



**The Intel International Science and Engineering Fair**

## **Finalist Directory**

**Phoenix, Arizona  
May 8-13, 2005**

**Science Service  
1719 N Street, N.W.  
Washington, DC 20036  
Phone: 202/785-2255  
Fax: 202/785-1243  
<http://www.sciserv.org>  
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## TABLE OF CONTENTS

Acknowledgments and Award Sponsors

Behavioral and Social Sciences .....	1
Biochemistry .....	3
Botany .....	5
Chemistry .....	8
Computer Science .....	10
Earth Science.....	12
Engineering .....	13
Environmental Science.....	18
Mathematics .....	23
Medicine and Health .....	25
Microbiology.....	29
Physics.....	31
Space Science.....	33
Zoology .....	34
Team Projects.....	36
Affiliated Fairs .....	47
Alphabetical List of Finalists .....	66
Finalist Statistics .....	75

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 Phoenix Host Committee, its financial supporters, and volunteers for their dedication and hard work. In addition to the **Intel Foundation**, five other organizations are presenting **Grand Awards**:

**Agilent Technologies presents Biochemistry**  
**Shell Oil presents Earth Science**  
**Ricoh presents Environmental Science**  
**Science News presents Mathematics**  
**Merck Research Laboratories presents Medicine and Health**  
**Ricoh 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.

Special Award Organizations

Acoustical Society of America	International Society for Optical Engineering
ADA Foundation	MILSET
Agilent Technologies	Mu Alpha Theta, The National High School and Two Year College Mathematics Honor Society
Albany College of Pharmacy of Union University	National Academy of Neuropsychology
American Association for Artificial Intelligence	National Aeronautics and Space Administration
American Association for Clinical Chemistry	National Anti-Vivisection Society
American Association of Physics Teachers and The American Physical Society	National Collegiate Inventors Alliance/ The Lemelson Foundation
American Astronomical Society and The Astronomical Society of the Pacific	National Ground Water Association
American Chemical Society	National Taiwan Science Education Center
American Committee for the Weizmann Institute of Science	New College of Florida
American Geological Institute	NOAA - Office of Education and Sustainable Development
American Indian Science and Engineering Society	North American Benthological Society
American Intellectual Property Law Association	Office of Naval Research on behalf of the U.S. Navy and Marine Corps
American Mathematical Society	Oregon State University
American Meteorological Society	Patent and Trademark Office Society
American Physiological Society	Ricoh
American Phytopathological Society	Robert Luby, Jr. of IBM
American Psychological Association	Stockholm International Youth Science Seminar (SIYSS)
American Society for Microbiology	Showboard, Inc.
American Society of Pharmacognosy	Sigma Xi, The Scientific Research Society
American Speech-Language-Hearing Association	Society for Technical Communication
American Statistical Association	Society of Environmental Toxicology and Chemistry
American Veterinary Medical Association	Society of Exploration Geophysicists
ANATEK Electronics, LLC	U.S. Air Force
Ashtavadhani Vidwan Ambati Subbaraya Chetty (AVASC) Foundation	U.S. Army
Association for Computing Machinery	U.S. Coast Guard
Association for Women Geoscientists	United Technologies Corporation
Bureau of Reclamation/U.S. Department of the Interior	University of Sciences in Philadelphia
China Association for Science and Technology (CAST)	Vacuum Technology Division of the American Vacuum Society
Coalition for Plasma Science (CPS)	
Department of Homeland Security	
Drexel University	
Eastman Kodak Company	
Endocrine Society	
European Union Contest for Young Scientists	
Florida Institute of Technology	
Geological Society of America	
IEEE Computer Society	
IEEE Foundation	
Indiana University	
Intel Foundation	
International Amateur-Professional Photoelectric Photometers	



