus aureus***  
Ciera Elani Thayne, 16, Junior, Payson Senior High School, Payson, Utah, T: Joseph Meldrum
- MI055** **What Cleaning Method Inhibits the Growth of Bacteria?**  
Vanessa J. Messelt, 16, Junior, Valley Public School, Hoople, North Dakota, T: Kathleen Melaas
- MI056** **High Dose Interference in PRRSV Is through PKR**  
Jessica Marie Rowland, 16, Junior, Brookings High School, Brookings, South Dakota, T: Chad Caldwell
- MI057** **A Bit of Spit: Effect of Different Mammal Salivas on the Growth Rates of *Micrococcus luteus* and *Sarcina aurantiaca***  
Jilian Leigh Rinehart, 15, Sophomore, Myrtle Beach High School, Myrtle Beach, South Carolina, T: Beverly Cottingham
- MI058** **Phages: The Ultimate Cure!**  
Salvatore Mottillo, 14, Freshman, Laurier Macdonald High School, St. Leonard, Quebec, Canada, T: Nancy Verrillo
- MI301T** **Moon's Valley: Microfossils and Microflora**  
Carlos Jose Gomez, 17, Senior  
Ignacio Javier Marianetti, 17, Senior  
Marcos Alberto Pavetti, 17, Senior  
Instituto Leonardo Murialdo, Guaymallen, Mendoza, Argentina  
T: Edgardo Nicolas Allendes
- MI302T** **Development of Bacteriophage-resistant *E. coli***  
# Anna Mary Bishop, 16, Sophomore  
# Emily Claire Letourneau, 15, Sophomore  
Como Park Senior High School, St Paul, Minnesota  
T: Arthur Payne
- MI303T** **Is Garlic or Aloe as Effective as Commonly Prescribed Antibiotics Against Bacteria?: Phase II**  
Angela Marie Evatt, 15, Sophomore  
Daron Lynn Wade, 16, Sophomore  
Wildwood High School, Wildwood, Florida  
T: Emily Keller
- MI304T** **Effect of Beta Irradiation on Meat Preservation: Reducing Food-Borne Pathogens**  
# Lauren Catherine Ball, 18, Senior  
# Kathleen Ellen MacMillan, 18, Senior  
Lake Brantley High School, Altamonte Springs, Florida  
T: Susan Behel
- MI305T** **Which Organism Produces the Greatest Power in an MFC?**  
Lawrence Shieh, 15, Sophomore  
Matthew Bing Gee Lee, 16, Sophomore  
Manhasset Junior-Senior High School, Manhasset, New York  
T: Peter Guastella
- MI306T** **Incidence of Methicillin-resistant *Staphylococcus aureus* in a Societal Environment**  
Brian T. Kim, 16, Junior  
Kelly Lee Ryan, 17, Junior  
duPont Manual Magnet High School, Louisville, Kentucky  
T: Glen Zwanzig
- MI307T** **Initiation of Heat Shock Protein by Viral Invasion: Defense against or Benefit for Virus?**  
Peter Nathan Starr, 17, Junior  
Vivek Kasinath, 16, Junior  
Keystone School, San Antonio, Texas  
T: Glen Sobey
- MI308T** **Effects of Smoke on Throat Flora: Part II**  
# Luke Vernon Yohe, 17, Senior  
# Trevor Dru Nash-Keller, 17, Junior  
Selby High School, Selby, South Dakota  
T: Robin Jung
- MI309T** **Gasbusters**  
Normarie Santiago Perez, 15, Sophomore  
Williset Ernesto del Valle, 16, Sophomore  
Southwestern Educational Society, Mayaguez, Puerto Rico  
T: Evelyn Montalvo
- MI310T** ***Bacillus subtilis* as Biological Control Agent for Black Sigatoka-causing *Mycosphaerella fijiensis* in Bananas**  
Noelle Nina Y. Gianan, 16, Sophomore  
Mendrado Sedoriosa Canusa, 16, Sophomore  
Catherine Rose Alix Lu, 16, Sophomore  
Philippine Science High School-Mindanao Campus, Davao City, Philippines, T: Trinidad V. Alfeche
- MI311T** **Investigations on Biological Control of *Penicillium expansum* on Apple Fruits**  
Emre Devrim, 17, Senior  
Huseyin Gercek, 18, Senior  
Izmir Science High School, Izmir, Turkey  
T: Seyfettin Dogan Aldag
- MI312T** **Development of a Conditionally Flocculent Strain of *Saccharomyces cerevisiae* for Industrial Use**  
## Mona Carolina P. Pavan, 18, Senior  
## Carolina Wasielesky Galvao, 17, Senior  
Escola Americana de Campinas, Campinas, Sao Paulo, Brasil  
T: Vivian H. Schlesinger
- MI313T** **Conditions Required for the Colony Formation in *Chromulina rosanoffii***  
Haruyo Yamaguchi, 17, Senior  
Shinichi Ogawa, 17, Senior  
Awa High School, Tateyama-shi, Chiba, Japan  
T: Noriyuki Ishii
- MI314T** **Wash Off, Wash On!**  
Carrie Josefine Babe Rogers, 18, Senior  
Jill Marie Trammel, 17, Junior  
Glen Rose High School, Malvern, Arkansas  
T: Connie Marlene Tuggle
- MI315T** **Water Quality and Algal Influences on the Technologies Treatment**  
Jeferson Montenegro, 18, Sophomore  
Jose Alexandre Galimberti, 19, Sophomore  
Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo,RS, Brasil  
T: Gabriel Luis de Oliveira
- MI316T** **Peptide Blockade: Are we Able to Inhibit HRV Infection by Design? Part II**  
# Ronald Valentine Williams, 18, Senior  
# Jennifer Lynn Wilwert, 18, Senior  
Cardinal O'Hara High School, Springfield, Pennsylvania  
T: Maureen Colanzi

## PHYSICS

### GRAND AWARDS PRESENTED BY: INTEL FOUNDATION

- PH001** **A Novel Surface Tension Measuring Method and Apparatus**  
Tai-Hsiang Huang, 17, Junior, Taipei Municipal Chien-Kuo Senior High School, Taipei, Taiwan, T: Ming-Chang Tai
- PH002** **Black Hole Space Stations and Space Ships: Investigations of a New Type of Interstellar Travel**  
Christopher Michael Orban, 18, Senior, Manatee High School, Bradenton, Florida
- PH003** **Antimatter Storage in a Betatron-based Magnetic Bottle**  
William Charles Young, 18, Senior, Fort Myers High School, Fort Myers, Florida, T: Karen Connors
- PH004** **MAGLEV: Defying Gravity**  
Thomas Fortson Curry, 14, Freshman, Port Saint Joe High School, Port Saint Joe, Florida, T: Tammy Owens
- PH005** **Comparison of the Effectiveness of Two Monte Carlo Generators in the H-WW Channel**  
Catherine Davison, 19, Senior, Queen Annes School, Reading, Berkshire, United Kingdom, T: Mrs. Devereax
- PH006** **Determining a Relationship for Air Friction of a Polygon**  
Mark Eban Richardson, 18, Senior, New Prairie High School, New Carlisle, Indiana, T: Michael Powers

- PH007 Icing: The Silent Killer**  
Sarah Elizabeth Murphy, 15, Freshman, Gibbon-Fairfax-Winthrop High School, Winthrop, Minnesota, T: Bix Baker
- PH008 Resistivity of NaCl Solutions Undergoing Electrolysis**  
# Tuan Dinh Nguyen, 17, Junior, Classes School of Advanced Studies, Oklahoma City, Oklahoma, T: Shelley Hunter
- PH009 Quasi-elliptical Torsatron: Study of Induced Radial Electric Fields and Plasma Confinement**  
## Garrett Joseph Young, 18, Senior, Young Homeschool, Branchburg, New Jersey, T: Keith Young
- PH010 Electro-optic Effect & Bandwidth Limit of a LiNbO<sub>3</sub> Modulator**  
Erin Riley, 17, Junior, Palm Bay High School, Melbourne, Florida, T: Michael O'Donnell
- PH011 Diffuse Reflectance Spectroscopy of Living Tissue and Its Application for Medical Diagnostics**  
Michael Yurievich Polyakov, 18, Senior, Ward Melville High School, East Setauket, New York, T: George J. Baldo, Ph.D.
- PH012 Can Slick Willie Stand the Heat? Part II**  
Ryan Mathew Goitia, 15, Freshman, Destrehan High School, Destrehan, Louisiana, T: Jennifer Roberts
- PH013 Effect of Magnetic Ions in a Barrier on the Spin Tunneling Probability**  
Emily Ann Kendall, 18, Senior, North High School, Evansville, Indiana, T: Daryl Mottley
- PH014 Effects of Surface Texture on Common Lifting Bodies**  
Robert Parker McNish, 15, Freshman, Charlottesville High School, Charlottesville, Virginia, T: Pamela Tegelman
- PH015 Ground State of a Quantum Well and the Magnetic Flux Quantum**  
Jerry Moy Chow, 17, Senior, Stuyvesant High School, New York, New York, T: Anne Manwell
- PH016 Optimal Pacing for the Roessler System**  
Eduardo M. Calleja, 17, Senior, Mast Academy, Key Biscayne, Florida, T: Wafa Khalil
- PH017 Theoretical Analysis of Factors Affecting the Optical Potential for Atom Guiding in a Dark Hollow Laser Beam**  
Bryan Armando Lemus, 15, Sophomore, American Senior High School, Hialeah, Florida, T: Cristin Calder
- PH018 Conductance Quantization in Au Nanocontacts**  
Mariangela Lisanti, 17, Senior, Staples High School, Westport, Connecticut, T: Harry Rosvally
- PH019 Optimizing the Efficiency of Windmill Blades**  
Joseph Smith, 16, Sophomore, Sumter County High School, York, Alabama, T: Johnny Delaine
- PH020 Frequency Conversion of Phase-aberrated Laser Beams for the National Ignition**  
# Ronen Eliahu Mukamel, 18, Senior, Brighton High School, Rochester, New York, T: Steve Whitman
- PH021 Does the Color of Light Affect Modulation?**  
Leroy Anderson Campbell, 15, Sophomore, Frederick Douglass High School, Atlanta, Georgia, T: Sharese M. Taylor
- PH022 Using the Refraction of Visible Light to Determine the Properties of Substances**  
Richard C. Korzekwa, 16, Sophomore, Los Alamos High School, Los Alamos, New Mexico, T: Claire Riker
- PH023 Effect of Low Frequency Vibration on the Strength of Magnetic Fields on a Flexible Spinning Disc**  
Olumakinde Adegboyega Adeagbo, 15, Sophomore, duPont Manual Magnet High School, Louisville, Kentucky  
T: Glenn Zwanzig
- PH024 Implications of the Kapitza Pendulum**  
Karima Robert Nigmatulina, 17, Junior, Albany Academy for Girls, Albany, New York, T: Lynda Blankenship
- PH025 ...And Then There Was Light**  
Jason A. Zeleznik, 17, Junior, South Allegheny High School, McKeesport, Pennsylvania, T: Janice A. Skroly
- PH026 Sparks Will Fly: Armature Acceleration Using the Lorentz Force**  
William James Knobles, 17, Junior, Seguin High School, Seguin, Texas, T: Donna Boeltner
- PH027 Effects of Varied Metal Coating on the Overtone Amplitude of a Cello "A" String**  
Michael Edward Wallace, 17, Junior, E. C. Glass High School, Lynchburg, Virginia, T: Bill Bishop
- PH028 Einstein's Equivalency Principle**  
Adam Lucas Bang, 17, Senior, Basic High School, Henderson, Nevada, T: Robert H. Stauffer, Jr.
- PH029 Auto Sun Shades: Are you Paying Too Much?**  
# Courtney Lea Luster, 16, Sophomore, Wetumpka High School, Wetumpka, Alabama, T: Virginia Vilaridi
- PH030 Stability of Gyroscopes**  
Ross Andrew Coleman, 16, Sophomore, Winner High School, Winner, South Dakota, T: Randy Kludt
- PH031 Effect of Torque on Rockets**  
Carlos F. Mercado, 14, Freshman, S.U. Federico Degetau, Barranquitas, Puerto Rico, T: Hector Sanchez
- PH032 Atmospheric Gas Detection by Non-dispersive Infrared Analysis of Solar Radiation**  
# Nicole Anne Oertli, 17, Junior, Murphy High School, Mobile, Alabama, T: Wanda Griffis
- PH033 Interaction between Sound and Liquid Crystals**  
# Naveen Neil Sinha, 16, Sophomore, Los Alamos High School, Los Alamos, New Mexico, T: Clare Riker
- PH034 Atmospheric Pressure: The Invisible Force**  
Anna Elizabeth Aubin, 16, Junior, Carman-Ainsworth High School, Flint, Michigan, T: Edward Fritz
- PH035 Quantification of Blend**  
Hugh O. Churchill, 18, Senior, Conway High School, Conway, Arkansas, T: Belinda K. Hasty
- PH036 Properties and Precursors of Tin Thin Films Prepared by Inductively Coupled Plasma Assisted DC Magnetron Sputtering**  
Loh Huanqian, 17, Senior, Raffles Junior College, Singapore, Singapore, T: NIL
- PH037 Decoupling Nuclear Magnetic Resonance Spectra by Maximum Entropy Reconstruction**  
# Andrew Chi, 17, Senior, Terre Haute South Vigo High School, Terre Haute, Indiana, T: Stephen M. Beeler
- PH038 Three-dimensional Fast Photography of Excimer Laser Ablation**  
Ramon Hegedus, 19, Senior, Bolyai Janos Grammar School, Szombathely, Hungary, T: Jozsef Baranyai
- PH039 Thermoelectric Properties of Semiconductors at High Temperatures**  
Eyup Guler, 18, Senior, Ankara Science Lycee, Ankara, Turkey, T: Hasan Koca
- PH040 Stick It to Me**  
Natalie Alexis Willis, 18, Senior, Greenwood Laboratory School, Springfield, Missouri, T: Hugh Brewer
- PH041 Simulation of the Fractal Structure of a Lightning Ball**  
Aliaksandr Salauyov, 17, Junior, Physics-Technical Lyceum #19, Groolno, Belarus, T: Mikalai Matsetsky
- PH042 Not with a Bang: Ockham's Razor in the Vacuum Primordium**  
Heather N. Hughson, 17, Senior, Waterloo Collegiate Institute, Waterloo, Canada, T: Michael Burns
- PH043 Magnetism, Gravity and Light: A Study of Field Interactions**  
## Joseph Alexander Palatinus, 17, Senior, Oak Ridge High School, Oak Ridge, Tennessee, T: Jacquelyn Jacoby
- PH044 How Much Radiation Do Cell Phones Put Out?**  
Matthew C. Morrow, 17, Junior, Dekalb High School, Waterloo, Indiana, T: John Filutze
- PH045 Effect of Varying Electric and Magnetic Field Strengths on the Flow Rate of Saline Water in a Magnetohydrodynamic Setup**  
Thomas Hall Ruscher, 15, Sophomore, Roanoke Valley Governors School for Science and Technology, Roanoke, Virginia, T: Aaron Schuetz
- PH046 Hypertime: A New Formulation of Quantum Mechanics**  
# Oludamini Denison Ogunnaike, 15, Sophomore, The Charter School of Wilmington, Wilmington, Delaware, T: Beenu Gupta
- PH047 Contrast in Radiography**  
Deborah S. Dossick, 16, Junior, Georgiana Bruce Kirby Preparatory School, Santa Cruz, California, T: Kelly Clark

- PH048 Inductance of an Air-wound Coil**  
Ross M. Audet, 16, Junior, Palo Alto Senior High School, Palo Alto, California, T: Colin Quinton
- PH049 Determining the Focus of Translucent Windows in *C. Cardissa***  
Hong Thi Thanh Dang, 17, Senior, Oak Grove High School, San Jose, California, T: Carol Evans
- PH050 Effects of Abscisic Acid and Gibberellic Acid on the Tensile and Compressive Strength of *P. Aureosulcata***  
Julie Ann Wolfe, 17, Senior, Notre Dame Academy, Covington, Kentucky, T: Judith Averbeck
- PH301T Internal Propulsion**  
Triep Cuu Nguyen, 18, Junior  
Finny Kunjumon Koshy, 16, Junior  
Mustang High School, Mustang, Oklahoma  
T: Carla Hamm
- PH303T Muzzle Velocity vs. Accuracy**  
Zachary Stephen Stinson, 15, Freshman  
Trevor Allen Nesbitt, 15, Freshman  
Palatka High School, Palatka, Florida  
T: Lulu Parish
- PH304T An Odyssey in the Realm of Photon Probability**  
Brandon Nicholas Cavallaro, 17, Junior  
Ryan Matthew Chapman, 17, Junior  
Allen D. Nease High School, St Augustine, Florida  
T: Sally Mitalas
- PH305T An Advanced Study of Tennis Balls**  
Austin James Bratton, 17, Junior  
Jacqueline Elaine Wilson, 17, Junior  
Pleasant Grove High School, Texarkana, Texas  
T: Mrs. Kendra Powers  
T: Kendra Powers
- PH306T Under the Bombardment of Microwaves**  
Erick Manuel Rivera, 16, Junior  
Daisy Colon, 16, Junior  
Luis Munoz Marin High School, Barranquitas, Puerto Rico  
T: Leticia Rodriguez
- PH307T Holography: Exploring the Wonders of Optics**  
Edgar Silva Figueira, 15, Sophomore  
Andre Rabasquinho Batista, 16, Sophomore  
Joao Andre Pereira Antunes, 15, Sophomore  
Escola Secundaria Campos Melo, Covilha, Portugal  
T: Rosa Maria Figueiredo Simoes
- ZO006 Effects of Chitosan on the Weight of *Rattus norvegicus***  
April Dawn Magby, 18, Senior, Moore High School, Moore, Oklahoma, T: Darla K. Wyatt
- ZO007 Cause and Effects of Abnormalities in Frogs: Phase IV**  
Zephian Wade Michaels, 15, Freshman, Palatka High School, Palatka, Florida, T: Lulu Gail Parish
- ZO008 Effect of the Light Pollution on *C. caretta* on the Beaches of Panama City Beach, FL**  
John David Kelley, 18, Senior, Rutherford High School, Panama City, Florida, T: Keilan McWhorter
- ZO009 Virtual Aquarium**  
Dustin James Carruthers, 17, Junior, Cheyenne East High School, Cheyenne, Wyoming, T: Mike Shappell
- ZO010 Diel Variation in *Lagodon rhomboides* Feeding #**  
Stephanie Anne Hanisak, 16, Sophomore, Vero Beach Senior High School, Vero Beach, Florida, T: Carol Haffield
- ZO011 Effects of Caffeine on the Ability of Mice to Negotiate a Maze**  
Waren Zachary Morrow, 18, Senior, Pawnee High School, Grover, Colorado, T: Carrie Erickson
- ZO012 Reproduction of Pomace Flies**  
Mei Mei Fong, 17, Senior, James B. Castle High School, Kaneohe, Hawaii, T: Sandra Linsky
- ZO013 I've Got Worms! The Effects of Biotin and Penicillin on the Regeneration of *Lumbriculus variegatus***  
Zachary Neal Donnell, 14, Freshman, Miami High School, Miami, Oklahoma, T: Sally Fenska
- ZO014 Effect of Delayed Egg Storage on Embryonic Development and Position of the Chick Embryo**  
Amanda Elizabeth Thomas, 18, Senior, Union County High School, Lake Butler, Florida, T: Renae Allen
- ZO015 Effect of Selected Soluble Bacteriostatic Agents on the Mortality of Neonatal Crocodylians due to Stress-induced Bacterial Infections**  
Aaron Nicholas Wyndham, 16, Junior, Timberland High School, Saint Stephen, South Carolina, T: Maja G. Fickett
- ZO016 *Odonata* Larvae Feeding Behavior**  
Lydia Marie O'Beirne, 18, Senior, Bagley Junior-Senior High School, Bagley, Minnesota, T: Ole Anderson
- ZO017 Ornithological Responses to Recreational Disturbance**  
Chad Zachary Rose, 18, Senior, Lake Brantley High School, Altamonte Springs, Florida, T: Suzy Behel
- ZO018 Copper Levels: That's No Bull**  
David Andrew Lohmann, 16, Sophomore, Alva Senior High School, Alva, Oklahoma, T: Julie Angle
- ZO020 North Fork Cafe**  
Saygar Bevenger, 16, Sophomore, Cody High School, Cody, Wyoming, T: Nelson B. Thomas
- ZO021 Investigations of *Capricious* Gene Expression in *Drosophila* Wing Development**  
Michelle S. Itano, 16, Junior, Fairview High School, Boulder, Colorado, T: Mark Chavez
- ZO022 Predator Avoidance of *Blaberus giganteus* in a Laboratory Maze**  
Mark David Mentzel, 16, Sophomore, Colonia High School, Colonia, New Jersey, T: James Danch
- ZO023 Another Itching Question**  
Adam Walter Zarowski, 18, Senior, Americas High School, El Paso, Texas, T: Troy Byrne
- ZO024 Conditioning of a Snake to Differentiate between Scented Man's Hand and It's Prey**  
Robert Harwood Hegna, 17, Junior, Dayton Christian High School, Dayton, Ohio, T: Robert Fogg
- ZO025 Inos in Ischemia Reperfusion Injury in Mouse Tissue**  
Stephanie Alexandra Savory, 18, Senior, Caddo Parish Magnet High School, Shreveport, Louisiana, T: Kris Clements
- ZO026 Watch Out, Ortho! #**  
Amanda Leigh Koppel, 18, Senior, Chantilly High School, Chantilly, Virginia, T: Andrea Cobb
- ZO027 Are You My Mother? Effects of Audio and Visual Signals**  
Laura Elizabeth Schulte, 16, Junior, Langley High School, McLean, Virginia, T: Jeff Brockett