# 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** **Correlations Between Environment, Classes, and Stress and the Effect It Has on High School Students**  
Nava E. Cohen, 17, Senior, F. W. Springstead High School, Spring Hill, Florida, T: Craig Gates
- BE002** **Music and Studying: Is There a LINK? A Three-Year Study: A Comparison of Special Education and General Education Students**  
Stephanie Nicole Sickels, 16, Junior, Okeechobee High School, Okeechobee, Florida, T: Wendy Reister
- BE003** **The Psychological Effects of the Media on Body Image and Self Esteem**  
Jillian Meredith Phipps, 17, Senior, Lake Brantley High School, Altamonte Springs, Florida, T: Nancy Johnson
- BE004** **Can Simulated Robotic Behaviors Elicit Responses from *Anolis sagrei*?**  
Thomas Kemerer Bunbury, 18, Senior, Lakewood High School, Saint Petersburg, Florida, T: Paul H. Dickman
- BE005** **Memorization, Duration, and Motivation**  
Cristina Maria Canfield, 17, Junior, Crawford Mosley High School, Lynn Haven, Florida, T: Judy Parker
- BE006** **The Effects of Sexually Appealing Images on Cognitive Processing Speed**  
Devin Michael Elting, 17, Junior, James Bicknell Castle High School, Kaneohe, Hawaii, T: Sandra Warriner Linskey
- BE007** **Pseudomemories: Can We Really Believe What We Remember?**  
Paige Nicole Paxton, 16, Junior, The Villages High School, The Villages, Florida, T: Emily Malec Keeler
- BE008** **Reactions**  
Kelci Noelle Mynhier, 16, Sophomore, Manatee High School, Bradenton, Florida, T: Patricia Lou Zalo
- BE009** **Does Visual, Auditory, or Gustatory Perception Have the Greatest Affect on a Supertaster, Mediumtaster, or a Nontaster? A Fifth Year Study**  
# Jessica Caroline Stanton, 15, Sophomore, Columbia High School, Lake City, Florida, T: Charleen Kelley
- BE010** **Comparative Analysis of the Health Related Quality of Life of Breast and Prostate Cancer Patients, Phase II: Treatment Impact and Management Issues**  
# Antonio Javier Pietrantoni, 16, Junior, Academia del Perpetuo Socorro, Miramar, Puerto Rico, T: Michele Laura Ruiz
- BE011** **Quantitative EEG as an Identifier of Learning Modality**  
# Ilang Mae Guiroy, 17, Senior, The York School, Monterey, California, T: Linda M. Lee
- BE012** **Video Games: Friend or Foe?**  
Peter David Allen, 17, Senior, York Catholic High School, York, Pennsylvania, T: Matt Euclide
- BE013** **The Peer Pressure Effect: A Search for Greater Understanding**  
# Cristina Maria Costantini, 16, Sophomore, University School of Milwaukee, Milwaukee, Wisconsin, T: Robert M. Heun
- BE014** **What Do You Think?**  
Peter Michael Bishara, 16, Junior, Dr. Ronald E. McNair Academic High School, Jersey City, New Jersey, T: Jeremy Richard Stanton
- BE015** **The German Dialect in the Former Colony of Baumschneis**  
Bruno Gasparotto Ponne, 17, Junior, Fundacao Escola Tecnica Liberato Salzano Vieira da, Novo Hamburgo, Rio Grande do Sul, Brasil, T: Rogeria Pacheco
- BE016** **Djuha's Sleeve: A Study on the Reliability of the Oral Tradition**  
Katie Lynn Thompson, 14, Freshman, Saint Clair High School, St. Clair, Minnesota, T: Melissa Rose Marzinske
- BE017** **The Effects of Chronological Age on Teenage Decision Making**  
Ashley Sandra Kroubetz, 16, Sophomore, Lake Crystal Wellcome Memorial Secondary School, Lake Crystal, Minnesota, T: Jodi Lynn Kopischke Hicks
- BE018** **Liar, Liar, Your Stomach's on Fire**  
Trisha Satya Pasricha, 16, Sophomore, Clear Lake High School, Houston, Texas, T: Hanaa Sallam
- BE019** **Pitches Go Up and Down, Part Two**  
Cynthia Alejandra Juraidini, 14, Freshman, Homer Hanna High School, Brownsville, Texas, T: Liz Valdez
- BE020** **A Statistical Evaluation of Northern Paiute Rock Art from the Guano Valley Region**  
Grant Jeffery Snitker, 16, Junior, McNary High School, Keizer, Oregon, T: Gary Miller
- BE021** **Is a Picture Worth a 1000 Lives?**  
Cory Daniel Cox, 16, Sophomore, Charlottesville High School, Charlottesville, Virginia, T: Rick A. Wellbeloved-Stone
- BE022** **The Bi-Orbital Rotational Therapy Swing: A New Hope for Children with ADHD**  
# Elizabeth Anne Baker, 16, Junior, University High School, Tucson, Arizona, T: Gene D. Woon
- BE023** **Standard Functional Magnetic Resonance Imaging Protocol for the Study of Neuronal Responses to Food Stimuli in Humans**  
Daniel E Katz, 18, Senior, Ossining High School, Ossining, New York, T: Valerie Holmes
- BE024** **Pisco: A Peruvian Cultural Heritage**  
Paula Mariana Zambrano, 16, Senior, Centro Educativo Parroquial San Antonio de Padua, Jesus Maria, Lima, Peru, T: Persida Gomez
- BE025** **Origins of Mass Polarization in the Tucson Electorate**  
# William Amado Green, 16, Junior, Rio Rico High School, Rio Rico, Arizona, T: Teresa Potter
- BE026** **Rehteaed Aphlaebt Suop**  
Kayelon Lee Easterday, 17, Junior, Eustis-Farnam Public Schools, Eustis, Nebraska, T: Dan Widick
- BE027** **Comparative Study on the Effects of Attractiveness**  
Daniel Tate Verwholt, 17, Senior, Hilton Head Preparatory School, Hilton Head Island, South Carolina, T: Tina Webb-Browning
- BE028** **Teacher Perception of Student Attitude Towards Learning**  
Brett Tyler Figus, 18, Senior, Saint Charles West High School, St Charles, Missouri, T: Joan M. Twillman
- BE029** **The Correlation Between Teacher and Student Multiple Intelligences and the Effects on Student Classroom Performance**  
Johanna Esther Dela Cruz, 17, Senior, Kapolei High School, Kapolei, Hawaii, T: Naidah Gamurot
- BE030** **If You Drink, THINK! Don't Go for a Spin!**  
# Victor Edward Cross, 17, Senior, Central High School, Phenix City, Alabama, T: Michelle Eastridge
- BE031** **We Got the Beat**  
Hubert Montoya, 16, Junior, Andrews High School, Andrews, Texas, T: Vickie J. Gardner

- BE032 Reason and Sentiment: The Self-Representation of Dehumanization in Literature**  
Taly Sister, 17, Junior, Escola Brasileira Israelita Chaim Nachman Bialik, Sao Paulo, Brasil, T: Luana Chnaiderman de Almeida
- BE033 Unhealthy Eating Habits Intensifies Menstrual Cycle Discomfort in Northeastern Puerto Rican Women: A Portrait of Latin American Women**  
Tashay Gonzalez-Ortiz, 16, Junior, Colegio Sonifel, Fajardo, Puerto Rico, T: Angel L. Diaz-Rosario
- BE034 The Importance of the Emotional Intelligence in the Life of a Human Being**  
Michael Gabriel Rodriguez, 15, Sophomore, Jose Gautier Benitez High School, Caguas, Puerto Rico, T: Lourdes Hernandez
- BE035 The Effect of Classical Music in Reading Comprehension with Tenth Graders**  
Esther Morales, 17, Senior, Ramon Quinones Medina High School, Yabucoa, Puerto Rico, T: Carmen Milagros Rivera
- BE036 The Influence of Preferential Music on the Retention of Information**  
Sarah Renee Kropf, 17, Senior, Seneca High School, Seneca, Missouri, T: Shannon Diahann Sample
- BE037 # Prototype for Autonomy: Pathway for the Blind**  
Ameen Abdulrasool, 18, Senior, Lane Technical High School, Chicago, Illinois, T: Michael Robles
- BE038 Absolute Pitch: Human Accuracy in the Identification of Auditory Tones**  
Reva Lee Stidd, 17, Senior, Macomb High School, Macomb, Illinois, T: Thomas Tjark Johnson
- BE039 "My Brother's Keeper": Well-Being and Relationship Effects of Having a Sibling with Autism**  
Christina Marie Amoroso, 17, Senior, Lawrence High School, Cedarhurst, New York, T: Stephen Jude Sullivan
- BE040 Sounds into Syllables: A Teaching System for Autistic Children**  
Kayla Marie Cornale, 15, Sophomore, Assumption Roman Catholic Secondary School, Burlington, Ontario, Canada, T: Craig Roberts
- BE041 The Effects of External Loans on the Economic Performance of Latin American Countries: An Integrated Statistical Approach**  
Daniel Nikbakht, 16, Junior, Half Hollow Hills High School West, Dix Hills, New York, T: Chrysi Notskas
- BE042 Dominance Hierarchies Among Crayfish**  
Joseph James Mammone, 18, Senior, American Fork High School, American Fork, Utah, T: Don Curtis Bastian
- BE043 Edge Integration in Human Brightness Perception**  
Jonathan Yong An, 19, Senior, Emerald Ridge High School, Puyallup, Washington, T: Michael Rudd
- BE044 A State by State Analysis of the Benefits Derived from State Lottery Programs**  
Vanessa Elizabeth Esch, 17, Senior, Skyview High School, Vancouver, Washington, T: Carol Ramsey
- BE045 The A "maze"ing Sleep Deprived Mice: A Study of the Effects of Sleep Deprivation**  
Valerie Renee Brak, 17, Junior, Navasota High School, Navasota, Texas, T: Cody Satterfield
- BE046 Social Spacing in Juvenile African Weakly Electric Fish, *Mormyrus rume proboscirostris* (Teleostei, mormyridae)**  
Samantha Allyne Breakstone, 17, Senior, John F. Kennedy High School, Bellmore, New York, T: Peter Moller
- BE047 A New Strategy for the Educational Latin-American Change - @cepromul.caf**  
Karina Maribel Rivas Rodriguez, 15, Freshman, Trujillo, Peru, T: Jessie Gina Minchola
- BE048 The Effect of the "Learning Breakthrough Program" on Cognitive Performance**  
Kaitlin Ashley Graff, 15, Freshman, Henry Clay High School, Lexington, Kentucky, T: Steven Joseph Mangine
- BE049 Crystallized Intelligence: Beneficial for Memory Performance in the Elderly**  
Menaka Kaur Dhand, 17, Senior, Spanish River Community High School, Boca Raton, Florida, T: Susan Mary Devick
- BE050 An Examination of the Effects of 5-Methoxy-N,N-Di(iso)propyltryptamine Hydrochloride on Neuropsychological Development in *Rattus norvegicus***  
Melissa C. Selinger, 18, Senior, Wellington High School, Wellington, Florida, T: Charlsa Ann Henderson
- BE051 Making Out the Media: Chomsky's Propaganda Model**  
William Durland Watson, 18, Senior, Arkansas School for Mathematics, Science, and Arts, Hot Springs, Arkansas, T: Marty Slaughter
- BE052 The Psychopharmacological Effects of Antidepressants on *Procambarus clarkii***  
Nissa Leigh Schmidt, 18, Senior, Merino High School, Merino, Colorado, T: Penny Propst
- BE053 The Evolution of Written Language**  
Anna Elizabeth Stalker, 14, Freshman, The Altamont School, Birmingham, Alabama, T: Tessa Hope Magnuson
- BE054 Tune into Touch! Do We Rely on Our Other Senses Too Much? Tactile Discrimination of Stimuli**  
Alison Rae Ficek, 15, Sophomore, Trinity High School, Dickinson, North Dakota, T: Bradly Jay Foss
- BE301T Males vs. Females: Perception of a Boy/Girl Relationship**  
John David Johnson III, 17, Junior  
Kayo Mckinley Johnson, 17, Junior  
Earth LeTrae Robinson, 18, Senior  
Greenville-Weston High School, Greenville, Mississippi  
T: Jessie M.S. Shaw
- BE302T Skin Deep**  
Hanna Bliden, 14, Freshman  
Miraya G Berke, 14, Freshman  
Nikki Dance, 14, Freshman  
Soquel High School, Soquel, California  
T: David Casterson
- BE303T Gender Determination by Thumbprints**  
Shannon Marie Cassidy, 15, Freshman  
Meryl Adelman Hulteng, 15, Freshman  
Wilsonville High School, Wilsonville, Oregon  
T: Holly Rayliene Chidsey-Gardner
- BE304T Who Has Better Coordination: Musicians or Athletes?**  
Jessica Lynn Reile, 17, Junior  
Danielle Marie Strausbaugh, 17, Junior  
Upper Sandusky High School, Upper Sandusky, Ohio  
T: Teresa J. Harris
- BE305T Action-Research Environmental**  
Nelson Beuter Junior, 18, Senior  
Priscila de Camargo Nunes, 18, Senior  
Fundacao Escola Tecnica Liberato Salzano Vieira da, Novo Hamburgo, Rio Grande do Sul, Brasil  
T: Dalva Ines de Souza
- BE306T Al-kuhl: Adolescents' Alcohol Abuse Consequences**  
Marcelo Claudio Lazza, 16, Senior  
Violeta Soledad Broggi, 17, Senior  
Normal Superior Olegario Victor Andrade, Gualeguaychu, Entre Rios, Argentina  
T: Stella Maris Lopez Squeff
- BE307T Education and H.D.I. in Romang**  
Mauro Isaac Sanchez Zalazar, 18, Senior  
Emir Gabriel Espinoza, 17, Senior  
Adriel Yamil Machin, 17, Senior  
High School NO. 9314, Romang, Argentina  
T: Alfredo Pedro Lovato
- BE308T Time to Get Up: Does Sleep Deprivation Affect the Frontal Lobe of the Brain?**  
Jose David Lopez, 16, Junior  
Mayra Balderrama Martinez, 16, Junior  
Andrews High School, Andrews, Texas  
T: Vickie J. Gardner
- BE309T Bullying in Schools: The Emotional and Psychological Killer**  
Erin M. Sanderson, 17, Junior  
William Pinnock, 18, Senior  
Malta High School, Malta, Montana  
T: Marida J. Demarias