## ZOOLOGY

GRAND AWARDS PRESENTED BY:  
INTEL FOUNDATION

- ZO001 Technology of Breeding New Queen Bees by Jailing Old Queens Outside Their Hives and its Application Effect**  
Xiaoqin Ji, 19, Senior, Rudong Vocational High School of Jiangsu Province, Nantong City, Jiangsu Province, China  
T: Chengkun Xue
- ZO002 Mediation of Allorecognition with Signaling Transduction Molecules in *Botryllus schlosseri***  
Jason W. Steinberg, 16, Sophomore, Saint Mary's High School, Stockton, California
- ZO003 Neural Processing of a Conditioned Stimulus in *Planaria***  
Zachary Lee Aurand, 16, Sophomore, Cloquet Senior High School, Cloquet, Minnesota, T: Tim Anderson
- ZO004 Enzyme Control of *Gasterophilus* Eggs**  
Christopher Robert Paulson, 17, Junior, Okeechobee High School, Okeechobee, Florida, T: Joe Arnold
- ZO005 Search for Protein(s) Differentially Expressed During Tissue Regeneration of the Tadpole Tail**  
Hui-Tzung Luh, 17, Junior, Municipal Kaohsiung High School, Kaohsiung, Taiwan, Chinese Taipei, T: Chin-Wei Liang

- ZO028 Cryopreservation of *Lumbriculus* Using Trehalose**  
Christopher Steven Huff, 18, Senior, Lafayette High School, St Joseph, Missouri, T: Sean Nash
- ZO029 Linkage Mapping of Genetic Factors Affecting Vocal Behavior in the Domestic Canary, *Serinus canaria***  
Emy Mary Kuriakose, 17, Senior, Townsend Harris High School, Flushing, New York, T: Susan Brustein
- ZO030 Anhydrobiotic Capacities of Three Species of Tardigrada and Evidence and Documentation Describing a New Tardigrade Species**  
# Amber Marie Hohl, 18, Senior, Central Lee High School, Donnellson, Iowa, T: Ernest Schiller
- ZO031 Effect of Potassium on Zebra Mussel Substrate Adhesion**  
## Mark Edward Jackson, 16, Junior, Sheridan High School, Sheridan, Arkansas, T: Vickie Thornton
- ZO032 Deterrents of *Odocoileus virginianus***  
Ashley Marie Noreuil, 16, Sophomore, George Washington High School, Cedar Rapids, Iowa, T: Heather Adams
- ZO033 Effects of Surface Water Runoff from an Urban Watershed on the Incidence of Backbone Deformities in *Rana aurora aurora* Tadpoles**  
Emily Anne Hickey, 17, Senior, Bellarmine Preparatory School, Tacoma, Washington, T: Ronald Nilsen
- ZO034 How Do Neurotransmitters Affect the Aggressive Behavior of *Macrobrachium rosenbergii***  
Francisco E. Castillo, 15, Sophomore, Colegio San Ignacio de Loyola, Rio Piedras, Puerto Rico, T: Wilma M. Giol de Rivera
- ZO035 The X Factor**  
Kellyn Lane Kuhlmann, 18, Senior, Mason High School, Mason, Texas, T: Bonnie Schmidt
- ZO036 Nutrient Enrichment in Soft Coral Communities and the Benefits of Antioxidant Treatment**  
# Elizabeth Marie White, 17, Junior, Spruce Creek High School, Port Orange, Florida, T: Andrea White
- ZO037 Effects of Allelochemicals on Insect Behavior and Physiology: Phase II**  
Roberta Michelle Gonzalez, 17, Senior, Sunnyside Senior High School, Sunnyside, Washington, T: Joyce E. Stark
- ZO038 Effects of Induced Plant Responses on the Suitability of Potato and Celery Plants for the Cabbage Looper**  
# Laura Kate Tom, 16, Junior, West Valley High School, Yakima, Washington, T: Jewel Brumley
- ZO039 Effect of Supplements on the Virility of Male Butterflies**  
# Rachel Lauren Rosenberg, 16, Sophomore, Hilton Head High School, Hilton Head Island, South Carolina  
T: Stephanie McNulty
- ZO040 Linear Distances of Attraction of Japanese Beetle Lures**  
Jeffrey Michael Valla, 18, Senior, Saratoga Springs Senior High Sch, Saratoga Springs, New York, T: Evelyn Perkins
- ZO042 Worm Runners: An Exploration of Biochemical Memory**  
Laura Joye Harmon, 15, Sophomore, Batesburg-Leesville High School, Batesburg, South Carolina, T: Cathy Watson
- ZO043 Stridulation in *Rabidosa punctulata***  
William Ramey Miller, 15, Freshman, Oxford High School, Oxford, Mississippi, T: Judy T. Nicholas
- ZO044 Osprey (*Pandion haliaetus*): Phase II**  
# Krista J. Mougey, 17, Junior, Colstrip High School, Colstrip, Montana, T: Bernie Smith
- ZO045 Effect of Totipotent Cells on Regeneration**  
Eric C. Singletary, 15, Freshman, Robert E. Lee High School, Midland, Texas, T: Reggie MacAllister
- ZO046 There is a Time for Everything**  
Richard Cole Vaughn, 16, Freshman, Winona High School, Winona, Mississippi, T: James Colbert
- ZO047 Comparative Study of Feed Intake, Body Growth, Weight Gain, Muscle Mass and Leanness of the *Suidae sus scrofa*:: Phase 6**  
### Abigail Brigitte Taylor, 18, Senior, West Jones Junior Senior High School, Laurel, Mississippi, T: Denise C. Taylor
- ZO048 Effect of Brassinosteroids on Insect Molting**  
Jacob Thomas Wilson, 17, Senior, Miller County R-III High School, Tuscumbia, Missouri, T: Constance Wyrick
- ZO049 Avoidance Behavior or Feeding Behavior? Phase II**  
## Geneya Cox, 18, Senior, Pine View High School, Saint George, Utah, T: Steven Cox
- ZO050 Short Range Attractants between Male and Female *Leptinotarsa decemlineata*, Colorado Potato Beetle**  
Elisabeth Corbin Stratton, 18, Senior, Eleanor Roosevelt High School, Greenbelt, Maryland, T: William Martin
- ZO051 The Miracle of Metamorphosis: Third Year Study**  
# Michelle Elizabeth Afkhami, 17, Junior, Plano East Senior High School, Plano, Texas, T: Elizabeth Priddy
- ZO052 Effect of Mosquito Control on *Dirofilaria immitis* in the Canine Population of Duval County**  
Katie L. Nash, 17, Junior, Paxon School for Advanced Studies, Jacksonville, Florida, T: Marvin Mosely, Jr.
- ZO053 *Ascaris lumbricoides* Life's Cycle**  
Osvaldo Ramirez, 17, Junior, C.E.T.S No. 156, Tijuana, Baja California, Mexico, T: Fernando Hernandez Diaz
- ZO054 Interactive Effects of UV and Natural Pesticides on Mealworms and Crickets**  
Adam P. Rago, 15, Freshman, Falmouth High School, Falmouth, Massachusetts, T: David Berglund
- ZO055 Comparative Genomics in the Horse and Other Perissodactyls Revealed by Reciprocal Chromosome Painting**  
Abigail Linda Shearin, 18, Senior, Middletown Senior High School, Middletown, Maryland, T: Ronald L. Albaugh
- ZO056 Effect of Ultraviolet Radiation on *Xenopus laevis***  
Beth Marie Dakin, 17, Senior, Revere High School, Revere, Massachusetts, T: David Eatough
- ZO057 Population Genetics of Local Wild Oyster Populations Using PCR**  
Nathan Piskor Twichell, 17, Junior, Falmouth Academy, Falmouth, Massachusetts, T: Victoria Centurino
- ZO058 Determination of Eating Preferences of *Veronicella cubensis***  
Limaris Toro, 16, Junior, Colegio Radians, Cayey, Puerto Rico, T: Juan Martinez
- ZO059 Nerves and Metals**  
Eva Lily Vertes, 16, Sophomore, Highland High School, Dundas, Ontario, Canada, T: Janet Hughes
- ZO060 Ephedra Effects on Problem-solving Ability of *Cambarus virilus***  
Toria Anne Argo, 17, Junior, Westview High School, Martin, Tennessee, T: Rosemary Neville
- ZO061 Effect of Vitamin E on *Planaria* Regeneration**  
Anton Luigi Zanotto, 15, Sophomore, Los Gatos High School, Los Gatos, California, T: Kim Burlinson
- ZO062 Effects of Chromium on *Planaria***  
# Christine Mae Concho, 16, Junior, Barstow High School, Barstow, California, T: Suzan Kypriotis
- ZO063 Got More Milk?**  
Bernard Neil Kauk, 17, Junior, Wishek Public School, Wishek, North Dakota, T: William Malaski
- ZO064 Urine as an Olfactory Cue for Individual Recognition in Rats**  
Neha Mehta, 16, Junior, Great Neck South High School, Great Neck, New York, T: Carol Hersh
- ZO065 Newly-recorded Parasitic Wasp of the Fruit Fly in Japan**  
Takeshi Kawano Take, 19, Senior, Omiyanishi Senior High School, Omiya, Saitama, Japan, T: Hidehiro Hamamoto
- ZO066 Larval Reactions of *Dermatobia hominis* (*Diptera uterebriidae*) to Various Plant Extracts**  
Ana Margoth Quesada Araya, 17, Junior, Liceo Diurno de Esparza, Esparza, Puntarenas, Costa Rica
- ZO067 Blue Mussel Size Preference of *Nucella lima***  
Carl Harold Brodersen, 16, Sophomore, Juneau-Douglas High School, Juneau, Alaska, T: Erik Lundquist
- ZO068 Examining Chromosomal Puffing Activity in *Drosophila melanogaster*: How Does Salt Concentration Affect the Localization of DNA Topoisomerase I?**  
Maria Elena DeObaldia, 14, Freshman, Moorestown High School, Moorestown, New Jersey, T: Maureen Kavulich
- ZO069 Diurnal Butterflies in Stadsbygd**  
Ragnhild Bergene Skraastad, 19, Senior, The Rudolf Steiner School in Trondheim, Trondheim, Norway, T: Dan Harald Fosse



- ZO301T Protection of *Branchiostoma balcheri* (Amphioxus) in Xiamen**  
Shiyang Han, 16, Junior  
Wei Cai, 17, Junior  
Tianxiang Lu, 18, Senior  
Xiamen First High School, Xiamen, Fujian, China  
T: Zeng Guoshou
- ZO302T Use of Copper Sulfate to Control the Golden Apple Snail (*Pomacea canaliculata*) in Hanalei Valley Taro Fields**  
Tyson Mitsuo Wakayama, 15, Freshman  
Whitney Takeo Haraguchi, 14, Freshman  
Rodney Koa Yama, 15, Freshman  
Kapa'a High School, Kapa'a, Hawaii  
T: Ray D. de la Pena  
T: Ray D. de la Pena
- ZO303T Effect of Fluoxetine on Learning and Memory of *Dugesia***  
John Joseph Byrnes, 16, Sophomore  
Alvin Wong, 15, Sophomore  
Manhasset Junior-Senior High School, Manhasset, New York  
T: Peter Guastella
- ZO304T Tactile and Olfactory Aspects of Environmental Mapping in *Procambarus clarkii***  
Nadezhda Belova, 18, Senior  
Alisa Neymark, 17, Senior  
Midwood High School at Brooklyn College, Brooklyn, New York  
T: Martin Langan  
T: Ann G. Nicastrì
- ZO305T Hamsters: Infanticide**  
Gabriela Veronica Escudero, 17, Senior  
Nicolas Ariel Bertola, 17, Senior  
Colegio Hispano Argentino, Rio Cuarto, Cordoba, Argentina  
T: Carolina Alejandra Barrera
- ZO306T To Fly or Not to Fly? Study of *Drosophila* Sexual Inheritance**  
Miguel Alejandro Beltran, 14, Freshman  
Israel Del Toro, 15, Freshman  
Clint High School, Clint, Texas  
T: Laura Cade
- ZO307T Examination and Promotion of *Diadegma insulare* as an Alternative Biological Pest Control Method for the Suppression of *Plutella xylostella* (Diamondback Moth)**  
#  
Allison Joy Ferber, 18, Senior  
#  
Sonali R. Hippalgaonkar, 17, Junior  
Lake Highland Preparatory School, Orlando, Florida  
T: Judith Legault
- ZO308T Frog Culture: Hatchery for the Red-legged Frog**  
Caitlin Mary Connolly, 18, Senior  
Katia Irene Knudson, 18, Senior  
Bellarmine Preparatory School, Tacoma, Washington  
T: Ron Nilsen
- ZO309T Evaluation of the Use of the Entomopathogenic Nematode *Steinernema bibionis* on the Biocontrol of the American Cockroach *Periplaneta americana***  
Xavier Martinez-Camacho, 17, Senior  
Maria E. Olmo-Collazo, 17, Senior  
Angel L. Osorio-Velez, 16, Junior  
Pedro Falu Orellano High School, Rio Grande, Puerto Rico  
T: Angel L. Diaz-Rosario  
Casiano Cepeda High School, Caguas, Puerto Rico
- ZO310T Effects of Timing and Duration of Exercise on Oxidative Stress as Measured by the Ratio between Reduced and Oxidized Glutathione Levels**  
Zachary Adam Ozer, 16, Sophomore  
Daniel M Gude, 15, Sophomore  
Mark Junichi Havel, 16, Sophomore  
Keystone School, San Antonio, Texas  
T: Glen Sobey
- ZO311T Effects of Disturbance on Defending and Non-defending *Pemphigus* Aphids**  
Esther Marae Wilch, 17, Junior  
Falina Enriquez, 17, Junior  
University High School, Tucson, Arizona  
T: Margaret Wilch
- ZO312T Biological Control of Termites (*Fam. rhinotermitidae*) with *Bacillus thuringiensis***  
Esteban Roberto Arrieta, 17, Junior  
Silvia Bolanes Castro, 18, Junior  
Allan Eduardo Ramos, 17, Junior  
Colegio Cientifico Costarricense sede San Carlos, San Carlos, Alajuela, Costa Rica  
T: Sonia Arias
- ZO313T Ancestry by Sound: Tracing the Evolutionary Relationships of *Hyla* Species**  
Simeon McMillan, 15, Freshman  
Daniel Jason Rowe, 16, Senior  
Uniondale High School, Uniondale, New York  
T: Paul Lichtman
- ZO314T Light Responses of Various *Drosophila* Phenotypes**  
Alisyn Hansen, 17, Junior  
Chelsey Lynn Barrett, 16, Junior  
Haylee Ferguson, 17, Junior  
American Fork High School, American Fork, Utah  
T: Don Bastian

## TEAM PROJECTS

### GRAND AWARDS PRESENTED BY: SCIENCE NEWS

- BE301T You Are What You Hear: The Influence of Music on Mood**  
# Sarah Elizabeth Wolff, 17, Senior  
# Brian Charles Hardy, 17, Junior  
Cheyenne Central High School, Cheyenne, Wyoming  
T: Robert Hodges
- BE302T Twin Telepathy, It Takes Two: Phase II**  
# Megan Marjorie Hicks, 16, Sophomore  
# Rachel Renae Hicks, 16, Sophomore  
Champlin Park High School, Champlin, Minnesota  
T: Sue Glennon
- BE303T Now Hear This: Effects of Various Types of Noise on Students' Performance on Reading Comprehension Tests**  
Denae Allison Mock, 18, Senior  
Jennifer Marie Snyder, 18, Senior  
Minerva High School, Minerva, Ohio  
T: Molly Winters
- BE304T Effect of Music on Problem Solving Aptitude in Adolescent Girls**  
Ceridwen Bonnell Cherry, 17, Senior  
Alison Sutton Fernandes, 17, Senior  
Sydney Girls High School, Sydney, New South Wales, Australia  
T: Debra M. Irwin
- BE305T Individual vs. Group Study for Introverts and Extroverts**  
I-rang Im, 16, Sophomore  
Emilie Ruth Sutterlin, 18, Senior  
Thomas Jefferson High School for Science and Technology, Alexandria, Virginia, T: Pamela Hannah
- BE306T Looking for a Place: The New Poor**  
Angelica Martina Zuniga Oliva, 17, Junior  
Maria Ines Berniell, 17, Junior  
Escuela Normal Superior "Dr. Alejandro Carbo", Cordoba, Argentina, T: Monica Zehnder
- BE307T Animal Use in Laboratories: Necessary or Not?**  
# Marimar Rivera-Medina, 17, Senior  
# Jose Johel Monge, 18, Senior  
Colegio San Antonio, Rio Piedras, Puerto Rico  
T: Luz N. Velazquez
- BE308T Indicators of ADHD in Children 10-12 Years of Age**  
Cristal Soto, 17, Senior  
Julio Santiago, 18, Senior  
Clarimar Rivera-Mercado, 17, Senior  
Colegio Maria Auxiliadora, Carolina, Puerto Rico  
T: Mayra Santana

- BE309T Did Your Parents Select the School That Meets Your Expectations?**  
Adianeris Joanne Crespo, 15, Sophomore  
Shearly Ann Figueroa, 16, Sophomore  
Colegio San Pedro Martin, Guaynabo, Puerto Rico  
T: Lysset Morales
- BE310T Photogenic Coloration Research on *Tenebrio molitor***  
Thomas Ryan Rhodes, 14, Freshman  
Harry Nelson Werner, 15, Freshman  
The Academy at Ector Junior High School, Odessa, Texas  
T: Ron Schulze
- BE311T Emotion and Memory . . . Is There a Gender Bias?**  
Sadie Ann Tierney, 17, Senior  
Emily Jean Sweeney, 18, Senior  
Amador Valley High School, Pleasanton, California  
T: J. Eric Thiel
- BE312T Stop, Look, Listen**  
Josh Matthew Borts, 16, Sophomore  
Joseph Alexandre Lallouz, 16, Sophomore  
Saint Georges School Montreal, Montreal, QC, Canada  
T: Linda Leiberman
- BE313T The Daisy: A Tolerant Lifestyle of Young People**  
Zdenek Chmelar, 20, Senior  
Pavel Umaceny, 20, Senior  
Ekogymnazium, Prague, Czech Republic  
T: Hana Entlerova
- BE314T Batview**  
Cassio Tagliari, 17, Senior  
Guilherme Cerutti Muller, 17, Senior  
Silvio Cesar Antunes Dutra, 18, Senior  
Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo, RS, Brasil  
T: Joao Artur D'Avila Neves
- BI301T Protein Electrophoresis in Crickets**  
Issac Basse Johnson, 16, Junior  
Richie D. Cobb, 17, Junior  
Nettleton High School, Jonesboro, Arkansas  
T: Karen Ladd
- BI302T Polymorphism(s) of Fig1 Gene in Patients with Systemic Lupus Erythematosus**  
Kiran Gupta, 18, Senior  
Diana Chang, 17, Junior  
Great Neck South High School, Great Neck, New York  
T: Carol Hersh
- BI303T Beta-Amyloid-induced Migration of Monocytes across Human Brain Endothelial Cells Involving RAGE and PECAM-1**  
Huoy Juin Chen, 15, Sophomore  
Wei David Liang, 15, Sophomore  
Alhambra High School, Alhambra, California  
T: Duane Nichols
- BI304T Imprinted Gene IPL and Tumor-Suppressor PTEN**  
Raymond Michael Musalo, 16, Junior  
Nandita Gupta, 17, Junior  
Manhasset Junior-Senior High School, Manhasset, New York  
T: Peter Guastella
- BI305T Mitochondrial Genome of the Zebrafish, *Danio rerio***  
# Francesca Marie Pignataro, 17, Senior  
# Rachel Meredith Shoichet, 17, Senior  
Plainview-Old Bethpage John F. Kennedy High School, Plainview, New York  
T: Melanie Kreiger
- BI306T Comparisons of Unrelated *Musa acuminata* by Electrophoresis**  
Melissa Lynn Grabofsky, 16, Sophomore  
Mandy Lyn Baldik, 16, Sophomore  
Turner High School, Turner, Montana  
T: Kay Fjeld
- BI307T Short Term Effects of Diuron on the Variability of pH on Fraternidad Soil**  
# Robinson Seda, 16, Junior  
Ernie Xavier Perez, 17, Junior  
Leonides Morales Rodriguez High School, Lajas, Puerto Rico  
T: Lester L. Lopez
- BI308T Effects of the Sweet Cherry (*Prunus avium*) as an Inhibitor of Lipid Oxidation in Cooked Ground Beef during Storage**  
Amy Lee Hart, 17, Junior  
# Elizabeth Kathleen Schreiner, 17, Junior  
Port Huron High School, Port Huron, Michigan  
T: Robert Weiss  
Marine City High School, Marine City, Michigan  
T: John Depa
- BI309T Influence of the Cationic Peptides on Adenylyl Cyclase**  
Alexander Anosov, 16, Sophomore  
Yakov A. Bursian, 15, Sophomore  
Artem Genadievich Shamsuarov, 15, Sophomore  
School N371, Saint-Petersburg, Russia  
T: Alexander O. Shpakov
- BI310T Titer Levels and Antibodies of Blood and Urine of *Oryctotagus cuniculus* When Given PZP**  
Shannon Marie Murphy, 18, Senior  
Maggie Marie Dunn, 17, Senior  
Billings West High School, Billings, Montana  
T: George Grover
- BI311T Computer Aided Drug Design Based on Small Molecules**  
See Qin Yong, 16, Sophomore  
Xu Wei Zhen, 15, Sophomore  
Chong Yao Feng, 15, Sophomore  
Raffles Institution, Singapore, Singapore, T: NIL
- BI312T Base Pair Baseball: Simulations in DNA Computation**  
James Solomon Fraser, 19, Senior  
Andrew Nicholas Smith, 18, Senior  
Northern Secondary School, Toronto, Ontario, Canada  
T: Angela Vavitsas
- BI313T DNA Identification: Asian Connection**  
Sarith Ly, 19, Senior  
Nancy Tuyet Lam, 17, Senior  
Thuy Hong Thi Luong, 18, Senior  
William C Overfelt High School, San Jose, California  
T: Louise Handly
- BI314T Effect of Orifice Length in Hydrodynamic Point-sink DNA Shearing**  
Shoshana Ruth Osofsky, 16, Junior  
Julia D. Barmeier, 16, Junior  
Saratoga High School, Saratoga, California  
T: Robert Kucer
- BO301T Effects of Allelochemicals Produced by *Kochia scoparia* on Selected Crops Grown in North Toole County (NTC), Montana**  
Daniel Ray Cox, 16, Sophomore  
Marshall Cole Overcast, 18, Senior  
North Toole County High School, Sunburst, Montana  
T: Lawrence Fauque
- BO302T Possible Anti-viral Properties of *Azadirachta indica* in Suppressing Tobacco Mosaic Virus**  
# LaTonya Monique Little, 18, Senior  
# Candace D. Tubbs, 17, Senior  
Yazoo City High School, Yazoo City, Mississippi  
T: Kimberly Patterson
- BO303T Pesticides and Plant Growth**  
Eric Michael Morley, 18, Senior  
Paula Rose Lopez, 18, Senior  
Elko High School, Elko, Nevada  
T: Teresa Noland
- BO304T Clinical Inhibition of Germination by Sunflowers**  
Darin Michael Kilcoin, 17, Junior  
Clint Michael Sandness, 17, Junior  
Woonsocket High School, Woonsocket, South Dakota  
T: Thomas Allen Foubert
- BO305T Which Grows Best with Lead, Hydroponic or Soil Soy Plants?**  
Anthony David Cinson, 17, Junior  
Brandon Jay Lautzenheiser, 16, Junior  
Minerva High School, Minerva, Ohio  
T: Molly Winters