- BE310T** **The Effect of the Rhythm of Background Music on Iconic Memory and Two Physiological Indicators on 15-17 Year-Old Students**  
# Luis Abner Lopez-Febres, 17, Senior  
Priscilla Martinez-Rosario, 17, Senior  
Dr. Gilberto Concepcion de Gracia High School, Carolina, Puerto Rico  
T: Maritza Garcia-Arroyo
- BE311T** **The Effect of Age and Gender on Cognition Rates: The Stroop Effect**  
Saima Akheel Zaman, 16, Junior  
Reema Farasat Chaudhry, 17, Junior  
Potomac Senior High School, Dumfries, Virginia  
T: Christopher S. Wakefield
- BE312T** **The Effects of Birth Order on Personality Traits in Twins**  
Brittany Alison Koffer, 15, Sophomore  
Rachel Elyse Koffer, 15, Sophomore  
Chantilly High School, Chantilly, Virginia  
T: Latha Shankar
- BE313T** **Pluricreamathematics Games**  
Caroline Elizabeth Nieto- Polo Abanto, 15, Freshman  
Edinson Ivan Perez Castaneda, 15, Freshman  
Colegio Militar Gran Mariscal Ramon Castilla, Trujillo, Peru  
T: Nolberto Arniado Leyua Aguilar
- BE314T** **Personality Learns**  
McKinzie Rhea Craig, 17, Senior  
Jessie Marshall, 17, Senior  
Christian Academy of Louisville, Louisville, Kentucky  
T: Tina Gibson
- BE315T** **Detecting the Aggregation Pheromone of *Armadillidium vulgare***  
# Clara Grace Watson, 17, Junior  
# Jason Lavar Anderson, 18, Senior  
Grenada High School, Grenada, Mississippi  
T: Thomas Jackson Holliday