- BO306T Tubes of the Unknown**  
Jade Yadon, 16, Sophomore  
Cassandra S. Clary, 15, Sophomore  
Deming High School, Deming, New Mexico  
T: Steve Goodgame
- BO307T Use of Local Plants and Marl in Making Water Soluble Dyes**  
Phuwani Khechonphun, 17, Senior  
Suwannee Phalakonphaisan, 17, Senior  
Sudthisa Srisawad, 17, Senior  
Matthayom Siriwanwari 3 Chachoengsao School,  
Chachoengsao, Thailand  
T: Pin Charnghong
- BO308T Affects of Artificial Gravity on Plant Growth**  
Michael Ivan Judson, 15, Sophomore  
Nelson Bret Radmall, 16, Sophomore  
Pleasant Grove High School, Pleasant Grove, Utah  
T: Douglas Panee
- BO309T Remote Sensing and Iceplant**  
Richard Donald Johnson, 16, Sophomore  
Michael Henry Fischer, 15, Freshman  
Pacific Collegiate School, Santa Cruz, California  
T: Daniel Welsh-Bon  
T: Darrell Steely
- CH301T Compatibilization of Polymer Blends Using Supercritical Carbon Dioxide**  
Edmund Francis Palermo, 17, Junior  
James W. Conlon, 16, Junior  
Bay Shore High School, Bay Shore, New York  
T: Ronald Occhiogrosso
- CH302T Sol-Gel Synthesis of Yttrium Iron Garnet Magnets**  
Michael Takbun Ng, 16, Junior  
Patrick Li, 16, Junior  
Midwood High School at Brooklyn College, Brooklyn, New York, T: Jay Touger
- CH303T Degradation of Vitamin C: Phase II**  
# Kathleen Dawn Wilkes, 15, Sophomore  
# Kristi B. Meaders, 16, Sophomore  
Weber High School, Pleasant View, Utah  
T: Lareen Radle
- CH304T Emergence of Life: A Chemical Approach**  
Niels Martin Moller, 20, Senior  
Line Hjortshoj Pedersen, 19, Senior  
Grenaa Gymnasium OG HF, Grenaa, Denmark  
T: Stig Carlsson
- CS301T Artificial Neural Networks as Applied to an Intelligent Alarm System**  
Bernard Willers, 16, Sophomore  
Josef Johann Vrba, 16, Sophomore  
Saint Alban's College, Pretoria, Gauteng, South Africa  
T: Carol Ashton
- CS302T Implementation of Parallel Processing in Tasks of Logical Deduction**  
Victor Alexandrovich Lapshin, 16, Junior  
Alexey Borisovich Komarov, 17, Junior  
Moscow Chemical Lyceum, Moscow, Russia  
T: Dmitrii Vitalievich Andreev
- CS303T Is Your Computer Running? You Better Go Catch It!**  
Brian Scott Cooper, 18, Senior  
Sean Matthew Flanagan, 17, Senior  
Jefferson High School, Shenandoah Junction, West Virginia  
T: Virginia Demchik
- CS304T Advanced Overclocking Using Thermal Variations**  
# Chance Wayne Schraeder, 17, Junior  
Dustin Ross Beier, 15, Sophomore  
Box Elder High School, Brigham City, Utah  
T: Ronald Cefalo
- CS305T Can an Unbeatable AI be Created for Connect Four?**  
Isaac D. Bowen, 16, Junior  
Henry A. Pate, 16, Junior  
Spruce Creek High School, Port Orange, Florida  
T: Ruth Vonnieda
- CS306T Ethernet Robotic Control**  
# Ian Matthew Collier, 18, Senior  
Ghassan A. Nassar, 18, Senior  
Julie M. McMillan, 17, Senior  
Divine Child High School, Dearborn, Michigan  
T: Katherine Higgins-Luthman
- CS307T Intelligent Building Management System**  
Peter Salmikov, 17, Junior  
Anton D. Kachalov, 17, Junior  
Lyceum 1523, Moscow, Russia  
T: Ludmila V. Zhabina
- CS308T Cost Minimization through Flight Scheduling**  
Sarah A. Omar, 18, Senior  
Elizabeth Jean Brown, 17, Senior  
Thomas Lewis Widland, 18, Senior  
Albuquerque Academy, Albuquerque, New Mexico  
T: Jim Mims
- EA301T Dinosaur Fossils and Footprints**  
Laura Ann Vietti, 16, Junior  
Brandon Lee Drake, 17, Junior  
Hot Springs County High School, Thermopolis, Wyoming  
T: Jeb Schenck
- EA302T Microbarometric Turbulence: Measuring Atmospheric Waves**  
# Aaron Taylor Burgess, 15, Sophomore  
Kristen L. Rasmussen, 15, Sophomore  
Fairview High School, Boulder, Colorado  
T: Michael Stanley
- EA303T Study on Solar Limb Darkening**  
Cheng Yu Yeh, 18, Senior  
Chih Fan Chen, 18, Senior  
Taipei Municipal TaTung Senior High School, Taipei, Taiwan, Chinese Taipei, T: Che Yi Liao
- EA304T Living with a Star: On the Trends in Geomagnetic Activity and Total Amount of Ozone**  
Saule Zhaksylykovna Sakenova, 15, Freshman  
Alexandre Dmitrievich Petelin, 13, Freshman  
School No. 105, Almaty, Kazakhstan  
T: Goldayeva Elena, "Gray Stone", Saskatoon, Canada
- EA305T Comparative Evolution of Cataclysmic Variables: Study of DV Ursae Majoris and CP Eridani**  
Jacqueline Naomi Gordon, 17, Senior  
Megan Ilona Hall, 17, Senior  
Mamaroneck High School, Mamaroneck, New York  
T: Jodi Pear  
John Jay High School, Katonah, New York  
T: Douglas Bartel
- EA306T Improved System of Radio Observations of Meteors**  
Michael Barynov, 18, Junior  
Aliaksei Akulionak, 16, Junior  
Lyceum #2, Minsk, Belarus  
T: Vladimir Bahamolav
- EN301T Gaseous Emissions from Char Particle Combustion in a Fluidized Bed**  
Andrew Michael Coughlin, 17, Senior  
Virginia Bess Eakin, 18, Senior  
Laramie Senior High School, Laramie, Wyoming  
T: Eric Weitzel
- EN302T Antistatic Tape Application on a Robotic Assembly**  
Richard John Davies, 18, Senior  
James Palmer, 18, Senior  
Neil Roques, 18, Senior  
Bassaleg Comprehensive School, Newport, Wales, United Kingdom, T: Peter Harriman
- EN303T The Coolface Multi-Tray**  
Stephanie Nicole Kaszuba, 17, Junior  
Clara Yentin Tow, 16, Sophomore  
Smithtown High School, Smithtown, New York  
T: Elaine Champey
- EN304T Pressured to Work . . . Again**  
Jerry De La Huerta, 17, Senior  
Roman Ramos, 18, Senior  
Simon Rivera High School, Brownsville, Texas  
T: Miguel A. Chapa

- EN305T Special Electrical Wheelchair for Motion Incapacitated People**  
Bernardo Ariel Garcia, 15, Sophomore  
Federico Jose Tarruco, 14, Freshman  
Pedro Poveda, Montevideo, Uruguay  
T: Jose Miguel Garcia
- EN306T A Comparison of Three Modes of Applied Flow Visualization**  
John Patrick Bennett, 15, Junior  
Paul Vincent Calluzzo, 17, Junior  
Manhasset Junior-Senior High School, Manhasset, New York  
T: Peter Guastella
- EN307T Bottle Rockets: Aerodynamic Capabilities of Nose Cones and Fins**  
Katrina T. Grigsby, 15, Sophomore  
Kassie Kendell, 15, Sophomore  
Bonneville High School, Ogden, Utah  
T: Michelle Wood
- EN308T Computer Mouse Control for Quadraplegic People**  
Israel Astacio, 16, Junior  
Rafael Torres, 16, Junior  
Superior Jardines de Ponce, Coto Laurel, Puerto Rico  
T: Fernando L. Ghigliotti
- EN309T Gauss Propulsion System 3600**  
Robert Andrew Fellingner, 17, Junior  
Colin Chalupa, 16, Junior  
# Mark H. Lund, 17, Junior  
Hilton Head High School, Hilton Head Island, South Carolina  
T: Kathryn Howard
- EN310T Parabolic Reflectors for Better Utilization of Solar Energy**  
Juan Luis Acevedo, 14, Freshman  
Eli Samuel Velez Cruz, 14, Freshman  
Colegio Evangelico Capitan Correa, Arecibo, Puerto Rico  
T: Irma Velez
- EN311T The Feasibility of Peltier-based Cooling for Use with Solid State Electronics**  
# Sloan J. Lindsey, 17, Junior  
Derrick R. Olson, 16, Junior  
Richland Northeast High School, Columbia, South Carolina  
T: Ginger Foley
- EN312T Cluck-A-Doodle-Do!**  
Patrick L. Donnelly, 19, Senior  
Terence John Carmichael, 19, Senior  
Saint Patricks College, Maghera, County Derry, Northern Ireland, T: Kieran McGeown
- EN313T Auxiliary Electrical System in the Shrimp Industry**  
Jose Guadalupe Cornejo, 17, Junior  
Omar Santillan, 19, Junior  
Bertin Serrano, 17, Junior  
Politecnico de Baja California, Tijuana, Baja California, Mexico  
T: Sergio David Pila
- EN314T Don't Rock the Boat: Phase III**  
## Barrett Christopher Boutte, 18, Senior  
## Julie Michelle Roy, 18, Senior  
Catholic High School, New Iberia, Louisiana  
T: Donald Voorhies
- EN315T The Robot**  
Alisha El-Amin, 14, Senior  
John Matthew Bolden, 15, Sophomore  
Amalim C. Onyia, 17, Junior  
Piney Woods Country Life School, Piney Woods, Mississippi  
T: Barbara Ward
- EN316T Protists and Photovores**  
Timothy A. Machado, 15, Freshman  
Scott A. McPherson, 14, Freshman  
Bellarmine College Preparatory, San Jose, California  
T: Mark Riese
- EN317T Novel Fuel Formulations to Improve Health and Safety by Reduction of Noxious Emissions**  
Adam S. Judelson, 16, Junior  
Ari A. Bencuya, 16, Junior  
Saratoga High School, Saratoga, California  
T: Robert Kucer
- EN318T Apollo's Chariot**  
Andrew Lawrence Murphy, 16, Sophomore  
Cheng-Ju Henry Wu, 16, Sophomore  
Yewkit Bernard Lo, 15, Sophomore  
Shepton Freshman High School, Plano, Texas  
T: Debbie Ferguson
- EN319T Emu Oil Lubrication/Performance Qualities Using Dynamometer, Spectrochemical/Infrared Analysis**  
Amy Ward Tasca, 18, Senior  
Brian Matthew Ness, 18, Senior  
Winona Senior High School, Winona, Minnesota  
T: Jerry Foster
- EN320T Advantages of Hybrid Composites**  
# Lesley Danielle Grimes, 16, Junior  
Staci Pack, 16, Junior  
Drew Central High School, Monticello, Arkansas  
T: Dennis Thurman
- EN321T Ice-Crawler: The Rescue Robot for Snow, Ice, and Glaciers**  
Hanna Hult Craig, 17, Junior  
Heather Hult Craig, 17, Junior  
East Anchorage High School, Anchorage, Alaska  
T: Deb Fancher
- EN322T Thermal Autospeed Fan**  
Salma Yasmin Mohd. Yusuf, 17, Senior  
Nurul Atiqah Ali, 16, Senior  
Wan Nurhayati Wan Mohammad, 17, Senior  
Tunku Kurshiah College, Seremban, Negeri Sembilan, Malaysia, T: Jeyanathan Kandiah
- EN323T Design of Automatic Controller of Salinity in Shrimp Hatchery**  
Daniel Kurniadi Nyoto, 17, Senior  
Dominggo Edy Maukaling, 17, Senior  
Christian High School of Dharma Mulya, Surabaya, East Java, Indonesia, T: Tri Anggono Prijo
- EN324T Solar Vehicle Prototype**  
Oswaldo Mejia Bsiceno, 17, Junior  
Hugo Eunogie, 18, Junior  
Padre Iluminato, Lima, Lima, Peru
- EV301T Daphnia magna Biochemiluminescence: A Bioindicator of Toxicity**  
Avi Melech Robbins, 18, Senior  
Jessica Elizabeth Chiafair, 18, Senior  
Lake Brantley High School, Altamonte Springs, Florida  
T: Susan N. Behel
- EV302T Wholly Macros: Is Hester Dendy, Leaf Bag, or Scoop Net the Most Effective Method of Sampling in Order to Correlate Macroinvertebrates with Water Quality?**  
# Lauren Elizabeth McQuiston, 18, Senior  
# Allyson T. Ponsock, 18, Senior  
# Rachel Lynn Troyer, 17, Senior  
Saint Joseph's Academy, Baton Rouge, Louisiana  
T: Linda Messina
- EV303T Study of Seagrass Beds Along the Central Texas Coast**  
David Michael Ho, 18, Senior  
Samuel Scott Keyburn, 16, Junior  
John B. Connally High School, Austin, Texas  
T: Pat Merkord
- EV304T Cultivars or Accessions: Comparative Study on the Ability of Certain Grass Species to Occupy Mining Waste Sites**  
Coralynn Louise Jones, 17, Junior  
Nora Nell Hanson, 16, Junior  
Stevensville High School, Stevensville, Montana  
T: George D. Wasser
- EV305T Nitrification Inhibitors**  
Bryan Christopher Tomm, 16, Junior  
Erin Joy Lewis, 17, Junior  
Delavan High School, Delavan, Illinois  
T: Mary Kay Wonders
- EV306T Phytoremediation of Crude Oil-contaminated Mediums Using Alfalfa & Hybrid Poplar: Phase III**  
Nicholas Ronald Mattila, 17, Junior  
Matthew Thomas Dimich, 17, Junior  
Lincoln Senior High School, Thief River Falls, Minnesota  
T: Patti Johnson

- EV307T Effects of Genetically-engineered *Bt Zea mays* on Soil Organisms**  
 Sonja Jeanne Riddle-Ford, 16, Sophomore  
 Jaime Elizabeth Jirele-Borleske, 16, Junior  
 Laura Jean Jirele-Borleske, 18, Senior  
 Winona Senior High School, Winona, Minnesota  
 T: Carol Jefferson
- EV308T Assessment System of Urban Eco-Environment Based on 3-D VQ**  
 Zi Ye, 18, Senior  
 Yifan Zhou, 15, Sophomore  
 Yinfei Zhang, 16, Junior  
 No. 2 Secondary School Attached to East China Normal Univ., Shanghai, China  
 T: Chen Shengqing
- EV309T Affection of Students' Tiredness Caused by the Air Environment**  
 Huanhuan Dai, 17, Junior  
 Wei Yue, 17, Junior  
 Demin Shen, 15, Junior  
 Affiliated Middle School of Beijing University, Beijing, China  
 T: Qinglin Zhou
- EV310T Effects of *Prosopis glandulosa* on the Nitrate (NO<sub>3</sub><sup>-</sup>) Concentration in Top Soil**  
 # Tonya Pickett, 18, Senior  
 # Priscilla VanDyke, 18, Senior  
 Burkburnett High School, Burkburnett, Texas  
 T: Pamela Francis  
 T: Connie Marshall
- EV311T Environmental Toxicology: Effects of Point and Non-Point Sources on Stream Quality**  
 Katherine L. Welch, 17, Senior  
 William A. Paddock, 18, Senior  
 Dayton Christian High School, Dayton, Ohio  
 T: Tom Minor
- EV312T Effects of Increasing Salinity in Lac Des Allemands on Lead Fractionation in Surrounding Soils**  
 Janie Elizabeth Reulet, 17, Senior  
 Lee Michael Granier, 18, Senior  
 Christie Lynn Duet, 17, Senior  
 Saint James High School, St. James, Louisiana  
 T: Kermit J. Gauthreaux
- EV313T Effects of Polymer Crystals on Nitrates and Plant Growth**  
 # Kendal Wallis Bauman, 16, Junior  
 # Ashley Rochelle Chapin, 17, Junior  
 Pawnee High School, Grover, Colorado  
 T: Carrie Erickson
- EV314T What Are the Effects of EDTA on the Availability of Cadmium for the Phytoremediation of *Agropyron cristatum*?**  
 # Janelle Lorna Booth, 17, Junior  
 # Erin Belinda Enright, 17, Junior  
 Timber Lake High School, Timber Lake, South Dakota  
 T: Chris Bohlander
- EV315T Comparative Analysis of Oregon White Oak Trees in Treated and Untreated Areas**  
 Nicole Renee Blalock, 16, Junior  
 Benjamin Tommo Price, 18, Senior  
 Gold Beach High School, Gold Beach, Oregon  
 T: Mary L. Omberg
- EV316T Urban Impact on the Quality of Water in the Trajectory of a River**  
 Pablo D. Duarte, 15, Sophomore  
 Sergio L. Sierra, 16, Sophomore  
 University Gardens High School, San Juan, Puerto Rico  
 T: Maria R. Rivera
- EV317T What Are the Effects of Different Intensities of Light on Zoanthid Polyps?**  
 Andrew Michael Hare, 15, Freshman  
 Ryan Addison Meany, 15, Freshman  
 Hilton Head Preparatory School, Hilton Head Island, South Carolina, T: Jayne Matney
- EV318T The Organic Myth**  
 Jose Alberto Davis, 16, Sophomore  
 Manuel Fernando Mas, 15, Sophomore  
 Jorge Rafael Aviles, 15, Sophomore  
 American Military Academy, Guaynabo, Puerto Rico  
 T: Sylvia Cortes Aquino
- EV319T Don't Forget to Wipe**  
 Jared Allen Cordell, 17, Senior  
 John Edward Chapuis, 18, Senior  
 Muskogee High School, Muskogee, Oklahoma  
 T: Karla Ford
- EV320T Comparison of the Management of Waste Landfills in Humacao and Juncos: Phase II**  
 # Vivian Marie Lebron, 15, Sophomore  
 # Sonaris Molina, 15, Sophomore  
 Ana Roque Senior High School, Humacao, Puerto Rico  
 T: Nelson Velazquez
- EV321T Noise: Destructor Sound in School**  
 Surey Santini, 16, Junior  
 Sheila M. Gonzalez, 16, Junior  
 Bonifacio Sanchez Jimenez High School, Aibonito, Puerto Rico  
 T: Reinaldo G. Rosado
- EV322T Tree...XACO, Our Fuel for the Future?**  
 Leandro L. Pena-Merheb, 16, Sophomore  
 Luis Gabriel Velez-Del Rosario, 15, Sophomore  
 Colegio La Piedad, Carolina, Puerto Rico  
 T: Pedro Martinez
- EV323T Phytoremediation: Phytoextraction, Rhizofiltration**  
 Renee Lang, 17, Senior  
 Brandy Renee Bennett, 17, Senior  
 Grenada High School, Grenada, Mississippi  
 T: Sherry Cook
- EV324T Oil Spill Collector for the Control of Marine Pollution**  
 Amit Kiran Sowani, 16, Junior  
 Bharat Suresh Mhatre, 16, Junior  
 Ramnivas Ruia Junior College, Mumbai, Maharashtra, India  
 T: V.G. Karandikar
- EV325T Effects of Platinum-Palladium Mining on Surrounding Surface Water**  
 Andrew Max Wilson, 17, Junior  
 Erin Elizabeth Leonard, 16, Junior  
 Billings West High School, Billings, Montana  
 T: George Grover
- EV326T Pharmaceuticals in the Las Vegas Wash**  
 Rachel Maureen Morin, 16, Sophomore  
 Robert H. Stauffer, 16, Sophomore  
 Basic High School, Henderson, Nevada  
 T: Robert H. Stauffer, Jr.
- EV327T Trash Our Worms Again**  
 Matthew R. Lamb, 18, Senior  
 Matthew E. Dahms, 16, Junior  
 Central Lee High School, Donnellson, Iowa  
 T: Ernest Schiller
- EV328T An Agricultural Approach to the Hydrogen Economy**  
 Phoung-Lan Thi Nguyen, 14, Freshman  
 Angela Raquel Beach, 15, Sophomore  
 California Academy of Mathematics and Science, Carson, California, T: Thomas Jett
- EV329T Deriving Ideal Conditions for a *Pseudomonas sp.* Bioreactor**  
 ## Krisda Chaiyachati, 18, Senior  
 ## Emem Inyang Adolf, 18, Senior  
 Columbia High School, Decatur, Georgia  
 T: Diane Copeland