## BIOCHEMISTRY

### GRAND AWARDS PRESENTED BY: AGILENT TECHNOLOGIES

- BI001** **Poison Stimulation: The Effects of Sodium Benzoate on the Reproductive Patterns of *Choanephora cucurbitarum* and *Mucor hiemalis***  
Anna Aleksandrova, 17, Junior, Lake Brantley High School, Altamonte Springs, Florida, T: Susan N. Behel
- BI002** **Ascorbic Acid Induced Enhancement of Laminin in Schwann Cells: Application for Peripheral Nerve Regeneration**  
# Yahya Maqsood Mohammed, 16, Junior, Okaloosa-Walton CC Charter High School, Niceville, Florida, T: Philip Heise
- BI003** **How Long Will Human Embryonic Kidney Cells Express a Transiently Transfected Gene?**  
Bryan Christopher Bardin, 18, Senior, Lakewood High School, Saint Petersburg, Florida, T: Paul H. Dickman
- BI004** **The Role of Paxillin Binding in the Phosphorylation of Merlin, the Neurofibromatosis Type II Tumor Suppressor**  
Poonam Kirti Kalidas, 18, Senior, Lake Highland Preparatory School, Orlando, Florida, T: Judith Faith Legault
- BI005** **Abp1, a Homologue of the Human CENP-B Protein, Is Required for Efficient Initiation of DNA Replication in the Fission Yeast *S. pombe***  
# Cristina Victoria Fernandez, 18, Senior, Pine Crest School, Ft. Lauderdale, Florida, T: Barbara Grosz
- BI006** **Effect of Increased Fructose-2,6-Bisphosphate on the Akt Levels of 293 Cells**  
Kyrstin Timara Underbakke, 17, Junior, Maranatha Christian Academy, Brooklyn Park, Minnesota, T: Kristine Annette Bergkv

- BI007** **Animal Attraction: To What Extent Do Demographic Factors Predict a Female Human's Ability to Detect Male Human Pheromones?**  
Kyrie K Bourgeois, 16, Sophomore, Lutchter High School, Lutchter, Louisiana, T: Matt T. Dornier
- BI008** **Thiolated Gelatin Nanoparticles: A Novel Approach for Intracellular Delivery in Gene Therapy and Drug Delivery**  
### Joline Marie Fan, 17, Senior, Upper Arlington High School, Upper Arlington, Ohio, T: Laura Brennan
- BI009** **Understanding the Physiological Pathway of Homocysteine**  
Rafi Ridwan Kazi, 16, Junior, Little Rock Central High School, Little Rock, Arkansas, T: Annice Floyd Steadman
- BI010** **Dangers of Drinking: The Effects of Alcohol in PC-12 Cultured Cells**  
Heather Kay Ali, 15, Sophomore, Fayetteville Christian Academy, Fayetteville, Arkansas, T: Pat Robert Brinye
- BI011** **Simultaneous Detection of *E. coli* O157:H7 Toxin Genes by Nucleic Acid Sequence-Based Amplification**  
# Jennifer Jing Huang, 17, Junior, Oak Grove High School, Hattiesburg, Mississippi, T: Teresa Sappington
- BI012** **A Study of the Medicinal Value of *Symphytum officinale* (Comfrey Root) on the Growth of *Lumbriculus variegates***  
# Alix Beth Stelly, 17, Senior, Catholic High School, New Iberia, Louisiana, T: Donald Voorhies
- BI013** **Autophagic Mediated Cell Death in Glioblastomas**  
Shreya Gundavaram Rao, 17, Senior, Lecanto High School, Lecanto, Florida, T: Ronald Worthington
- BI014** **Environment-friendly Mold Retardant: Ancient Chinese Herbal Medicine in Modern Life**  
Ka Yan Man, 19, Senior, Skh Li Ping Secondary School, Hong Kong, Region of China, T: Wai Cheong Lo
- BI015** **The Effect of Natural Antioxidants on Longevity and Oxidative Stress Response in Genetically Suppressed *C. elegans***  
Jasdeep Singh Mangat, 17, Senior, Keystone School, San Antonio, Texas, T: Charles Scott Maderer
- BI016** **Multiplex Tagging to Understand Ribosomal Biogenesis**  
Mary Katherine Germino, 17, Junior, Immaculata High School, Somerville, New Mexico, T: Sr. Mary Ann Besitka
- BI017** **Resveratrol Induces Apoptosis and Inhibits the Cell Growth of Neuroblastoma, Endometrial and Human Leukemia Cells**  
# Quintisha Marie Walker, 17, Junior, Saginaw Arts & Sciences Academy, Saginaw, Michigan, T: Mathew Miller
- BI018** **Biochemical Characterization of the Fire Retardant Properties of *Medicago sativa* (Alfalfa): An Alternative to an Environmental Sustainable Development**  
Maria Del Mar Torres-Aviles, 14, Freshman, Colegio de la Salle, Bayamon, Puerto Rico, T: Wanda I. Aviles
- BI019** **The Effects of As205 on the DNA of *Equus caballus*: A Second-Year Study**  
Jennifer Erin Gutman, 15, Freshman, Mount de Chantal Visitation Academy, Wheeling, West Virginia, T: Grethe Lindemann
- BI020** **Effect of Hypoxia on Viability of Cultured Cells of the Renal Tubular Epithelium**  
Yevgen Yuri Sautin, 14, Freshman, Eastside High School, Gainesville, Florida, T: Donna Harrison
- BI021** **Antioxidant Activity of Dietary Supplements Determined by Radical Scavenging and Catalase Activity**  
Megan Elizabeth McKay, 16, Sophomore, South Pemiscot High School, Steele, Missouri, T: John David Walls
- BI022** **Quantitative Analysis of PicoGreen and Hoechst 33258 Binding Discrepancies to Animal, Phage and Plant DNA**  
Kristina Yifei Yang, 17, Senior, Montgomery Blair High School, Silver Spring, Maryland, T: Glenda Torrence
- BI023** **A Study of Total Phenolic Content and Antioxidant Property of *Camellia sinensis***  
# Joo-Hye Park, 18, Senior, Timber Lake High School, Timber Lake, South Dakota, T: Louise Ann Lindskov
- BI024** **Detection of Transgenic Peptide Cecropin B in a Model Plant *Arabidopsis***  
Sarah Elizabeth Bertrand, 16, Sophomore, Saint Joseph's Academy, Baton Rouge, Louisiana, T: Linda Kerr Messina