- EV330T Effects of Cricket Saliva and Purified Epidermal Growth Factor on *Little Marvel* Pea Plants**  
Todd Andrew Hofmann, 17, Senior  
Sarah Layne Shelby, 17, Senior  
Arkansas School of Mathematics & Sciences, Hot Springs, Arkansas, T: James Njengere
- EV331T Ultracentrifuge for Our Environment: A Turn for the Better**  
Karen Hazel Yen Jie Sam, 18, Senior  
Esther Elisabeth Margretha Kuhn, 17, Senior  
Sledlgh Gymnasium Leiden, Leiden, Z-Holland, Netherlands  
T: Ingeborg Marie Konradt-Booi
- EV332T The Possibilities of Recycling Are Growing**  
Michael Lee Mulder, 17, Junior  
Micky Isaac Sneider, 17, Junior  
Unity Christian High School, Orange City, Iowa  
T: Tim Kamp
- EV333T Water Purifying Plant through Microbubbles and Ultraviolet Radiation**  
Simon Andres Briell, 16, Sophomore  
Matias Francisco Herrera, 16, Sophomore  
Liceo Nuestra Senora del Rosario, Linares, Septima Region, Chile, T: Alejandro Antonio Vasquez V.
- EV334T The Alisos Woods (*Alnus acuminata* H.B.K. ssp. *acuminata*) and Their Importance on the Preservation of the Ecology Equilibrium**  
Mariela Noelia Gonzalez, 15, Junior  
Griselda Alejandra Soria, 17, Junior  
Escuela Republica de Panama, Concepcion, Tucuman, Argentina  
T: Silvia Patricia Soria
- GN301T Oxidative Stress Resistance is Enhanced by Limited Hypergravity Treatment**  
Ross Bartlett Clements, 16, Junior  
Sean Patrick Leonard, 16, Junior  
Keystone School, San Antonio, Texas  
T: Glen Sobey
- GN302T Does *Ginkgo biloba* Affect the Learning and Behavioral Patterns of Old Aged *Rattus norvegicus*?**  
Humberto Frausto, Jr., 18, Senior  
Jose Gerardo Contreras, Jr., 18, Senior  
Martin High School, Laredo, Texas  
T: Lizzy Newsome
- GN303T How Personality and Age Affect Gait**  
Melissa Neuwirth, 16, Sophomore  
Cynthia Crowers, 15, Sophomore  
Francis Howell North High School, Saint Charles, Missouri  
T: Mary Hennenfent
- GN304T All Shook Up: Postural Stability under Perturbation**  
Christina Nichole Hobson, 15, Sophomore  
Nachelle Diane Brown, 15, Junior  
Red Mountain High School, Mesa, Arizona  
T: Lorelei Wood
- GN305T Intergenerational Relationships as Lowering Factor of the Sociogenic Aging Process**  
Sandra Melissa Ybrahim, 16, Junior  
Dorys Leonor Rodriguez, 17, Junior  
Commercial School "La Tinidad", La Tinidad, Tucuman, Argentina, T: Ricardo Guillermo Rodriguez
- MA302T The Soundwaves of Music**  
Xinning Liu, 16, Junior  
Heather Jennifer Rosenfeld, 17, Junior  
Dr. Michael M. Krop Senior High School, Miami, Florida  
T: Allyn Pond
- MA303T Compound Rules in an Iterated Prisoner's Dilemma**  
Edward Thomas Hinson, 18, Senior  
Victor Kostyuk, 17, Senior  
Arkansas School of Mathematics & Sciences, Hot Springs, Arkansas, T: George Connor
- MA304T Daedalus' Box: A Three-dimensional Parabola**  
Michael Harry Kaleta, 19, Senior  
Matthew Howard Stemm, 18, Senior  
Heon Joon Choe, 18, Senior  
Marquette University High School, Milwaukee, Wisconsin  
T: Elizabeth Morrell
- MA305T Isothermal Equilateral Triangle Formed by Different Places in the World**  
Aurea Maria Auiles-Gaudier, 18, Senior  
Ana Maria Auiles-Gaudier, 18, Senior  
University Gardens High School, San Juan, Puerto Rico  
T: Loyda Rodriguez
- MA306T The Mosaic Behavior**  
Caban Jozabed, 16, Junior  
Miranda B. Walkiria, 15, Freshman  
Eladio Tirado Lopez, Aguada, Puerto Rico  
T: Hilda Rosa Garcia
- MA307T Mathematics Is Not Yet Ready for Such Problems**  
Curtis James Larimer, 15, Freshman  
Dave Hubbell Wacker, 14, Freshman  
William J. Palmer High School, Colorado Springs, Colorado  
T: Rata Clarke
- MA308T New Curriculum for the Elementary Logic, Algorithms and Scheme-models for Problem Solving in Math**  
Areg Ara Avetisyan, 14, Junior  
Yerevan Secondary School #4, Yerevan, Armenia  
T: Ara Avetisyan
- ME302T Role of Microglia in Neuronal Injury**  
Reed Hobby Shaffner, 16, Junior  
Anant Ramesh Patel, 16, Sophomore  
Astronaut High School, Titusville, Florida  
T: Scott McCord
- ME303T 2001: A School Odyssey-Is There More to Carrying Your Books to Class Than You Think?**  
Mia Ramona Hebert, 17, Junior  
Kenneth Paul Hebert, 16, Sophomore  
Catholic High School, New Iberia, Louisiana  
T: Donald Voorhies
- ME304T Does Inulin Enhance Ca Dissolution from OTC Supplements?**  
Jacqueline Marie Savage, 16, Junior  
Kyle William Soller, 17, Junior  
Mount Vernon High School, Alexandria, Virginia  
T: Joy McManus
- ME305T Does Exposure to High Levels of Glucose Cause Insulin Resistance in Adipose Cells?**  
Ananth S. Ranganathan, 15, Sophomore  
Edward Hunter Benson, 17, Junior  
Little Rock Central High School, Little Rock, Arkansas  
T: Ms. Cole
- ME306T The Pressure's On: The Healing Effects of Hyperbaric Oxygen**  
# Tyler Jordan Morehart, 16, Sophomore  
# Devin Randall Harper, 16, Sophomore  
Northside High School, Ft Smith, Arkansas  
T: Nancy Cardwell-Scamardo
- ME307T Functional Analysis of the Merlin Tumor Suppressor Deletion Variance in Cells**  
# Matthew William Sand, 16, Sophomore  
# Christopher J. Lauten, 16, Sophomore  
Lake Highland Preparatory School, Orlando, Florida  
T: Judith Legault
- ME308T Modulation of Vascular Smooth Muscle Cell Adhesion to Polytetrafluoroethylene (PTFE) Vascular Graft Material**  
David Johnson Hiller, 18, Senior  
John-Paul Moore Young, 18, Senior  
Caddo Parish Magnet High School, Shreveport, Louisiana  
T: Kris Clements
- ME309T At First Sight**  
Traci Lynn Waller, 16, Sophomore  
Leonard M. Green, 16, Sophomore  
Liberty Eylau High School, Texarkana, Texas  
T: Mike Dale
- ME310T Effects of Carnitine on the Glycation of Proteins in Diabetic Rats**  
# Shelly Kate Collins, 16, Junior  
# Rebecca Ann Taylor, 16, Junior  
John S. Davidson Fine Arts School, Augusta, Georgia  
T: Barbara Howerton

- ME311T Inside Iholena: Anticancer Effects of Floral Extracts**  
Kalikolehua Kilia Hurley, 17, Senior  
Nicole K. Shishido, 17, Senior  
Kamehameha Secondary School, Honolulu, Hawaii  
T: Lawrence Mordan
- ME312T Civil War Wounds That Glowed**  
William Richard Martin, 17, Senior  
Jonathan Daniel Curtis, 18, Senior  
Bowie High School, Bowie, Maryland  
T: Godfrey Rangasammy
- MI301T Moon's Valley: Microfossils and Microflora**  
Carlos Jose Gomez, 17, Senior  
Ignacio Javier Marianetti, 17, Senior  
Marcos Alberto Pavetti, 17, Senior  
Instituto Leonardo Murialdo, Guaymallen, Mendoza, Argentina  
T: Edgardo Nicolas Allendes
- MI302T Development of Bacteriophage-resistant *E. coli***  
# Anna Mary Bishop, 16, Sophomore  
# Emily Claire Letourneau, 15, Sophomore  
Como Park Senior High School, St Paul, Minnesota  
T: Arthur Payne
- MI303T Is Garlic or Aloe as Effective as Commonly Prescribed Antibiotics Against Bacteria?: Phase II**  
Angela Marie Evatt, 15, Sophomore  
Daron Lynn Wade, 16, Sophomore  
Wildwood High School, Wildwood, Florida  
T: Emily Keller
- MI304T Effect of Beta Irradiation on Meat Preservation: Reducing Food-Borne Pathogens**  
# Lauren Catherine Ball, 18, Senior  
# Kathleen Ellen MacMillan, 18, Senior  
Lake Brantley High School, Altamonte Springs, Florida  
T: Susan Behel
- MI305T Which Organism Produces the Greatest Power in an MFC?**  
Lawrence Shieh, 15, Sophomore  
Matthew Bing Gee Lee, 16, Sophomore  
Manhasset Junior-Senior High School, Manhasset, New York  
T: Peter Guastella
- MI306T Incidence of Methicillin-resistant *Staphylococcus aureus* in a Societal Environment**  
Brian T. Kim, 16, Junior  
Kelly Lee Ryan, 17, Junior  
duPont Manual Magnet High School, Louisville, Kentucky  
T: Glen Zwanzig
- MI307T Initiation of Heat Shock Protein by Viral Invasion: Defense against or Benefit for Virus?**  
Peter Nathan Starr, 17, Junior  
Vivek Kasinath, 16, Junior  
Keystone School, San Antonio, Texas  
T: Glen Sobey
- MI308T Effects of Smoke on Throat Flora: Part II**  
# Luke Vernon Yohe, 17, Senior  
# Trevor Dru Nash-Keller, 17, Junior  
Selby High School, Selby, South Dakota  
T: Robin Jung
- MI309T Gasbusters**  
Normarie Santiago Perez, 15, Sophomore  
Williset Ernesto del Valle, 16, Sophomore  
Southwestern Educational Society, Mayaguez, Puerto Rico  
T: Evelyn Montalvo
- MI310T *Bacillus subtilis* as Biological Control Agent for Black Sigatoka-causing *Mycosphaerella fijiensis* in Bananas**  
Noelle Nina Y. Gianan, 16, Sophomore  
Mendrado Sedoriosa Canusa, 16, Sophomore  
Catherine Rose Alix Lu, 16, Sophomore  
Philippine Science High School-Mindanao Campus, Davao City, Philippines, T: Trinidad V. Alfeche
- MI311T Investigations on Biological Control of *Penicillium expansum* on Apple Fruits**  
Emre Devrim, 17, Senior  
Huseyin Gercek, 18, Senior  
Izmir Science High School, Izmir, Turkey  
T: Seyfettin Dogan Aldag
- MI312T Development of a Conditionally Flocculent Strain of *Saccharomyces cerevisiae* for Industrial Use**  
## Mona Carolina P. Pavan, 18, Senior  
## Carolina Wasielesky Galvao, 17, Senior  
Escola Americana de Campinas, Campinas, Sao Paulo, Brasil  
T: Vivian H. Schlesinger
- MI313T Conditions Required for the Colony Formation in *Chromulina rosanoffii***  
Haruyo Yamaguchi, 17, Senior  
Shinichi Ogawa, 17, Senior  
Awa High School, Tateyama-shi, Chiba, Japan  
T: Noriyuki Ishii
- MI314T Wash Off, Wash On!**  
Carrie Josefine Babe Rogers, 18, Senior  
Jill Marie Trammel, 17, Junior  
Glen Rose High School, Malvern, Arkansas  
T: Connie Marlene Tuggle
- MI315T Water Quality and Algal Influences on the Technologies Treatment**  
Jeferson Montenegro, 18, Sophomore  
Jose Alexandre Galimberti, 19, Sophomore  
Fundacao Escola Tecnica Liberato Salzano Vieira da Cunha, Novo Hamburgo, RS, Brasil  
T: Gabriel Luis de Oliveira
- MI316T Peptide Blockade: Are we Able to Inhibit HRV Infection by Design? Part II**  
# Ronald Valentine Williams, 18, Senior  
# Jennifer Lynn Wilwert, 18, Senior  
Cardinal O'Hara High School, Springfield, Pennsylvania  
T: Maureen Colanzi
- PH301T Internal Propulsion**  
Triep Cuu Nguyen, 18, Junior  
Finny Kunjumon Koshy, 16, Junior  
Mustang High School, Mustang, Oklahoma  
T: Carla Hamm
- PH303T Muzzle Velocity vs. Accuracy**  
Zachary Stephen Stinson, 15, Freshman  
Trevor Allen Nesbitt, 15, Freshman  
Palatka High School, Palatka, Florida  
T: Lulu Parish
- PH304T An Odyssey in the Realm of Photon Probability**  
Brandon Nicholas Cavallaro, 17, Junior  
Ryan Matthew Chapman, 17, Junior  
Allen D. Nease High School, St Augustine, Florida  
T: Sally Mitalas
- PH305T An Advanced Study of Tennis Balls**  
Austin James Bratton, 17, Junior  
Jacqueline Elaine Wilson, 17, Junior  
Pleasant Grove High School, Texarkana, Texas  
T: Mrs. Kendra Powers
- PH306T Under the Bombardment of Microwaves**  
Erick Manuel Rivera, 16, Junior  
Daisy Colon, 16, Junior  
Luis Munoz Marin High School, Barranquitas, Puerto Rico  
T: Leticia Rodriguez
- PH307T Holography: Exploring the Wonders of Optics**  
Edgar Silva Figueira, 15, Sophomore  
Andre Rabasquinho Batista, 16, Sophomore  
Joao Andre Pereira Antunes, 15, Sophomore  
Escola Secundaria Campos Melo, Covilha, Portugal  
T: Rosa Maria Figueiredo Simoes
- ZO301T Protection of *Branchiostoma balcheri* (Amphioxus) in Xiamen**  
Shiying Han, 16, Junior  
Wei Cai, 17, Junior  
Tianxiang Lu, 18, Senior  
Xiamen First High School, Xiamen, Fujian, China  
T: Zeng Guoshou

- ZO302T Use of Copper Sulfate to Control the Golden Apple Snail (*Pomacea canaliculata*) in Hanalei Valley Taro Fields**  
Tyson Mitsuo Wakayama, 15, Freshman  
Whitney Takeo Haraguchi, 14, Freshman  
Rodney Koa Yama, 15, Freshman  
Kapa'a High School, Kapa'a, Hawaii  
T: Ray D. de la Pena
- ZO303T Effect of Fluoxetine on Learning and Memory of *Dugesia***  
John Joseph Byrnes, 16, Sophomore  
Alvin Wong, 15, Sophomore  
Manhasset Junior-Senior High School, Manhasset, New York  
T: Peter Guastella
- ZO304T Tactile and Olfactory Aspects of Environmental Mapping in *Procambarus clarkii***  
Nadezhda Belova, 18, Senior  
Alisa Neymark, 17, Senior  
Midwood High School at Brooklyn College, Brooklyn, New York, T: Martin Langan  
T: Ann G. Nicastri
- ZO305T Hamsters: Infanticide**  
Gabriela Veronica Escudero, 17, Senior  
Nicolas Ariel Bertola, 17, Senior  
Colegio Hispano Argentino, Rio Cuarto, Cordoba, Argentina  
T: Carolina Alejandra Barrera
- ZO306T To Fly or Not to Fly? Study of *Drosophila* Sexual Inheritance**  
Miguel Alejandro Beltran, 14, Freshman  
Israel Del Toro, 15, Freshman  
Clint High School, Clint, Texas  
T: Laura Cade
- ZO307T Examination and Promotion of *Diadegma insulare* as an Alternative Biological Pest Control Method for the Suppression of *Plutella xylostella* (Diamondback Moth)**  
# Allison Joy Ferber, 18, Senior  
# Sonali R. Hippalgaonkar, 17, Junior  
Lake Highland Preparatory School, Orlando, Florida  
T: Judith Legault
- ZO308T Frog Culture: Hatchery for the Red-legged Frog**  
Caitlin Mary Connolly, 18, Senior  
Katia Irene Knudson, 18, Senior  
Bellarmine Preparatory School, Tacoma, Washington  
T: Ron Nilsen
- ZO309T Evaluation of the Use of the Entomopathogenic Nematode *Steinernema bibionis* on the Biocontrol of the American Cockroach *Periplaneta americana***  
Xavier Martinez-Camacho, 17, Senior  
Maria E. Olmo-Collazo, 17, Senior  
Angel L. Osorio-Velez, 16, Junior  
Pedro Falu Orellano High School, Rio Grande, Puerto Rico  
T: Angel L. Diaz-Rosario  
Casiano Cepeda High School, Caguas, Puerto Rico
- ZO310T Effects of Timing and Duration of Exercise on Oxidative Stress as Measured by the Ratio between Reduced and Oxidized Glutathione Levels**  
Zachary Adam Ozer, 16, Sophomore  
Daniel M Gude, 15, Sophomore  
Mark Junichi Havel, 16, Sophomore  
Keystone School, San Antonio, Texas  
T: Glen Sobey
- ZO311T Effects of Disturbance on Defending and Non-defending *Phemphigus* Aphids**  
Esther Marae Wilch, 17, Junior  
Falina Enriquez, 17, Junior  
University High School, Tucson, Arizona  
T: Margaret Wilch
- ZO312T Biological Control of Termites (*Fam. rhinotermitidae*) with *Bacillus thuringiensis***  
Esteban Roberto Arrieta, 17, Junior  
Silvia Bolanes Castro, 18, Junior  
Allan Eduardo Ramos, 17, Junior  
Colegio Cientifico Costarricense sede San Carlos, San Carlos, Alajuela, Costa Rica  
T: Sonia Arias
- ZO313T Ancestry by Sound: Tracing the Evolutionary Relationships of *Hyla* Species**  
Simeon McMillan, 15, Freshman  
Daniel Jason Rowe, 16, Senior  
Uniondale High School, Uniondale, New York  
T: Paul Lichtman
- ZO314T Light Responses of Various *Drosophila* Phenotypes**  
Alisyn Hansen, 17, Junior  
Chelsey Lynn Barrett, 16, Junior  
Haylee Ferguson, 17, Junior  
American Fork High School, American Fork, Utah  
T: Don Bastian



# ISEF AFFILIATED FAIRS

## Alabama

### Birmingham

Central Alabama Regional Science and Engineering Fair - Physical Sciences  
CH002 EN002

### Birmingham

Central Alabama Regional Science and Engineering Fair - Life Sciences  
BE001 ME057

### Decatur

North Alabama Regional Science and Engineering Fair - Life Sciences  
BO026 CH020

### Decatur

North Alabama Regional Science and Engineering Fair - Physical Sciences  
EV040 EV042