- BI025** **Seasonal Variations in Associated Pollen Proteins from Local Bee (*Apis mellifera*) Honey**  
# Cody J. Falgoust, 18, Senior, Saint James High School, St. James, Louisiana, T: Kermit J. Gauthreaux
- BI026** **Using Absorbance Difference Spectroscopy to Study Interactions of Selected Inhibitors on Breast Cancer Molecular Target Cytochrome P450 Aromatase**  
Jonathan Lloyd Priester, 17, Junior, William B. Murrach High School, Jackson, Mississippi, T: Stanley Vaughn Smith
- BI027** **Production of Ethanol by Vacuum Process**  
Jessica Lynn Laviolette, 17, Junior, Brandon High School, Ortonville, Michigan, T: Kelly Sweet
- BI028** **Anodic Stripping Voltammetry for Mercury in Various Fish Samples**  
Jason G. Leung, 17, Senior, Homestead High School, Fort Wayne, Indiana, T: Michael R. Columbia
- BI029** **Use of Homology Modeling and Molecular Docking to Map Retinoid Binding Sites on Protein Kinase C**  
Jijun Chow, 18, Senior, The Bronx High School of Science, Bronx, New York, T: Richard Lee
- BI030** **Biochemical Evolution of the Breast Cancer-Inhibiting Protein, BRCA-1, Over Half a Billion Years**  
# Meaghan Alexandra Figge, 16, Junior, Albany Academy for Girls, Albany, New York, T: Lynda Blankenship
- BI031** **The Effects of Squalene and Pravachol on Total Cholesterol Levels in *Mus musculus***  
Zachary James VanWinkle, 16, Sophomore, East Noble High School, Kendallville, Indiana, T: Mark Antony Liepe
- BI032** **Radiation Shield: Using Biological Molecules to Prevent or Repair DNA Damage Caused by Radiation in *Drosophila melanogaster***  
# Parijata Desiree Mackey, 17, Senior, Dr. Michael M. Krop High School, Miami, Florida, T: David L. Buncher
- BI033** **Inhibitors Modulate E-cadherin N-glycosylation: Structure-Function Relationships and Implications for Antimetastasis**  
Xiaoyun Nong, 18, Senior, Miami Palmetto Senior High School, Pinecrest, Florida, T: Pamela Shlachtman
- BI034** **What Types of Biomass Have the Greatest Glucose Yield Through Enzymatic Hydrolysis?**  
Erin Marie Rosswurm, 18, Senior, Columbus East High School, Columbus, Indiana, T: Kevin Darr
- BI035** **Magnetoreception: The Role of Magnetite and the Piezoelectric Effect**  
Christopher Cody Notz, 16, Junior, Tuscarawas Valley High School, Zoarville, Ohio, T: Lucinda Lee Martin
- BI036** **Consistency of Phylogenetic Relationships: Proteins from Various Species**  
Sanjay Vasudev Saraf, 14, Freshman, Alfred M. Barbe High School, Lake Charles, Louisiana, T: Candace Hebert
- BI037** **Probing Gap Junction Dynamics in Cells**  
# Ching Zhu, 17, Senior, Academic Magnet High School, North Charleston, South Carolina, T: Bruce Newton
- BI038** **Testing the Effects of *Peacilomyces lilacinus* and French Marigolds (*Tagetes patula*) Tea Extract on the Pecan Root-Knot Nematode (*Meloidogyne partityla*)**  
Eric Ragnarson Malmquist, 17, Junior, Westside High School, Macon, Georgia, T: Jennifer S. Hulgán
- BI039** **DNA Damage from Acrylamide: Hold the Fries!**  
Lindsey Marie Hubley, 16, Sophomore, Woods Cross High School, Woods Cross, Utah, T: Rod Hill
- BI040** **Studying the Nucleosome Assembly Protein: Is the C-Domain Responsible for Histone Interaction?**  
Aleksandr Gorin, 15, Sophomore, Children's Creative and Performing Arts Academy, San Diego, California, T: Frima Fenster