### Huntsville

Alabama State Science and Engineering Fair - Life Sciences  
ME079

### Huntsville

Alabama Science and Engineering Fair; Physical Sciences  
EN070 PH032

### Livingston

West Alabama Regional Science Fair  
EV097 PH019

### Mobile

Mobile Regional Science Fair  
BO028 ME056

### Talladega

Northeast Alabama Regional Junior Academy Science Fair  
EV095 PH029

## Alaska

### Anchorage

Alaska Science and Engineering Fair  
EN321 EV109 ZO067

## American Samoa

### Pago Pago

American Samoa Science Fair  
BO048 CH037

## Arizona

### Pima

Southern Arizona Regional Science and Engineering Fair  
BI043 ZO311

### Prescott

Northern Arizona Regional Science and Engineering Fair  
BO022 EN036

### Sierra Vista

SSVEC's Youth Engineering and Science Fair  
EN014 MI018

### Tempe

Central Arizona Regional Science and Engineering Fair  
BE042 EN085 GN304

## Arkansas

### Arkadelphia

South Central Arkansas Regional Science Fair  
EN087 MI314 ZO031

### Batesville

North Central Arkansas Regional Science Fair  
EA021 ME039

### Camden

Ouchita County Regional Science Fair  
EV050 MI033

### Conway

Arkansas State Science Fair  
EA031 EV330 PH035

**Fayetteville**

Northwest Arkansas Regional Science and Engineering Fair  
BE016 GN008 ME306

**Hot Springs**

West Central Regional Science fair  
EV046 GN007 MA303

**Jonesboro**

Northeast Arkansas Regional Science Fair  
BI301 EN001 ME001

**Little Rock**

Central Arkansas Regional Science Fair  
BI010 ME005 ME305

**Monticello**

Southeast Arkansas Regional Science Fair  
CH029 EN320

**San Jose**

Synopsys Silicon Valley Science and Technology Championship III  
Presented by the Santa Clara Valley Science and Engineering Fair  
Association  
EN090 EN317 PH048

**San Jose**

Synopsys Silicon Valley Science and Technology Championship IV  
Presented by the Santa Clara Valley Science and Engineering Fair  
Association  
CS053 EN316 ZO061

**Santa Cruz**

Santa Cruz County Science Fair  
BE031 BO309 PH047

**Seaside**

Monterey County Science and Engineering Fair  
CS019 ZO002

**California**

**Colorado**

**Alhambra**

Alhambra Science and Engineering Fair  
BI020 BI303 ME022

**Danville**

Tri-Valley Science and Engineering Fair  
BE311 MA035

**Fresno**

Central California Regional Science, Mathematics and Engineering Fair  
EV083 EV084

**Rolling Hills Estates**

Honeywell Regional Science and Engineering Fair  
EV085 EV328 ME068

**San Diego**

Greater San Diego Science and Engineering Fair  
BE029 MA028

**San Francisco**

San Francisco Bay Area Science Fair, Inc.  
CS039 ME074

**San Jose**

Synopsys Silicon Valley Science and Technology Championship presented  
by the Santa Clara Valley Science and Engineering Fair Association  
BI313 CH047 PH049

**San Jose**

Synopsys Silicon Valley Science and Technology Championship II  
Presented by the Santa Clara Valley Science and Engineering Fair  
Association  
BI314 BO052 ME075

**Alamosa**

San Luis Valley Regional Science Fair, Inc.  
BO001 EN004

**Aurora**

Denver Metropolitan Regional Science Fair  
CS013 EA017

**Boulder**

Boulder Valley Regional Science Fair  
EA302 EN021 ZO021

**Brush**

Morgan-Washington Bi-County Science Fair  
EN028 ME031

**Colorado Springs**

Pikes Peak Regional Science Fair  
CS015 EV028 MA307

**Fort Collins**

Colorado Science and Engineering Fair  
EN006 ME013

**Greeley**

Longs Peak Science and Engineering Fair  
CS006 EV313 ZO011

**Sterling**

Northeast Colorado Regional  
EV116 ME014

## Connecticut

### Hamden

Connecticut State Science Fair - Life Sciences  
ME033 ME034

### Hamden

Connecticut State Science Fair - Physical Sciences  
EV045 PH018

### New Fairfield

Science Horizons, Inc. Science Fair and Symposium  
CS001

## District of Columbia

### Washington

District of Columbia Mathematics, Science and Technology Fair  
EA027 EN053

## Florida

### Bradenton

Manatee Regional Science and Engineering Fair  
EN005 PH002

### Bushnell

Sumter County Regional Science Fair  
MA006 MI004 MI303

### Crystal River

Citrus Regional Science and Engineering Fair  
EV002 MI001

### Fort Myers

Thomas Alva Edison East Regional Science Fair  
GN001 PH003

### Fort Myers

Thomas Alva Edison Regional Science Fair  
BI005 BO003

### Fort Pierce

Treasure Coast Regional Science and Engineering Fair  
BI004 MI002

### Fort Walton Beach

Northeast Panhandle Regional Science and Engineering Fair  
BO002 ME002

### Fort Walton Beach

Southeast Panhandle Regional Science and Engineering Fair  
BI006 EV003

### Gainesville

Alachua Region Science and Engineering Fair  
BI033 EN009

### Jacksonville

Northeast Florida Kiwanis Regional Science and Engineering Fair  
EN068 ZO052

### Kissimmee

The Osceola Regional Science Fair  
BO008 EV010

### Lake City

Suwannee Valley Regional Science and Engineering Fair  
EA011 ZO014

### Lakeland

Polk County Regional Science and Engineering Fair  
EV005

### Marianna

Chipola Regional Science and Engineering Fair  
EN010 PH004

### Melbourne

South Brevard Science and Engineering Fair  
MI024 PH010

### Merritt Island

Brevard Intracoastal Regional Science and Engineering Fair  
BI013 EA007

### Miami

South Florida Science and Engineering Fair - I  
MA302 ME032 PH017

### Miami

South Florida Science and Engineering Fair - II  
BI026 EV044

### Miami

South Florida Science and Engineering Fair - III  
MI029 PH016

### Miami

South Florida Science and Engineering Fair  
BI025 EV043

### New Port Richey

PASCO Regional Science and Engineering Fair  
BO007 EV009

### Ocala

Big Springs Regional Science Fair  
BO009 EN013

**Orlando**

Orange County Regional Science and Engineering Fair-Physical Science  
EN007 MA005 ME307

**Orlando**

Orange County Regional Science & Engineering Fair-Life Sciences  
B1009 GN002 ZO307

**Palatka**

Putnam Regional Science and Engineering Fair  
PH303 ZO007

**Panama City**

Florida Three Rivers Regional Science and Engineering Fair  
EN011 ZO008

**Pensacola**

West Panhandle Regional Science and Engineering Fair  
CH004 CS002

**Pinellas Park**

Pinellas Regional Science and Engineering Fair  
BI003 MA003

**Plantation**

East Broward County Science Fair  
BE003 EA002

**Plantation**

West Broward County Science Fair  
EV004 ME003

**Port Orange**

Tomoka Region Science and Engineering Fair  
CS305 ZO036

**Saint Augustine**

River Region East Science Fair  
PH304

**Sanford**

Seminole County Regional Science, Math & Engineering Fair  
EA022 EV301 ZO017

**Sanford**

Seminole Science Festival  
ME006 MI019 MI304

**Sarasota**

Sarasota Regional Science, Engineering and Technology Fair  
EV068 MI043

**Spring Hill**

Hernando County Regional Science and Engineering Fair - East  
B1011 ME007

**Spring Hill**

Hernando County Regional Science and Engineering Fair - West  
EA004 EN012

**Stuart**

Martin County Regional Science and Engineering Fair  
BE010 MI031

**Tallahassee**

Capital Regional Science and Engineering Fair  
BO004 EV006

**Tallahassee**

Capital Region Science and Engineering Fair II  
MA007 ME008

**Titusville**

Brevard Mainland Regional Science and Engineering Fair  
EN008 ME004 ME302

**Vero Beach**

Indian River Regional Science and Engineering Fair  
MI005 ZO010

**Wauchula**

Heartland Regional Science and Engineering Fair  
MA002 ZO004

**Georgia**

**Albany**

Darton College/Merck Regional Science Fair  
EV015 EV016

**Athens**

Georgia State Science and Engineering Fair  
CS034 EV088 EV329

**Atlanta**

Atlanta Science and Mathematics Congress  
EV052 PH021

**Brunswick**

Coastal Georgia Regional Science and Engineering Fair  
BE008 CH007

**Griffin**

Griffin RESA Regional Science Fair  
EV018 MI013

**Milledgeville**

Georgia College & State University Regional Science and Engineering Fair  
MI044

**Savannah**

First Congressional District Science and Engineering Fair  
BO012 EN016

**Warner Robins**  
Houston Regional Science and Engineering Fair  
BO006

## Hawaii

**Honolulu**  
Hawaii Association of Independent Schools Science and Engineering Fair  
EN056 ME059 ME311

**Honolulu**  
Hawaii State Science and Engineering Fair  
BI056 BI057

**Kahului**  
Maui Schools Science and Engineering Fair  
BO055

**Kailua**  
Windward District Science and Engineering Fair  
ZO012

**Kapaa**  
Northeast Kauai Regional Science & Engineering Fair  
BO018 BO019 ZO302

**Pearl City**  
Leeward District High School Science Fair  
BO011

## Illinois

**Chicago**  
Chicago Public Schools Student Science Fair - Region I  
BI047 ME069

**Chicago**  
Chicago Public Schools Student Science Fair - Region II  
BE035 MI048

**Edwardsville**  
Illinois Junior Academy of Science Region XII Science Fair  
EA033 EN074

**Macomb**  
Heart of Illinois Science and Engineering Fair  
CH009 CH011 EV305

**Springfield**  
Illinois Junior Academy of Science Region X Science Fair  
ME040 MI034

## Indiana

**Angola**  
Northeastern Indiana Tri-State Regional Science Fair  
GN003 PH044

**Bloomington**  
South Central Indiana Regional Science and Engineering Fair  
EA005 MI007

**Evansville**  
Tri-State Regional Science and Engineering Fair  
CH027 PH013

**Fort Wayne**  
Northeastern Indiana Regional Science and Engineering Fair  
CS023 EN030

**Gary**  
Calumet Regional Science Fair  
EV011 ME018

**Green Castle**  
West Central Indiana Regional Science and Engineering Fair  
CH033 CH034

**Hanover**  
Southeastern Indiana Regional Science Fair  
BO005 EV017

**Indianapolis**  
Central Indiana Regional Science and Engineering Fair  
BO051 EN039

**Indianapolis**  
Hoosier Science and Engineering Fair  
MI050 PH037

**Muncie**  
East Central Indiana Regional Science Fair  
EV030 MI023

**South Bend**  
Northern Indiana Regional Science and Engineering Fair  
EN017 EV008

**West Lafayette**  
Lafayette Regional Science and Engineering Fair  
BE002 BI012

**Westville**  
Northwestern Indiana Science and Engineering Fair  
EV035 PH006

**Owensboro**  
Owensboro - Western Kentucky Regional Fair  
BE017 MA017

**Iowa**

**Louisiana**

**Ames**  
Iowa State Science and Technology Fair  
BO041 EV074 EV327

**Baton Rouge**  
Louisiana Science and Engineering Fair  
CS037 EN069 EN314

**Cedar Rapids**  
Eastern Iowa Science and Engineering Fair - A  
EN034 ZO032

**Baton Rouge**  
Region VII-Science and Engineering Fair  
EA008 EA009 EV302

**Cedar Rapids**  
Eastern Iowa Science and Engineering Fair - B  
EN031 ZO030

**Bossier City**  
Bossier Parish Community College Louisiana Region I Science and  
Engineering Fair  
ME308 MI026 ZO025

**Indianola**  
South Central Iowa Science and Engineering Fair  
BO046 EN061

**Houma**  
Terrebonne Parish Science Fair  
BI017 CS011

**Kansas**

**Lafayette**  
Louisiana Region VI Science and Engineering Fair  
BI019 ME303 MI021

**Wamego**  
Wamego Regional Science and Engineering Fair  
BO013 EV020

**Lake Charles**  
Louisiana Region V Science and Engineering Fair  
EN022 EV027

**Kentucky**

**New Orleans**  
Greater New Orleans Science and Engineering Fair  
BI016 ME012

**Bowling Green**  
Southern Kentucky Regional Science Fair  
MI006

**St. James Parish**  
St. James Parish Science Fair  
BE004 CH006 EV312

**Lexington**  
Central Kentucky Regional Science Fair - Life Science  
BO064 EV117

**Thibodaux**  
Louisiana Region X Science and Engineering Fair  
EV034 PH012

**Lexington**  
Central Kentucky Regional Science Fair - Physical Science  
ME054 PH050

**Louisville**  
Louisville Regional Science Fair - Physical Science  
EV054 PH023

**Louisville**  
Louisville Regional Science Fair - Life Science  
B1030 ME041 MI306

**Maryland**

**Annapolis**  
Anne Arundel County Regional Science and Engineering Fair  
EN029 ME036

**Baltimore**  
Morgan State University Science-Mathematics-Engineering Fair  
BO031 EN047

**Frederick**

Frederick County Science and Engineering Fair  
EN072 ZO055

**Frostburg**

Western Maryland Science Expo  
CS028

**Gaithersburg**

Montgomery Area Science Fair - Life Sciences  
BE028 BO039

**Gaithersburg**

Montgomery Area Science Fair - Physical Sciences  
CH032 EA028

**Largo**

Prince George's Area Science Fair  
EA030 ME312 ZO050

**Towson**

Baltimore Science Fair  
EN060 EV078

**Massachusetts**

**Amherst**

Massachusetts Region I Science Fair  
BE038

**Boston**

Massachusetts Region VI Science Fair  
MI051

**Bridgewater**

Massachusetts Region V Science Fair  
BO049 ZO054

**Cambridge**

Massachusetts State Science Fair  
MI052 ZO057

**Fall River**

Massachusetts Region III Science Fair  
EV093 MA036

**Somerville**

Massachusetts Region IV Science Fair  
BI053 ZO056

**Worcester**

Massachusetts Region II State Science Fair  
EV092

**Michigan**

**Ann Arbor**

Southeastern Michigan Science Fair  
BO014 MA009

**Battle Creek**

Southwest Michigan Science and Engineering Fair  
CS026 ME060

**Big Rapids**

West Central Michigan Science and Engineering Fair  
EV024 ME017

**Detroit**

Science and Engineering Fair of Metropolitan Detroit, Inc. - #1  
BO043 CS306 EV079

**Detroit**

Science and Engineering Fair of Metropolitan Detroit, Inc. - #2  
BO045 EA029

**Detroit**

Science and Engineering Fair of Metropolitan Detroit, Inc. - #3  
BE032 CH035

**Detroit**

Science and Engineering Fair of Metropolitan Detroit, Inc. - #4  
CS033 ME065

**Detroit**

Michigan Science and Engineering Fair  
EN054 GN017

**Flint**

Flint Area Science Fair  
EN071 PH034

**Port Huron**

St. Clair County Science and Engineering Fair  
BE030 BI308 ME062

**Saginaw**

Saginaw County Science and Engineering Fair  
BI048 CS029

**Minnesota**

**Bemidji**

Northern Minnesota Regional Science Fair  
EV306 ZO016

**Crookston**

Western Minnesota Regional Science Fair  
EV014 MI012

**Duluth**

Northeast Minnesota Regional Science Fair  
BI021 ZO003

**Mankato**

South Central/North Minnesota Regional Science and Engineering Fair  
CH008 CS009

**Mankato**

South Central/South Minnesota Regional Science and Engineering Fair  
EV013 MI011

**Mankato**

Southwest/North Minnesota Regional Science and Engineering Fair  
BO010 PH007

**Mankato**

Southwest/South Minnesota Regional Science and Engineering Fair  
BI014 CS010

**Minneapolis**

Twin Cities Regional Science Fair  
CH003 ME058

**Minneapolis**

St. Paul Science Fair  
BI015 MI302

**Minneapolis**

Western Suburbs Science Fair  
BI007 BI008

**Rochester**

Rochester Regional Science Fair  
BI024 ME026

**Saint Cloud**

Central Minnesota Regional Science Fair and Research Paper Program  
BE302 MI016

**St. Paul**

National American Indian Science and Engineering Fair  
BO056 ZO062

**St. Paul**

National American Indian Science and Engineering Fair  
EN083 ME081

**St. Paul**

National American Indian Science and Engineering Fair  
EN082 EV105

**Winona**

Southeast Minnesota Regional Science Fair  
BO015 EV021 EV307

**Winona**

South Minnesota Regional  
EN319

**Mississippi**

**Biloxi**

Mississippi Region VI Science and Engineering Fair  
EV110 EV111

**Booneville**

Mississippi Region IV Science Fair  
EN051 EN052

**Greenville**

Mississippi Region III Science and Engineering Fair  
BO302 EA019 ME037

**Hattiesburg**

University of Southern Mississippi Region I Science and Engineering Fair  
EV115 ZO047

**Jackson**

Mississippi Region II Science and Engineering Fair  
BI035 ME050

**Mississippi State**

Mississippi State Science and Engineering Fair  
BI058 EN315 EV082

**Mississippi State**

Mississippi Region V-North Science and Engineering Fair  
CS032 ZO046

**Mississippi State**

Mississippi Region V-South Science and Engineering Fair  
BO044 EV080

**Oxford**

Mississippi Region VII Science and Engineering Fair  
EV323 MA023 ZO043

**Missouri**

**Cape Girardeau**

Southeast Missouri Regional Science Fair  
CH026 EN044

**Chillicothe**

Three Rivers Regional Science & Engineering Fair  
BI052 BO050



**Hillsboro**

Mastodon Park Science/Art Connection Fair  
BO020 MA013

**Jefferson City**

Lincoln University Regional Science Fair  
EV071 ZO048

**Joplin**

Missouri Southern Regional Science Fair  
BE034 MI047

**Kansas City**

Greater Kansas City Science and Engineering Fair  
BI051 MI049

**Rolla**

South Central Missouri Regional Science and Engineering Fair  
EV073 EV094

**Saint Joseph**

Mid-America Regional Science and Engineering Fair  
MI027 ZO028

**Springfield**

Ozarks Science and Engineering Fair  
BO054 PH040

**St. Louis**

Greater St. Louis Science Fair  
BI054 MA038

**St. Peters**

St. Charles-Lincoln County Regional Science and Engineering Fair  
GN303 ME044 MI036

**Montana**

**Billings**

Deaconess Billings Clinic Research Division Science Expo  
EV070 EV325 ZO044

**Butte**

Southwest Montana Regional Science and Engineering Fair  
EN035 EV304

**Great Falls**

Montana Region II Science and Engineering Fair  
BO301 EV038 ME028

**Havre**

Hi-Line Regional Science and Engineering Fair - MSU-Northern  
BI306 EN045 EV060

**Missoula**

Montana Science Fair  
BI310 EV089 MI053

**Nebraska**

**Hildreth**

Central Nebraska Science and Engineering Fair  
CH010 ME015

**Nebraska City**

Greater Nebraska Science and Engineering Fair  
BE023 BI034

**Nevada**

**Elko**

Elko County Science Fair  
BO303 EN059 ME064

**Las Vegas**

Southern Nevada Science Fair  
EV081 EV326 PH028

**Reno**

Western Nevada Regional Science & Engineering Fair  
EV048 EV049

**New Jersey**

**Jersey City**

Hudson County Science Fair  
CS008 MI020

**Lawrenceville**

Mercer Science and Engineering Fair  
EA010

**Randolph**

North Jersey Regional Science Fair - Senior Division  
CH014 PH009

**Randolph**

North Jersey Regional Science Fair - Junior Division  
BE009 ZO022

## New Mexico

### Albuquerque

Northwestern New Mexico Regional Science and Engineering Fair  
BO063 CS308 EV039

### Farmington

San Juan New Mexico Regional Science and Engineering Fair  
BI018 EA015

### Grants

Four Corners Regional Science and Engineering Fair  
ME021 MI022

### Las Cruces

Southwestern New Mexico Regional Science and Engineering Fair  
BI059 BO306 EV099

### Las Vegas

Northeastern New Mexico Regional Science and Engineering Fair  
EV053 PH022

### Portales

Southeastern New Mexico Regional Science and Engineering Fair  
EN020 MI003

### Socorro

New Mexico Science and Engineering Fair - Life Sciences  
BE040 EV037

### Socorro

New Mexico Science and Engineering Fair - Physical Sciences  
CH045 PH033

## New York

### Brooklyn

Polytechnic University NYC Board of Education Math, Science &  
Technology Fair - I  
BO025 CH302 EN025

### Brooklyn

Polytechnic University and NYC Board of Education Math, Science &  
Technology Fair - II  
EV041 PH015 ZO304

### Brooklyn

Polytechnic University and NYC Board of Education Math, Science &  
Technology Fair - III  
CH021 MA018

### Brooklyn

Polytechnic University/NYC Board of Education, Math, Science and  
Technology Fair VI  
BI028 ZO029

### Hempstead

New York State Science & Engineering Fair  
EA305 EV103 ZO064

### Hempstead

New York State Science & Engineering Fair - II  
BI062 BO062 ZO313

### Long Island

Long Island Science and Engineering Fair - I  
BE013 BI302 EN024

### Long Island

Long Island Science and Engineering Fair - II  
BE021 BE022 EN306

### Long Island

Long Island Science and Engineering Fair - III  
ME024 MI025 MI305

### Long Island

Long Island Science and Engineering Fair - IV  
BI304 EV033 MA016

### Long Island

Long Island Science and Engineering Fair - V  
BO023 MA015 ZO303

### Long Island

Long Island Science and Engineering Fair - VI  
BI023 BI305 GN005

### Long Island

Long Island Science and Engineering Fair - VII  
CH301 ME029 ME030

### Long Island

Long Island Science and Engineering Fair-VIII  
EA016 EN303 PH011

### New York

Polytechnic University New York City Board of Education Math, Science  
& Technology Fair IV  
EA018 EN027

### New York

Polytechnic University/New York City Board of Education Math Science &  
Technology Fair  
ME035 MI030

### Pleasantville

Westchester Science and Engineering Fair  
BE020 EA023

**Pleasantville**

Westchester Science and Engineering Fair  
CH023 MI032

**Poughkeepsie**

Dutchess County Regional Science Fair  
EN073

**Rochester**

Central Western Section-Science Teachers Asso. of NY State Science  
Congress  
PH020

**Syracuse**

Greater Syracuse Scholastic Science Fair  
BI029 EV047

**Troy**

Greater Capital Region Science and Engineering Fair  
PH024 ZO040

**Utica**

Utica College Regional Science Fair  
BI039 EA026

**Mandan**

Southwest Central North Dakota Regional Science and Engineering Fair  
BO058 EA035

**Minot**

North Dakota State Science and Engineering Fair  
BI061 ME078

**Minot**

Northwest Central North Dakota Regional Science Fair  
BO057 GN019

**Watford City**

Northwest North Dakota Regional Science Fair  
EN078 MA039

**Ohio**

**Archbold**

Northwest Ohio Science and Engineering Fair  
EN058 EV075

**Athens**

Southeastern Ohio Regional Science and Engineering Fair  
CS025 EV065

**Cleveland**

Northeastern Ohio Science and Engineering Fair  
EN019

**Cleveland**

Northeastern Ohio Science & Engineering Fair  
EV023

**Columbus**

Buckeye Science and Engineering Fair  
BE303 EA012 ME016

**Columbus**

Buckeye Regional IV  
BI031 MA021

**Columbus**

Buckeye Regional VI  
BO016 MI015

**Dayton**

Dayton Science and Engineering Fair  
BI045 BO032

**Dayton**

Montgomery County Science and Engineering Fair  
CS017 EV311 ZO024

**North Canton**

Ohio Region XIII Science and Engineering Fair  
BI040 BO305 EN066

**North Carolina**

**Salisbury**

Rowan Science, Math and Engineering Fair  
BI050 CH039

**North Dakota**

**Devils Lake**

Northeast Central North Dakota Science and Engineering Fair  
CH042 CS045

**Dickinson**

Southwest North Dakota Regional Science and Engineering Fair  
BI060 EV100

**Fargo**

Southeast North Dakota Regional Science and Engineering Fair  
BO059 EV101

**Grand Forks**

Northeast North Dakota Regional Science and Engineering Fair  
BE041 MI055

**Jamestown**

Southeast Central North Dakota Science and Engineering Fair  
EN080 ZO063

## Oklahoma

### Ada

Oklahoma State Science and Engineering Fair  
GN015 MA037

### Alva

Northwestern Oklahoma State University Regional Science Fair  
EA013 ZO018

### Bartlesville

Bartlesville District Science Fair  
EN040 ME043

### Edmond

Central Oklahoma Regional Science and Engineering Fair  
EA014 PH301 ZO006

### Lawton

Cameron University Regional Science Fair  
EV022 MI014

### Miami

Northeastern Oklahoma A&M Science and Engineering Fair  
EV019 ZO013

### Muskogee

Muskogee Regional Science and Engineering Fair  
EV319 GN010

### Oklahoma City

Oklahoma City Regional Science and Engineering Fair  
MI017 PH008

### Seminole

East Central Oklahoma Regional Science and Engineering Fair  
GN006

### Tulsa

Tulsa Regional Science and Engineering Fair  
BE014

### Wilburton

Eastern Oklahoma Regional Science and Engineering Fair  
MA012

## Oregon

### Forest Grove

NorthWest Science Exposition  
EV029 EV315 GN004

## Pennsylvania

### Carlisle

The Patriot-News Capital Area Science and Engineering Fair  
ME048 ME049

### Lancaster

Lancaster Science and Engineering Fair  
CH012 ME019

### Philadelphia

Ben Franklin Science Fair  
MA041 PH046

### Philadelphia

Benjamin Banneker Science Fair  
EN088 ZO068

### Philadelphia

Delaware Valley Science Fair  
EN089 ME084 MI316

### Philadelphia

Marie Curie Science Fair  
MA042 ME085

### Pittsburgh

Pittsburgh Regional Science and Engineering Fair  
CH028 PH025

### Pittsburgh

Pittsburgh Regional Science & Engineering Fair - II  
EN049 EV063

### Reading

Reading and Berks Science and Engineering Fair  
BO042 EV077

### York

York County Science and Engineering Fair  
BE005 EV012

## Rhode Island

### Warwick

Rhode Island Science and Engineering Fair  
CH015 CS016

## South Carolina

### Aiken

Central Savannah River Area Science and Engineering Fair  
GN011 ME310 ZO042

### Charleston

Low Country Science Fair  
MI010 ZO015

### Clemson

Anderson-Oconee-Pickens Regional Science Fair  
EN003 EV001

### Columbia

Central South Carolina Region II Science and Engineering Fair  
BI041 CS031 EN311

### Florence

Sand Hills Regional Science Fair  
BO061 MI057

### Greenville

South Carolina Upstate Science and Engineering Academic Competition  
EV061 ME051

### Hilton Head

Sea Island Regional Science Fair - Junior Division  
EN046 EV317 ZO039

### Hilton Head

Sea Island Regional Science Fair - Senior Division  
BE025 BE026 EN309

### Spartanburg

Piedmont South Carolina Region III Science Fair  
BO053

## South Dakota

### Aberdeen

Northern South Dakota Science and Math Fair  
BE033 ME067 MI308

### Brookings

Eastern South Dakota Science and Engineering Fair  
EN081 EV332 MI056

### Isabel

Northwest Area Schools Regional Science and Engineering Fair  
CS020 EV314 ME027

### Mitchell

South Central South Dakota Science and Engineering Fair  
BO304 MA030 PH030

### Rapid City

High Plains Regional Science and Engineering Fair  
CH018 EV072

## Tennessee

### Chattanooga

Chattanooga Regional Science and Engineering Fair  
EN033 ME038

### Cookeville

Cumberland Plateau Regional Science and Engineering Fair  
BO029 ME042

### Jackson

West Tennessee Regional Science Fair  
EV096 ZO060

### Knoxville

Southern Appalachian Science and Engineering Fair  
BI063 PH043

### Memphis

Memphis-Shelby County Science and Engineering Fair - North Region  
BI042 MI046

### Memphis

Memphis-Shelby County Science and Engineering Fair - South Region  
CS030 ME061

### Nashville

Middle Tennessee Science and Engineering Fair  
BI055 CH041

## Texas

### Amarillo

High Plains Regional Science Fair  
BE019 CH022

### Arlington

ExxonMobile Texas Science and Engineering Fair  
BI065 CH044

### Austin

Austin Area Fair and Festival  
EV303 ME045 MI009

**College Station**

Brazos Valley Regional Science and Engineering Fair  
BI027 BO027

**Dallas**

Dallas Morning News-Toyota Reg. Science and Engineering Fair-Life  
Sciences  
BE036 ZO051

**Dallas**

Dallas Morning News-Toyota RSEF - Physical Sciences  
EN067 EN318

**El Paso**

Sun Country Science Fair  
EV031 ZO023 ZO306

**Fort Worth**

Fort Worth Regional Science Fair  
EN026 MA011

**Harlingen**

Rio Grande Valley Regional Science Fair  
BE018 EA020 EN304

**Houston**

Science Engineering Fair of Houston - Life Sciences  
BE024 EV051

**Houston**

Science Engineering Fair of Houston - Physical/Engineering Sciences  
CH031 EN037

**Kilgore**

East Texas Regional Science Fair  
ME309

**Kilgore**

East Texas Regional Science Fair II  
PH305

**Kingsville**

Coastal Bend Science and Engineering Competition  
MA034 ME073

**Laredo**

Laredo Independent School District Science Fair  
EV067 GN302

**Laredo**

United Independent School District Regional Science Fair  
EV112

**Lubbock**

South Plains Regional Science and Engineering Fair  
EN062 ME083

**Odessa**

Permian Basin Regional Science Fair  
BE310 ME066 ZO045

**San Angelo**

District XI Texas Science Fair  
EV055 ZO035

**San Antonio**

Alamo Regional Science and Engineering Fair I  
CH030 GN301 PH026

**San Antonio**

Alamo Regional Science and Engineering Fair II  
MI041 MI042 MI307

**San Antonio**

Alamo Regional Science and Engineering Fair III  
BO036 EV066 ZO310

**Victoria**

Texas Mid-Coast Regional Science and Engineering Fair  
EV090 GN016

**Waco**

Central Texas Science and Engineering Fair  
BO035 ME055

**Wichita Falls**

Red River Regional Science and Engineering Fair  
EA006 EV310 MI008



**Utah**

**Brigham City**

Box Elder Science and Engineering Fair  
CS304

**Cedar City**

Color Country Utah Science and Engineering Fair  
EN057 MI045

**Cedar City**

South Central Utah Regional Science and Engineering Fair  
GN014 ME063

**Cedar City**

Southern Utah Science and Engineering Fair  
GN009

**Cedar City**

Southwest Utah Science and Engineering Fair  
EV091 ZO049

**Layton**

North Davis Area Science and Engineering Fair  
BO030 EV057

**Ogden**

Ogden Area I Science and Engineering Fair  
CH025

**Ogden**

State Science and Engineering Fair of Utah - Life Sciences  
EA025 EN043

**Ogden**

State Science and Engineering Fair of Utah - Physical Sciences  
EN041 MI035

**Ogden**

Weber Area Science and Engineering Fair-#1 Life  
CH303 EV059

**Ogden**

Weber Area Science and Engineering Fair - #2 Physical  
EN042 EN307

**Ogden**

Weber Area Science and Engineering Fair - #3 General  
EV056 EV104

**Provo**

Central Utah Science and Engineering Fair  
EV102 ME080 ZO314

**Provo**

Central Utah Science & Engineering Fair - North  
BO308 EN079 MI054

**Virgin Islands**

**St. Croix**

Good Hope School Science Fair  
CS014 EV026

**Virginia**

**Arlington**

Northern Virginia Science and Engineering Fair  
BE011 ME023

**Ashland**

Virginia State Science and Engineering Fair  
CS040 ME070

**Charlottesville**

Piedmont Regional Science Fair  
EV036 PH014

**Chesapeake**

Tidewater Science Fair  
EV025 ME020

**Dublin**

Blue Ridge Highlands Regional Science Fair  
BO038 CS027

**Fairfax**

Fairfax County Area I Regional Science and Engineering Fair  
CH017 CS018

**Fairfax**

Fairfax County Area II Regional Science and Engineering Fair  
ME025 ZO026

**Fairfax**

Fairfax County Area III Regional Science and Engineering Fair  
BE012 ZO027

**Fairfax**

Fairfax County Area IV Regional Science and Engineering Fair  
EN023 EV032 ME304

**Fairfax**

Fairfax County Regional Science and Engineering Fair - Thomas Jefferson  
BE305 BI022 CH016

**Harrisonburg**

Shenandoah Valley Regional Science Fair  
CH024 EN015

**Lynchburg**

Central Virginia Regional Science Fair  
BO037 PH027

**Manassas**

Prince William-Manassas Regional Science Fair  
MA014

**Purcellville**

Loudoun County Regional Science and Engineering Fair  
CH019 MI028

**Roanoke**

Western Virginia Regional Science Fair  
CS049 PH045

**Washington**

**Bremerton**

Washington State Science and Engineering Fair  
BO060 EV098

**Kennewick**

Mid-Columbia Regional Science and Engineering Fair  
ZO037 ZO038

**Tacoma**

South Sound Regional Science Fair  
MA019 ZO033 ZO308

## West Virginia

### Huntington

West Virginia State Science and Engineering Fair  
EV108 MA033

### Keyser

West Virginia Eastern Panhandle Regional High School Science Fair  
BE037 BO024 CS303

### Montgomery

Central West and Southern Virginia Regional Science and Engineering Fair  
ME011

### West Liberty

West Liberty State College Regional Science and Engineering Fair  
EN048 EV076

## Wisconsin

### Glendale

Nicolet Science and Engineering Fair  
EV007 ME010

### Kenosha

Parkside Regional Science Fair  
MA304

## Wyoming

### Cheyenne

Southeast Wyoming Regional Science Fair  
BE301 MA008 ME009

### Cody

Northern Wyoming District Science Fair  
EA301 EN018 ZO020

### Laramie

Wyoming State Science Fair  
CS007 EN301 ZO009

## ARGENTINA

### Concepcion

Feria Provincial de Ciencia y tecnologica Intergeneracional  
BE044 EV107 GN305

### Cordoba

Feria Provincial de Ciencias y Tecnologia-Cordoba-ARGENTINA  
BE015 ZO305

### Mendoza/Guaynallen

Feria Regional de Ciencia y Tecnologia  
MI301

### Qordoba

National Science Fair of Argentina  
BE306 CS022 EN032

### Tafi Viejo - Tucuman

1st Provincial Festival, The Environmental Science, Behavioral & Social  
Sciences & Engineering  
BE045 EN086 EV334

## ARMENIA

### Yerevan

Science Fair-2001 of Armenian Students  
MA308

## AUSTRALIA

### Sydney

Intel Young Scientist Awards  
BE007 BE304 BO017

## BELARUS

### Minsk

BelJunior 2000  
CS042 EA306 PH041



## BRASIL

### **Campinas**

E. A. C. Science Fair  
BE039 EN076 MI312

### **Novo Hamburgo**

International Fair of South America - MOSTRATEC  
BE314 CS048

### **Novo Hamburgo**

Feira Estadual de Ciencia e Tecnologia do Ensino Media do R S.  
EN084

### **Novo-Hamburgo**

National Science and Technology Fair  
BE046 MI315

## CANADA

### **London**

CWSF/Waterloo-Wellington/Lambton  
BI312 CS043 EA034

### **Montreal, Quebec**

Montreal Regional Science Fair  
BE312 ME082 MI058

### **Oakville, Ontario**

Hamilton-Wentworth & Halton Science and Engineering Fair  
EN077 ZO059

### **Regina**

CWSF/Central and Eastern Newfoundland/Montreal  
CS044 PH042

### **Regina**

CWSF/Quebec Regional Science Fair  
CH040 EN075

### **Regina**

CWSF/Greater Vancouver  
ME076 ME077

### **Windsor**

Windsor Regional Science Fair  
EV106

## CHILE

### **Sexta**

Juventudes Cientificas y Tecnologicas de Chile Fair  
EA032 EV114

### **Talca-Septima Region**

Club de Ciencias Colegio de la Salle Talca - Chile  
EA036 EV333

## CHINA

### **Beijing**

CASTIC( China Adolescents and Technology Invention Contest), Beijing  
BO021 CH013 EV309

### **Fuzhou City**

CASTIC (China Adolescents Science & Technology Invention Contest),  
Huanan  
ZO001 ZO301

### **Guangzhou**

CASTIC (China Adolescent Science & Technology Invention  
Contest), XINAN  
CS021

### **Hefei City**

CASTIC: (China Adolescent Science & Technology Invention Contest),  
Huadong  
EN064 MA032

### **Shanghai**

CASTIC (China Adolescents Science and Technology Invention Contest),  
Shanghai  
CS012 EV308 MA010

## CHINESE TAIPEI

### **Taipei**

Middle Taiwan Regional Science Fair  
CS003 MA004

### **Taipei**

South Taiwan Regional Science Fair  
CH005 ZO005

**Taipei**  
National Science and Engineering Fair of Republic of China  
BI002 EA303 PH001

**COSTA RICA**

**San Jose**  
Feria Nacional de Ciencia y Tecnologia XIII  
ZO312

**San Jose**  
Feria Nacional de Ciencia y Tecnologia-I (XIII)  
ZO066

**CZECH REPUBLIC**

**Roznov Pod Radhostem**  
Students' Professional Activities (SPA)  
BE313 CS041 CS046

**DENMARK**

**Copenhagen**  
Unge Forskere  
CH304

**GERMANY**

**Leipzig**  
Jugend Forscht  
CH046 CS052

**GUAM**

**Mangilao**  
Guam Island-Wide Science Fair  
MA040

**HUNGARY**

**Budapest**  
Innovation Contest for Young Scientists  
PH038

**INDIA**

**Mumbai Maharastra**  
Intel Science Talent Discovery Fair  
BI038 EV069 EV324

**INDONESIA**

**Jakarta**  
Rancang Bangun Teknologi  
EN323

**ISRAEL**

**Jerusalem**  
Young Scientists in Israel - Contest  
BE043 CS047

**JAPAN**

**Tokyo**  
Japan Students Science Awards  
CH043 MI313 ZO065

**KAZAKHSTAN**

**Astana**  
DARYN National Junior Science Projects Competition  
CS005 EA304 MA029

## MALAYSIA

**Penang**  
National Schools Science Innovation Competition  
BI064 EN322

## PHILIPPINES

**Manila**  
(Search for Toys) Philippine Science Fair  
BO047 EV086 MI310

## MEXICO

**Mexico City**  
Gran Encuentro de Ciencia Joven  
BI049 EN313 ZO053

## PORTUGAL

**Porto**  
European Contest for Young Scientists  
PH307

## NETHERLANDS

**Amsterdam**  
Dutch Contest for Young Scientists  
EV331

## PUERTO RICO

**Arecibo**  
Arecibo Regional Science Fair  
BO033 EN310 MI039

## NORTHERN IRELAND

**Belfast**  
Young Innovators  
EN063 EN312

**Bayamon**  
Bayamon Regional Science Fair I  
BI036 EV062 EV318

**Cayey**  
Radians Science & Engineering Fair  
GN018 ZO058

**Fajardo**  
Fajardo Region Science Fair I  
EN050 EV064 ZO309

**Guaynabo**  
San Juan Archdiocesan Region I Science Fair  
BE309 GN013 ME053

**Guaynabo**  
San Juan Archdiocesan Region II Science Fair  
BO034 EV322 MI040

**Guaynabo**  
San Juan Archdiocesan Region III Science Fair  
BE308 EA024 EN038

**Guaynabo**  
San Juan Archdiocesan Region IV Science Fair  
BE307 CS024 ZO034

**Gurabo**  
Caguas Educational Region Science Fair I  
BE027 EV321 ME052

## NORWAY

**Oslo**  
Norwegian Contest for Young Scientists  
ZO069

## PERU

**Chincha**  
Science and Technology Fair  
EN324 EV113

**Gurabo**  
Humacao Regional Science Fair  
BI037 EV320 GN012

**Manati**  
Morovis Regional Science Fair I  
BI046 PH031 PH306

**Mayaguez**  
Mayaguez Educational Region Science Fair I  
CH036 EV087 MI309

**Ponce**  
Ponce Regional Science Fair  
EN308 EV058 ME046

**San German**  
San German Regional Science Fair  
BI032 BI307 MI037

**San Juan**  
Western Regional Mathematics Fair  
MA026 MA027 MA306

**San Juan**  
Eastern Regional Mathematics Fair  
MA024 MA025 MA305

**San Juan**  
San Juan Educational Region Science Fair  
EV316 ME047 MI038

## RUSSIA

**Moscow**  
Junior - I  
CH038 CS307 MA031

**Moscow**  
Russian Youth Program "Step Into the Future"  
EN065 ME072

**Moscow**  
Junior-II  
BI309 MA022

**Moscow**  
ISAC Chernogolovka - 2001  
CH001 CS302 MA001

## SINGAPORE

Singapore Science and Engineering Fair  
BI311 CS038 PH036

## SOUTH AFRICA

**Pretoria**  
Expo for Young Scientists - South Africa  
CS301 EA003

## SOUTH KOREA

**Seoul**  
Korea Olympiad in Informatics  
CS035 CS036

## SWEDEN

**Stockholm**  
Utställningen Unga Forskare  
CS054

## THAILAND

**Bangkok**  
National Science Projects Competition  
BO307

**Bangkok**  
National Electronics and Computer Technology Center (NECTEC)  
CS050 CS051

**TURKEY**

**Ankara**  
Tubitak fair  
MI311 PH039

**UNITED KINGDOM**

**London**  
The BA Science Fair  
CS004 EN302 PH005

**URUGUAY**

Feria Nacional de Ciencia y Tecnologia Juvenil  
EN305

# ALPHABETICAL LIST OF FINALISTS

A 'T' after the booth ID number indicates a Team Project

Abdul Ali, M.	CS010	Baars, M.E.	CH004	Blas, D.V.	CS007
Abraham, J.	BO025	Babazhanov, E.E.	MA029	Blazina, A.E.	EV010
Acevedo, J.	EN310T	Backfish, K.M.	CH033	Blignaut, M.	EV117
Adams, C.L.	EN040	Bagwell, A.A.	BO053	Bliss, D.E.	MA014
Adeagbo, O.A.	PH023	Bailey, M.L.	ME058	Boehme, C.A.	CH012
Adolf, E.I.	EV329T	Bajpai, R.	BI038	Bolden, J.M.	EN315T
Afkhami, M.E.	ZO051	Baker, B.	ME080	Bombassaro, B.W.	BE002
Aguilar, F.G.	BE035	Baker, L.R.	EV094	Bonilla, T.N.	BO019
Ahron, S.M.	BE003	Balakrishnan, J.S.	MA040	Boonhajaroen, N.	CS051
Ahson, M.	BI005	Baldik, M.L.	BI306T	Booth, J.L.	EV314T
Ahumada, J.A.	BE044	Ball, L.C.	MI304T	Borgen, M.D.	EV014
Akulionak, A.	EA306T	Banasiak, J.E.	ME043	Borts, J.M.	BE312T
Alam, A.R.	ME050	Bang, A.L.	PH028	Bouchard, D.C.	ME057
Alexander, W.Z.	MI022	Bankowski, R.A.	BE032	Boulva, F.	EA034
Ali, N.A.	EN322T	Barclay, A.L.	CH011	Bounds, S.B.	EV111
Alleman, E.E.	GN009	Barmeier, J.D.	BI314T	Boutte, B.C.	EN314T
Allen, A.D.	CH022	Barnes, L.A.	BE034	Bowen, I.D.	CS305T
Allen, R.S.	EV054	Barrett, C.L.	ZO314T	Bowman, A.L.	CH034
Allen, T.C.	EA011	Barry, M.D.	EN012	Bowman, S.E.	CH017
Almonte Lora, H.S.	MI038	Barynov, M.	EA306T	Boyd, B.D.	EN082
Alvarez-Lopez, J.R.	CS024	Batista, A.R.	PH307T	Boyle, A.P.	BI058
Amin, S.K.	MI001	Bauer, F.L.	ME031	Bradley, S.A.	MI008
Anderson, A.M.	EV013	Bauman, K.W.	EV313T	Bratton, A.J.	PH305T
Anderson, H.M.	BE033	Baxi, A.C.	MI046	Bredehoft, B.D.	EN023
Andrews, B.W.	CS049	Beach, A.R.	EV328T	Breen, M.E.	BO012
Andrews, J.P.	ME070	Bean, S.E.	EV056	Brege, A.M.	BO043
Anosov, A.	BI309T	Beauchamp, P.	CS043	Bressler, I.J.	BE019
Antonoli, A.H.	EV038	Beckman, K.L.	BI061	Brezina, K.A.	BI026
Antunes, J.A.	PH307T	Beier, D.R.	CS304T	Briell, S.A.	EV333T
Aponte, J.A.	BI046	Belova, N.	ZO304T	Brillhart, J.M.	BE005
Aquino, J.S.	EV112	Beltran, M.A.	ZO306T	Brockman, K.D.	BO054
Aravamuthan, B.R.	ME060	Bencuya, A.A.	EN317T	Brodersen, C.H.	ZO067
Argo, T.A.	ZO060	Bender, S.A.	CS031	Brophy, S.E.	EA005
Arkus, K.A.	BI057	Bennett, B.R.	EV323T	Brown, E.J.	CS308T
Armstrong, L.S.	EA028	Bennett, J.P.	EN306T	Brown, N.D.	GN304T
Arnade, L.	MI024	Benrimon, L.Y.	EA016	Brown, S.M.	EV073
Arnold, R.C.	EN051	Benson, E.H.	ME305T	Brox, T.I.	EV083
Aronson, C.E.	BI052	Benson, Z.D.	EV070	Bruner, C.R.	MA037
Arrieta, E.R.	ZO312T	Bentley, J.M.	GN016	Brunner, R.L.	EV072
Askew, A.E.	MI013	Berniell, M.	BE306T	Brunsdale, T.J.	EV057
Astacio, I.	EN308T	Bernier, B.	GN012	Brunt, L.L.	MA023
Au, U.	ME024	Bertola, N.A.	ZO305T	Bsiceno, O.M.	EN324T
Aubin, A.E.	PH034	Bevenger, S.	ZO020	Bucy, J.J.	BE001
Audet, R.M.	PH048	Bhattacharya, M.	BO014	Buehring, K.J.	ME073
Auiles-Gaudier, A.M.	MA305T	Bickerstaff, S.A.	EA013	Burgess, A.T.	EA302T
Auiles-Gaudier, A.M.	MA305T	Bienvenu, R.J.	EN069	Burrell, M.A.	EV007
Aurand, Z.L.	ZO003	Birin, K.P.	CH001	Bursian, Y.A.	BI309T
Austin, H.L.	EV036	Bishop, A.M.	MI302T	Burtness, J.A.	MI016
Avetisyan, A.A.	MA308T	Bixler, R.M.	EN010	Busby, A.J.	EN044
Aviles, J.R.	EV318T	Bladow, L.L.	EV101	Byrnes, J.J.	ZO303T
Ayala-Santana, G.	EN050	Blalock, N.R.	EV315T	Cable, L.J.	MA013

Cai, W.	ZO301T	Cobb, R.D.	BI301T	Del Toro, I.	ZO306T
Calleja, E.M.	PH016	Cohen, L.E.	MA016	del Valle, W.E.	MI309T
Callender, T.M.	EV020	Cole, B.J.	EV043	DeObaldia, M.E.	ZO068
Callender, T.J.	BO013	Cole, M.E.	EV097	DeSanto, S.C.	EN030
Calluzzo, P.V.	EN306T	Coleman, R.A.	PH030	Desikan, S.K.	BI010
Camley, B.A.	CS015	Colic, O.	EV081	Devrim, E.	MI311T
Campbell, L.A.	PH021	Collier, I.M.	CS306T	Diaz, J.S.	EA036
Cantino, A.S.	CS025	Collins, A.D.	GN008	Dimich, M.T.	EV306T
Canusa, M.S.	MI310T	Collins, S.K.	ME310T	Dodge, T.L.	BI021
Cao, P.	BO021	Colon, D.	PH306T	Dolgalyov, A.P.	MA022
Capo, A.M.	BO023	Colon Villafane, G.J.	MA026	Donnell, Z.N.	ZO013
Carmichael, T.J.	EN312T	Colon-Jimenez, L.	MA024	Donnelly, P.L.	EN312T
Carruthers, D.J.	ZO009	Concho, C.M.	ZO062	Dorofeev, A.S.	CH038
Carter, N.N.	EV104	Concho, D.J.	BO056	Dossick, D.S.	PH047
Carucci, P.L.	EN042	Condit, R.D.	EN022	Drake, B.L.	EA301T
Casas, L.A.	BI036	Conlon, J.W.	CH301T	Drake, M.K.	EV110
Casey, J.A.	EV093	Connolly, C.M.	ZO308T	Duarte, P.D.	EV316T
Castillo, F.E.	ZO034	Conroy, S.A.	CH028	Duet, C.L.	EV312T
Castro, S.B.	ZO312T	Contreras, Jr., J.G.	GN302T	Duke, D.N.	EV017
Cates, A.H.	EN056	Cooper, B.S.	CS303T	DuLaney, C.A.	BE011
Cavallaro, B.N.	PH304T	Cordell, J.A.	EV319T	Duncan, C.E.	BI011
Caver, J.D.	EN028	Corey, A.L.	EN074	Dunn, M.M.	BI310T
Cecil, C.M.	BO038	Cornejo, J.G.	EN313T	Dutra, S.C.	BE314T
Chaiyachati, K.	EV329T	Coughlin, A.M.	EN301T	Dwyer, C.A.	EA030
Chalupa, C.	EN309T	Cox, D.R.	BO301T	Eakin, V.B.	EN301T
Champagne, M.L.	MI021	Cox, G.	ZO049	Eapen, D.J.	ME003
Chang, D.	BI302T	Craig, H.H.	EN321T	Echegaray, J.J.	MI040
Chang, S.Y.	ME045	Craig, H.H.	EN321T	Edie, S.D.	EV108
Chang, T.H.	CS003	Creamer, N.L.	EN041	Egerdal, L.E.	BI008
Chapin, A.R.	EV313T	Crespo, A.J.	BE309T	El-Amin, A.	EN315T
Chapman, R.M.	PH304T	Crowers, C.	GN303T	Ellis, T.S.	CH018
Chapuis, J.E.	EV319T	Cummings, K.E.	BO007	Eng, K.M.	MA036
Charest, R.W.	CH024	Curry, R.D.	EN062	Enright, E.B.	EV314T
Chasseur, Jr., T.C.	CS029	Curry, T.F.	PH004	Enriquez, F.	ZO311T
Chaudhry, S.B.	BI054	Curtis, J.D.	ME312T	Epling, B.R.	MA017
Chavez, A.T.	EV053	D'Ancona, M.L.	EN076	Escobar, R.A.	EA032
Chavez, G.Q.	EV113	D'Auria, T.C.	EV041	Escudero, G.V.	ZO305T
Chen, C.F.	EA303T	Daggy, D.A.	EV024	Eskov, V.V.	ME072
Chen, H.J.	BI303T	Dahms, M.E.	EV327T	Eskue, R.G.	EN014
Cherry, C.B.	BE304T	Dai, H.	EV309T	Eunogie, H.	EN324T
Chevalier, A.A.	EN037	Daigle, M.A.	BE040	Evatt, A.M.	MI303T
Chi, A.	PH037	Dakin, B.M.	ZO056	Eyring, A.	EV102
Chiafair, J.E.	EV301T	Dale, J.L.	MI012	Farina, J.T.	EV042
Chiu, J.W.	MA008	Dalo, D.t.	ME084	Fayad, S.K.	BI018
Chmelar, Z.	BE313T	Damalas, J.R.	EN017	Featherston, L.M.	EV049
Choe, H.J.	MA304T	Dang, H.T.	PH049	Feese, S.D.	ME039
Cholera, R.	BI042	Danzell, L.C.	BE026	Feingold, S.M.	MI029
Chow, J.M.	PH015	Dapper, R.E.	CS048	Feldman, S.D.	CH002
Christopher, K.S.	CS013	Darrith, B.T.	CH007	Fellinger, R.A.	EN309T
Chu, A.	CS053	Davidson, N.R.	BO001	Feng, C.Y.	BI311T
Chu, E.	GN011	Davidson, T.L.	BI012	Ferber, A.J.	ZO307T
Chung, F.	CS044	Davies, R.J.	EN302T	Ferguson, H.	ZO314T
Chung, J.	MA009	Davis, J.T.	EA023	Fernandes, A.S.	BE304T
Churchill, H.O.	PH035	Davis, J.A.	EV318T	Fidler, A.L.	BI017
Cianfagna, H.L.	EN032	Davis, L.A.	ME044	Figueira, E.S.	PH307T
Cinson, A.D.	BO305T	Davis, M.	ME037	Figuroa, S.A.	BE309T
Clarke, A.M.	BI063	Davison, C.	PH005	Fimple, L.D.	EV019
Clary, C.S.	BO306T	De La Huerta, J.	EN304T	Finch, A.H.	CS014
Clements, R.B.	GN301T	De Leon-Alejandro, J.D.	EA024	Finkbeiner, A.R.	GN017

Fischer, M.H.	BO309T	Grigsby, K.T.	EN307T	Hicks, M.M.	BE302T
Fisher, B.L.	BO058	Grimes, L.D.	EN320T	Hicks, R.R.	BE302T
Fitting, T.D.	EA020	Grimm, K.A.	BO022	Hiller, D.J.	ME308T
Flanagan, S.M.	CS303T	Gude, D.M.	ZO310T	Hills, H.A.	EA006
Fohner, B.G.	BO052	Guenther, J.M.	BO020	Hinner, M.	CS046
Fong, M.	ZO012	Guler, E.	PH039	Hinson, E.T.	MA303T
Fordham, N.D.	EV016	Guo, Y.	BI003	Hippalgaonkar, S.R.	ZO307T
Forsythe, B.A.	EN031	Gupta, K.	BI302T	Hiro, H.S.	CH043
Foster, B.M.	BE042	Gupta, N.	BI304T	Ho, D.M.	EV303T
Fox, A.F.	BI041	Guthrie, J.B.	MA007	Hobson, C.N.	GN304T
Fraser, J.W.	BI053	Gutman, S.E.	EN048	Hoey, H.M.	EA031
Fraser, J.S.	BI312T	Hackney, H.H.	ME063	Hofmann, T.A.	EV330T
Frausto, Jr., H.	GN302T	Hadd, A.N.	BI006	Hohl, A.M.	ZO030
Friend, J.	CS004	Hagbloom, M.N.	EV026	Holt, K.F.	EV025
Fryer-Biggs, J.	EN025	Hagen, D.R.	EN058	Honeycutt, L.B.	CH039
Fuller, M.E.	EA025	Hall, K.W.	BE041	Hood, B.R.	BO051
Gafoor, S.S.	MI048	Hall, M.I.	EA305T	Horodyskyj, U.N.	EA012
Gai, Y.	CH013	Halterman, W.G.	MI011	Howard, T.A.	ME074
Gaither, M.E.	BO061	Hammen, C.R.	EN035	Hrdlicka, T.	CS041
Galimberti, J.A.	MI315T	Han, S.	ZO301T	Hsiung, D.T.	BI065
Galvao, C.W.	MI312T	Hanisak, S.A.	ZO010	Hu, S.	EN064
Ganatra, S.C.	MA042	Hannahan, H.N.	BO029	Huang, T.	PH001
Gao, K.K.	MI009	Hansen, A.	ZO314T	Huang, Z.M.	ME025
Garabedian, C.W.	EV084	Hansen, L.	EN079	Huanqian, L.	PH036
Garcia, B.A.	EN305T	Hanson, N.N.	EV304T	Huff, C.S.	ZO028
Garcia, J.A.	BO033	Happel, M.K.	CH019	Hughes, C.L.	CH008
Garcia, P.G.	BI049	Haraguchi, W.T.	ZO302T	Hughson, H.N.	PH042
Garner, R.B.	EN020	Hardy, B.C.	BE301T	Hunniford, C.D.	MI043
Gatewood, B.E.	MA012	Hare, A.M.	EV317T	Hur, W.	CH047
Gatzert, S.T.	CH030	Harmon, L.J.	ZO042	Hurley, K.K.	ME311T
Gelner, S.D.	BO035	Harper, C.M.	EV092	Huynh, L.P.	BO030
Georgas, A.G.	ME056	Harper, D.R.	ME306T	Hwang, G.	EN071
Gercek, H.	MI311T	Harrell, H.L.	BE025	Idell, R.L.	EN073
Gervais, G.W.	EV106	Hart, A.L.	BI308T	Im, I.	BE305T
Gianan, N.N.	MI310T	Hart, M.B.	EV027	Ishak, A.A.	BO063
Gibson, S.M.	EN085	Hart, R.R.	EV071	Itano, M.S.	ZO021
Gieselmann, K.J.	CH003	Hartley, W.B.	MI010	Iverson, A.L.	BO016
Ginsburg, A.G.	EA017	Hauck, L.A.	EV100	Iverson, S.V.	EV089
Glassman, E.L.	EN088	Havel, M.J.	ZO310T	Jackson, M.E.	ZO031
Goitia, R.M.	PH012	Haynes, F.A.	EV079	Jackson, M.A.	CH029
Goldsmith, J.A.	MA033	Hays, S.M.	CH010	Jansen, P.A.	GN003
Gomez, C.J.	MI301T	Head, K.R.	EV022	Jarrett, K.J.	GN006
Gomez, M.L.	BO011	Hebert, K.P.	ME303T	Jeletic, M.S.	MI028
Goncalves, P.C.	BE046	Hebert, M.R.	ME303T	Jensen, A.K.	EV012
Gonzalez, M.N.	EV334T	Hedberg, H.M.	MI052	Jentz, R.M.	BO059
Gonzalez, R.M.	ZO037	Hedgecock, II, R.W.	CS002	Ji, X.	ZO001
Gonzalez, S.M.	EV321T	Hedged, S.A.	EV011	Jih, Y.	BE038
Gonzalez-Rodriguez, R.R.	BO034	Hegedus, R.	PH038	Jirele-Borleske, J.E.	EV307T
Goode, R.D.	EV040	Hegna, R.H.	ZO024	Jirele-Borleske, L.J.	EV307T
Gordon, J.N.	EA305T	Heltsley, S.R.	EN033	Jochim, A.A.	EV060
Grabofsky, M.L.	BI306T	Hem, S.	MI006	Johns, J.I.	BO003
Graf, R.V.	BO024	Henson, A.L.	BE016	Johnson, I.B.	BI301T
Granier, L.M.	EV312T	Herf, J.K.	EV003	Johnson, K.G.	CS039
Gray, J.L.	EN067	Herman, M.D.	MI032	Johnson, N.A.	BO026
Gray, N.E.	ME023	Hernandez, R.W.	EN080	Johnson, R.D.	BO309T
Gray, S.K.	EV061	Herrera, M.F.	EV333T	Johnson, T.C.	EN016
Green, L.M.	ME309T	Hess, E.A.	BE018	Johnston, J.H.	BE028
Greiner, J.D.	EN034	Hickey, E.A.	ZO033	Johnston, K.S.	EN053
Griffing, S.E.	ME083	Hicks, A.C.	MI049	Johnston, M.D.	EA019



Jones, C.L.	EV304T	Kuhlmann, K.L.	ZO035	Lohmann, D.A.	ZO018
Joseph, D.A.	EV076	Kuhn, E.E.	EV331T	Lomax, J.E.	GN007
Joshi, Y.V.	EV069	Kulawonganuchai, S.	CS050	Lopez, P.R.	BO303T
Jou, Y.H.	MA004	Kulkarny, A.V.	ME068	Lord, N.D.	BI048
Joyce, J.M.	CS018	Kuriakose, E.M.	ZO029	Lotts, B.L.	MI018
Jozabed, C.	MA306T	LaFarlette, B.J.	ME001	Lu, C.A.	MI310T
Judelson, A.S.	EN317T	Lai, A.	EV023	Lu, T.	ZO301T
Judson, M.I.	BO308T	Lallouz, J.A.	BE312T	Luh, H.	ZO005
Justiniano Quinones, V.C.	MI037	Lam, N.T.	BI313T	Luigi, C.	CH036
Kaae, J.E.	ME028	Lamb, M.R.	EV327T	Luna, A.M.	MI003
Kachalov, A.D.	CS307T	Lamb, S.M.	ME020	Lund, M.H.	EN309T
Kaganovich, M.	MI007	Lampton, Jr., J.H.	CS032	Luong, P.N.	MI041
Kaleta, M.H.	MA304T	Lang, R.	EV323T	Luong, T.T.	BI313T
Kao, R.M.	BO039	Lange, A.L.	BI045	Lussier Desbiens, A.	EN075
Kaochar, S.	BI043	Langston, M.D.	EN052	Luster, C.L.	PH029
Kasem, S.S.	BI009	Lapshin, V.A.	CS302T	Ly, S.	BI313T
Kasinath, V.	MI307T	Larimer, C.J.	MA307T	Ma, Q.	CS021
Kaszuba, S.N.	EN303T	Lasseter, L.T.	EV015	Machado, T.A.	EN316T
Kats, E.T.	BI062	Laurent, B.A.	CH006	MacMillan, K.E.	MI304T
Kauffman, J.R.	CS017	Lauten, C.J.	ME307T	Madduri, P.A.	CH016
Kauk, B.N.	ZO063	Lautzenheiser, B.J.	BO305T	Magby, A.D.	ZO006
Keifer, O.P.	EN068	Lavesson, W.J.	CS054	Magnan, M.R.	ME008
Kellett, M.K.	BI056	Lazar, S.C.	EA008	Maire, R.E.	CH032
Kelley, J.D.	ZO008	Lebron, V.M.	EV320T	Malbon, B.S.	CS027
Kelly, M.D.	MI020	Lee, A.C.	ME035	Malek, N.A.	BI027
Kemp, H.B.	GN014	Lee, H.C.	CS019	Mann, K.N.	EN083
Kendall, E.A.	PH013	Lee, M.B.	MI305T	Mansoor, F.A.	ME065
Kendell, K.	EN307T	Lee, T.	ME038	Marianetti, I.J.	MI301T
Kessans, S.A.	BO005	LeFleur, H.K.	BO041	Martin, W.R.	ME312T
Keyburn, S.S.	EV303T	Leggett, J.L.	ME066	Martinez, A.C.	EV055
Khechonphun, P.	BO307T	Leiberman, D.E.	EV103	Martinez, J.	GN018
Kilcoin, D.M.	BO304T	Lemus, B.A.	PH017	Martinez-Camacho, X.	ZO309T
Killian, S.	ME029	Lentz, M.L.	BI050	Martini, C.M.	BI040
Kilpatrick, C.D.	CS011	Lenz, J.L.	EA033	Mas, M.F.	EV318T
Kim, B.T.	MI306T	Lenze, C.J.	EV074	Mase, S.E.	ME016
King, D.A.	BI023	Leonard, E.E.	EV325T	Mason, A.	BO064
Kingsbury, M.R.	ME078	Leonard, S.P.	GN301T	Matchett, S.E.	EN063
Kiriluk, K.G.	EN029	Lerman, J.M.	ME075	Matthews, C.M.	ME036
Klaber, M.P.	CS009	Letourneau, E.C.	MI302T	Mattila, N.R.	EV306T
Klingenberg, B.J.	CS006	Levy, A.P.	BE012	Maukaling, D.E.	EN323T
Knobles, W.J.	PH026	Lewis, E.J.	EV305T	Mazumder, M.M.	ME005
Knorr, D.A.	GN019	Lewis, J.L.	EV004	McBurnett, N.L.	EA002
Knudson, K.I.	ZO308T	Lewis, W.I.	EN009	McCants, B.D.	BO045
Kocher, S.D.	ME040	Li, K.H.	BE036	McCuskey, R.W.	ME011
Koistinen, J.H.	EN081	Li, P.	CH302T	McDermott, A.L.	BE014
Kolsch, K.M.	ME064	Liang, W.D.	BI303T	McFarlane, C.J.	EN059
Komanski, C.B.	EN007	Liebhaber, A.B.	BE022	McGee, M.D.	EA022
Komarov, A.B.	CS302T	Liendo, L.A.	BE015	McGuire, S.A.	BO048
Koppel, A.L.	ZO026	Lin, S.	BO062	McLachlan, K.A.	EA003
Korman, J.B.	ME051	Lin, Y.	BI002	McLeod, A.	BO017
Korzekwa, R.C.	PH022	Lindsey, S.J.	EN311T	McMillan, J.M.	CS306T
Koshy, F.K.	PH301T	Lisanti, M.	PH018	McMillan, S.	ZO313T
Kostyuk, V.	MA303T	Little, L.M.	BO302T	McNish, R.P.	PH014
Kovalev, P.	CS047	Liu, C.Y.	CS037	McPherson, S.A.	EN316T
Kraft, E.M.	CH027	Liu, X.	MA302T	McQuiston, L.E.	EV302T
Krishnan, N.M.	BE029	Lloyd, B.S.	EN066	Meaders, K.B.	CH303T
Kruse, N.A.	EV065	Lloyd, I.E.	CH025	Meany, R.A.	EV317T
Kuandykov, A.A.	CS005	Lo, Y.B.	EN318T	Mehta, N.	ZO064
Kudryashov, Y.G.	MA001	Loboschefsky, P.Y.	EN057	Mei, L.	BI007

Meigooni, D.N.	ME054	Murphy, S.E.	PH007	Oxner, G.K.	EV031
Mendoza, Jr., B.B.	BO047	Murphy, S.M.	BI310T	Ozer, Z.A.	ZO310T
Mentzel, M.D.	ZO022	Murti, S.K.	ME061	Pack, S.	EN320T
Mercado, C.F.	PH031	Musalo, R.M.	BI304T	Paddock, W.A.	EV311T
Mertens, A.M.	ME014	Mustafi, D.	BI047	Padilla, T.L.	ME021
Messelt, V.J.	MI055	Myers, T.K.	MI023	Palatinus, J.A.	PH043
Messina, J.K.	EV044	Mylavarapu, S.	BI033	Palermo, E.F.	CH301T
Messina, M.E.	EA009	Nahoum, E.	BE043	Palma, C.R.	MI025
Mhatre, B.S.	EV324T	Napier, A.B.	EV098	Palmen, B.M.	BI024
Michaels, Z.W.	ZO007	Nash, K.L.	ZO052	Palmer, J.	EN302T
Milford, M.A.	MI033	Nash-Keller, T.D.	MI308T	Paredes-Vazquez, A.Y.	ME047
Miller, J.B.	EN008	Nassar, G.A.	CS306T	Park, Y.	CS035
Miller, W.R.	ZO043	Nayyar, S.	BI055	Parker, J.L.	EA004
Millet, L.A.	BE004	Nazario, I.R.	MI039	Paroder, M.	BI028
Minachi, B.	CS040	Needel, G.E.	EN047	Pastrian, R.A.	EV114
Mione, L.M.	ME007	Nesbitt, T.A.	PH303T	Pate, H.A.	CS305T
Miranda, M.	MA027	Ness, B.M.	EN319T	Patel, A.H.	EV002
Mirchandani, N.D.	BI030	Neuwirth, M.	GN303T	Patel, A.R.	ME302T
Mittal, A.C.	ME034	Newman, Z.L.	MI050	Patel, M.D.	MI031
Mittal, R.	ME033	Neymark, A.	ZO304T	Patel, N.M.	MA002
Mock, D.A.	BE303T	Ng, M.T.	CH302T	Patterson, R.R.	EN006
Moghul, K.F.	CS008	Nguyen, L.H.	ME049	Paulson, C.R.	ZO004
Mohammed, I.M.	ME002	Nguyen, P.Q.	MA003	Paulson, V.A.	BO027
Mohanty, J.F.	CH015	Nguyen, P.T.	EV328T	Pavan, M.P.	MI312T
Mohd. Yusuf, S.Y.	EN322T	Nguyen, T.C.	PH301T	Pavetti, M.A.	MI301T
Moldan, A.J.	BI014	Nguyen, T.D.	PH008	Pechenov, D.V.	EN065
Molina, S.	EV320T	Nieuwsma, J.M.	EA035	Pedersen, L.H.	CH304T
Moller, N.M.	CH304T	Nigmatulina, K.R.	PH024	Pena-Merheb, L.L.	EV322T
Monge, J.J.	BE307T	Noreuil, A.M.	ZO032	Perez, E.X.	BI307T
Mongeau, J.	CS023	Nuest, J.E.	EV035	Perna, M.A.	CS022
Monson, P.G.	EN078	Nyberg, M.H.	EV045	Perri, R.	ME082
Montenegro, J.	MI315T	Nyoto, D.K.	EN323T	Peschel, E.P.	EV066
Montoya, R.J.	MI051	O'Beirne, L.M.	ZO016	Petelin, A.D.	EA304T
Moore, C.N.	BO044	Oas, N.J.	EV021	Pfaff, D.K.	ME027
Morehart, T.J.	ME306T	Oberg, E.N.	MI035	Phalakonphaisan, S.	BO307T
Morgan, J.E.	EV052	Oberlin, N.R.	EV075	Pham, A.V.	MI017
Morgan, J.E.	ME015	Ocasio, L.C.	ME053	Pichler, C.	ME009
Morin, R.M.	EV326T	Odland, J.V.	ME067	Pickett, T.	EV310T
Morley, E.M.	BO303T	Oertli, N.A.	PH032	Pignataro, F.M.	BI305T
Morris, S.M.	BE021	Ogawa, S.	MI313T	Pinyerd IV, C.A.	BO028
Morrison, J.R.	BO049	Ogg, J.L.	EV096	Pirotti, R.P.	EN084
Morrow, M.C.	PH044	Ogunnaike, O.D.	PH046	Pizarro-Colon, J.R.	MA025
Morrow, W.Z.	ZO011	Olmo-Collazo, M.E.	ZO309T	Pollock, A.M.	BO008
Mortensen, K.A.	ME059	Olson, C.	EV091	Polyakov, M.Y.	PH011
Morton, M.J.	EV005	Olson, D.R.	EN311T	Ponsock, A.T.	EV302T
Moses, J.A.	BE009	Olumide, A.	BO031	Poplus, R.L.	EV034
Mottillo, S.	MI058	Olynyk, G.M.	EN077	Potter, L.E.	EN011
Mougey, K.J.	ZO044	Omar, S.A.	CS308T	Powell, K.K.	BI004
Mousa, A.S.	ME085	Onyia, A.C.	EN315T	Price, B.T.	EV315T
Moussazadeh, N.	ME030	Orban, C.M.	PH002	Propst, K.J.	ME013
Moya, R.	EV067	Orellana, L.d.	EN086	Pruett, B.S.	MI026
Mueller, M.	CH046	Ortiz, E.A.	EN038	Pryor, G.D.	CS034
Mukamel, R.E.	PH020	Ortiz, J.E.	ME052	Puri, A.	MI044
Mukhopadhyay, R.	CS033	Ortiz-Sanchez, M.	BI032	Putnam, C.W.	BE008
Mulder, M.L.	EV332T	Osofsky, S.R.	BI314T	Qiu, C.	MA032
Muller, G.C.	BE314T	Osorio-Velez, A.L.	ZO309T	Quesada Araya, A.M.	ZO066
Muren, N.B.	EV029	Ottensmann, S.N.	EN039	Qureshi, Z.A.	BI031
Murphy, A.L.	EN318T	Ou, A.L.	BE024	Rabiej, D.R.	CS026
Murphy, E.V.	BI034	Overcast, M.C.	BO301T	Radcliff, K.K.	BO050

Radmall, N.B.	BO308T	Ruscher, T.H.	PH045	Shin, H.	CS036
Rafes, R.N.	EN026	Ryan, K.L.	MI306T	Shishido, N.K.	ME311T
Rago, A.P.	ZO054	Sabar, A.R.	MA038	Shoichet, R.M.	BI305T
Rajamani, V.V.	BI016	Sadegh, C.	CH014	Shukla, D.	BI025
Ramirez, O.	ZO053	Sakenova, S.Z.	EA304T	Shukla, K.M.	EV078
Ramos, A.E.	ZO312T	Salauyou, A.	PH041	Siang, L.K.	CS038
Ramos, R.	EN304T	Salnikov, P.	CS307T	Sierra, S.L.	EV316T
Ranganathan, A.S.	ME305T	Sam, K.H.	EV331T	Siewiorek, G.M.	EN049
Ranney, J.D.	BI019	Sanchez, C.	EV087	Simone, C.G.	EA007
Rapoport, E.J.	EN027	Sanchez, M.C.	CH045	Singletary, E.C.	ZO045
Rasmussen, K.L.	EA302T	Sand, M.W.	ME307T	Sinha, N.N.	PH033
Raval, Z.S.	BI013	Sanders, T.R.	EN036	Skraastad, R.B.	ZO069
Reddy, B.G.	EN070	Sandness, C.M.	BO304T	Slenes, R.d.	BE039
Rees, J.A.	MI002	Sanford, K.L.	BO042	Sloane, C.M.	BE010
Resick, G.T.	BO060	Santiago, A.L.	EV062	Smart, K.E.	EV082
Reule, R.B.	MI027	Santiago, J.	BE308T	Smith, A.D.	EV115
Reulet, J.E.	EV312T	Santiago Perez, N.	MI309T	Smith, A.N.	BI312T
Reyes, R.C.	EV086	Santillan, O.	EN313T	Smith, J.	PH019
Rhodes, T.R.	BE310T	Santini, S.	EV321T	Smith, M.M.	EN018
Richardson, A.C.	BO002	Santos, J.I.	BO055	Smith, M.K.	EN090
Richardson, M.E.	PH006	Sarason, D.B.	EN004	Smolow, E.F.	EV033
Riddle, K.L.	CH026	Satriano, M.B.	MA015	Sneider, M.I.	EV332T
Riddle-Ford, S.J.	EV307T	Savage, J.M.	ME304T	Snell, S.C.	EA027
Riggs, K.L.	EV050	Savory, S.A.	ZO025	Snyder, J.M.	BE303T
Riley, E.	PH010	Scheffer, M.L.	MA034	Snyder, J.A.	ME079
Rinehart, J.L.	MI057	Schelle, M.J.	EV008	Soller, K.W.	ME304T
Rivera, C.G.	EV063	Schley, J.P.	MI015	Solorzano, R.M.	ME022
Rivera, E.M.	PH306T	Schmaeschke, F.	CS052	Song, H.F.	MA028
Rivera, M.	BI037	Schmidt, P.	BI059	Sorenson, S.M.	MI053
Rivera, N.B.	GN013	Schneider, N.L.	BO046	Soria, G.A.	EV334T
Rivera-Medina, M.	BE307T	Schraeder, C.W.	CS304T	Soroceanu, A.	ME076
Rivera-Mercado, C.	BE308T	Schreiner, E.K.	BI308T	Soto, C.	BE308T
Rivera-Sosa, E.J.	EV058	Schroeder, C.A.	MA030	Sowani, A.K.	EV324T
Robbins, A.M.	EV301T	Schuette, P.G.	BO010	Sparrow, E.B.	EV109
Roberts, B.L.	EN002	Schuh, S.T.	BO015	Speidel, T.J.	CS045
Roberts, M.C.	ME048	Schulte, L.E.	ZO027	Spence, D.B.	CH044
Robertson, C.L.	GN015	Schwartz, J.G.	ME026	Spratt, Z.A.	BE007
Robertson, K.A.	CH041	Schwarz, K.A.	BO004	Sprehn, D.J.	MA035
Roderick, R.J.	BO018	Schwinger, J.H.	EN061	Srisawad, S.	BO307T
Rodriguez, D.	ME046	Seda, R.	BI307T	St. Pierre, J.N.	BO032
Rodriguez, D.L.	GN305T	Sein, P.L.	GN010	Stainken, C.E.	MI042
Rogers, C.J.	MI314T	Semmes, A.J.	ME042	Stanislaw, R.C.	MI045
Rogers, R.L.	CH020	Serrano, B.	EN313T	Starr, P.N.	MI307T
Rollason, J.D.	CS020	Shade, L.E.	EN001	Stauffer, R.H.	EV326T
Roller, C.L.	EV080	Shaffner, R.H.	ME302T	Steinberg, J.W.	ZO002
Roques, N.	EN302T	Shah, A.A.	EN024	Stemm, M.H.	MA304T
Rose, C.Z.	ZO017	Shakoor, N.	MI034	Stern, A.R.	GN005
Rosenberg, R.L.	ZO039	Shamovsky, O.I.	CH040	Stinson, Z.S.	PH303T
Rosene, E.E.	ME010	Shamsuarov, A.G.	BI309T	Stocking, J.B.	BE037
Rosenfeld, H.J.	MA302T	Shanbhag, N.M.	BI029	Stone, M.R.	CS028
Ross, N.M.	BE020	Shearin, A.L.	ZO055	Stovall, J.L.	EV048
Rossman, P.D.	EV099	Shedd, B.P.	EN072	Stratton, E.C.	ZO050
Rothacker, M.	EV006	Shedletsky, J.J.	CS001	Suber, M.H.	MI004
Rothschild, J.M.	CS030	Shelby, S.L.	EV330T	Sun, J.J.	MA019
Rowe, D.J.	ZO313T	Shen, D.	EV309T	Sundaram, S.	BI035
Rowland, J.M.	MI056	Shepherd, R.F.	EV105	Suri, A.B.	BI015
Roy, J.M.	EN314T	Sherrill, R.E.	EA015	Sutterlin, E.R.	BE305T
Rubin, J.E.	GN001	Sherwood, K.E.	MI005	Svaricheuski, M.	CS042
Ruby, B.	CH023	Shieh, L.	MI305T	Swann, T.N.	BO006

Swanson, K.M.	CH042	Vaculin, L.D.	ME055	Wilson, J.E.	PH305T
Sweeney, E.J.	BE311T	Valdez, I.C.	EV107	Wilson, R.A.	EA029
Sweeney, T.W.	EA010	Valla, J.M.	ZO040	Wilwert, J.L.	MI316T
Sweetman, S.R.	EV001	Vandenbark, J.R.	EV116	Wissler, J.A.	ME019
Szerlip, D.J.	ME012	VanDyke, P.	EV310T	Wohl, A.R.	BO057
Szymanska, E.	BI039	Vanelli, S.M.	EV090	Wolfe, J.A.	PH050
Tagliari, C.	BE314T	Varela, E.V.	EV032	Wolff, S.E.	BE301T
Take, T.K.	ZO065	Vasudeva, R.S.	EV088	Wong, A.	ZO303T
Tang, H.K.	MA041	Vaughn, R.C.	ZO046	Wong, A.I.	CS016
Tarjan, S.	ME069	Vazquez, R.E.	BE027	Wood, E.B.	EN019
Tarruco, F.J.	EN305T	Vazquez-Claudio, W.	EV064	Woods, A.E.	EN043
Tasca, A.W.	EN319T	Velasquez, F.C.	BI022	Wu, C.H.	EN318T
Tatum, C.L.	ME004	Velez, C.D.	MI030	Wyler, L.S.	ME032
Taylor, A.B.	ZO047	Velez Cruz, E.	EN310T	Wyndham, A.N.	ZO015
Taylor, B.C.	EV028	Velez-Del Rosario, L.G.	EV322T	Yadon, J.	BO306T
Taylor, J.E.	EA021	Vertes, E.L.	ZO059	Yama, R.K.	ZO302T
Taylor, R.A.	ME310T	Vietti, L.A.	EA301T	Yamaguchi, H.	MI313T
Taylor, R.E.	ME062	Vrba, J.J.	CS301T	Yanamadala, V.	EV085
Taylor, T.M.	EN046	Wacker, D.H.	MA307T	Yao, Z.	MA010
Teran, G.E.	BE045	Wade, D.L.	MI303T	Yazzie, K.T.	ME081
Tesch, M.A.	MA011	Wakayama, T.M.	ZO302T	Ybrahim, S.M.	GN305T
Tescher, J.J.	BI060	Waldman, J.B.	BE013	Ye, Z.	EV308T
Tewksbury, C.M.	EA026	Waldron, A.J.	ME017	Yeh, C.Y.	EA303T
Thayne, C.E.	MI054	Walkiria, M.B.	MA306T	Yohe, L.V.	MI308T
Thiessen, K.A.	GN004	Wallace, M.E.	PH027	Yong, S.Q.	BI311T
Thomas, A.E.	ZO014	Waller, R.D.	MI036	Young, G.J.	PH009
Thompson, C.E.	EV030	Waller, T.L.	ME309T	Young, J.M.	ME308T
Thompson, R.P.	MI047	Walton Jr., D.L.	ME018	Young, W.C.	PH003
Thottumkara, A.P.	CH009	Wan, J.W.	ME077	Yu, L.	CH021
Tidwell, A.E.	EA014	Wan Mohammad, W.N.	EN322T	Yuan, Y.T.	CH005
Tierney, S.A.	BE311T	Wang, A.F.	BI051	Yue, W.	EV309T
Tishchenko, S.A.	MA031	Wang, D.C.	CH031	Yun, L.F.	BI064
Todd, J.R.	EN003	Wang, E.M.	ME041	Yurkoski, M.J.	EN021
Tofiga, D.S.	CH037	Ward, T.L.	EV095	Yutzy, K.A.	EV068
Tollander, H.A.	BE030	Watanabe, K.J.	BI020	Zaleski, M.T.	BO009
Tom, L.K.	ZO038	Watson, T.B.	BE017	Zalo, A.P.	EN005
Tomm, B.C.	EV305T	Weiner, C.N.	BO036	Zanotto, A.L.	ZO061
Tonioli, J.L.	EV059	Welch, K.L.	EV311T	Zarowski, A.W.	ZO023
Tooker, N.T.	EV037	Werbeck, J.L.	EV047	Zeglin, S.B.	EV051
Toro, L.	ZO058	Werner, H.N.	BE310T	Zelevnik, J.A.	PH025
Torres, R.	EN308T	White, E.M.	ZO036	Zelkowitz, A.M.	ME006
Tow, C.Y.	EN303T	White, M.C.	MA005	Zhang, Y.	EV308T
Trammel, J.M.	MI314T	White, S.A.	EV039	Zhen, X.W.	BI311T
Trana, J.S.	MA039	Whitfield, M.E.	EN087	Zhou, Y.	EV308T
Treib, P.A.	EN054	Whitman, T.A.	MA006	Zhu, Y.	CS012
Treitel, J.A.	EN089	Wichs, D.	MA018	Zinger, L.	EA018
Troyer, R.L.	EV302T	Widland, T.L.	CS308T	Zou, J.Y.	MA021
Tubbs, C.D.	BO302T	Wilch, E.M.	ZO311T	Zuniga Oliva, A.M.	BE306T
Tucker, J.S.	BO037	Wilhoit, S.M.	EV046	Zychinski, D.	MI019
Tung, F.C.	EN045	Wilkes, K.D.	CH303T		
Turner, C.H.	EN060	Willers, B.	CS301T		
Tweh, B.P.	CH035	Williams, E.R.	EV018		
Twichell, N.P.	ZO057	Williams, L.S.	MI014		
Tynes, S.J.	EV009	Williams, P.M.	GN002		
Tzvetanov, I.T.	EN013	Williams, R.V.	MI316T		
Udit, S.	BE023	Williams, S.A.	BE031		
Umaceny, P.	BE313T	Willis, N.A.	PH040		
Underwood, E.E.	EN015	Wilson, A.M.	EV325T		
Usbeck, K.F.	EV077	Wilson, J.T.	ZO048		

# FINALIST STATISTICS

CATEGORY	TOTAL FINALISTS	PREV ISEF	-- SEX --		----- GRADE -----			
			M	F	9	10	11	12
Behavioral and Social Sciences	75	9	27	48	8	21	11	35
Biochemistry	94	22	38	56	3	18	32	41
Botany	82	12	42	40	12	28	16	26
Chemistry	55	8	31	24	4	7	19	25
Computer Science	72	17	69	3	4	13	15	40
Earth and Space Sciences	47	9	21	26	3	10	14	20
Engineering	143	20	100	43	15	26	50	52
Environmental Sciences	191	44	86	105	13	40	62	76
Gerontology	29	5	10	19	6	6	8	9
Mathematics	55	10	41	14	5	14	17	19
Medicine and Health	106	26	46	60	8	23	35	40
Microbiology	92	20	44	48	8	24	25	35
Physics	63	7	46	17	7	13	21	22
Zoology	101	12	48	53	13	18	33	37
Team Project Finalists*	373	48	217	156	24	87	125	137
---- TOTAL ----	1205	221	649	556	109	261	358	477

\* There are 172 total team projects.