- BI041** **Modeling the Effect of Intestinal Transit Velocity of Milk on Lactose Hydrolysis**  
Arhana Chattopadhyay, 16, Sophomore, R.C. Clark High School, Plano, Texas, T: Cathy Bambenek
- BI042** **Nopal-Stuffing Chocolate**  
Valentina Nunez Bautista, 18, Senior, Colegio de Bachilleres Plantel 8 Cuajimalpa, Mexico, Mexico, T: Maria Guadalupe Luna Sandoval
- BI043** **Natural & Harmful**  
# Laura Ashley Zimmerman, 18, Senior, The Good Hope School, Frederiksted, Virgin Islands, T: Mary Jane Coles
- BI044** **Identification and Analysis of Mutations in the RP1 Gene for the Creation of the RP Microarray Chip**  
Ruonan Cheng, 17, Senior, Yorktown High School, Yorktown Heights, New York, T: Michael J. Blueglass
- BI045** **Investigating the Role of PTEN in Modulating the Insulin Signaling Pathway to Treat Type 2 Diabetes**  
Meredith Regan Spadaccia, 17, Senior, Yorktown High School, Yorktown Heights, New York, T: Michael J. Blueglass
- BI046** **The Development of a Novel Gene Knock-Out Technique Utilizing RNA-Interference**  
Jason Chao Zhang, 16, Junior, Yorktown High School, Yorktown Heights, New York, T: Michael J. Blueglass
- BI047** **Analysis of the Antibiotic Properties of the Epidermal Mucus of the Atlantic Stingray, *Dasyatis sabina*, Conferred by Associated Bacterial Symbionts**  
Benjamin Colby Powell, 18, Senior, Sarasota High School, Sarasota, Florida, T: William Shelley
- BI048** **The Recombination of RNA by Azoarcus Ribozyme in a Compartmentalized System: An Origin-of-Life Study**  
# Sergio-Francis Mellejor Zenisek, 16, Junior, Oregon Episcopal School, Portland, Oregon, T: Peter Langley
- BI049** **Tannins as an Environmentally Friendly Metal Cleaner**  
Faith Noelle Ezekiel, 17, Senior, Mayo High School for Math, Science and Technology, Darlington, South Carolina, T: Gerald Allan Porter
- BI050** **Using the Inhibitory Effects of ATP Analogs to Regulate mRNA Processing: Year II**  
Carol Yoon Joo Suh, 16, Sophomore, Palos Verdes Peninsula High School, Rolling Hills Estates, California, T: Peter Starodub
- BI051** **Can Biosensors Detect Pesticides and Herbicide Residues in Our Tribal Ponds?**  
Anna Lopez, 15, Freshman, Coolidge High School, Coolidge, Arizona, T: Joyce Baldwin
- BI052** **The Effect of TNF- $\alpha$  Concentration on Cancer Cell Pathways**  
Jessica Li Tse, 17, Senior, Somerville High School, Somerville, Massachusetts, T: Shahira Badran
- BI053** **Logic Genomics**  
Adrian Veres, 15, Sophomore, Jean de Brebeuf College, Montreal, Quebec, Canada, T: Martine Brousseau
- BI054** **Regulation of Telomere Lengths During Stem Cell Differentiation**  
Anneke Ellen Schwob, 16, Junior, Boston Latin School, Boston, Massachusetts, T: Alexandra Maria Montes
- BI055** **Influence of the Green Tea Polyphenol EGCG on Macrophage Inflammatory Function**  
Iddoshe Haile Hirpa, 15, Sophomore, duPont Manual Magnet High School, Louisville, Kentucky, T: Glenn Edwin Zwanzig
- BI056** **The Effect of Open Grazing on *Bos taurus* Lactation**  
Douglas Harry Gilchrist-Scott, 17, Senior, Hoover High School, North Canton, Ohio, T: Connie Hubbard
- BI057** **The Effect of *Aloe vera* and *Spathodea campanulata* (African Tulip) Extracts Used as Pesticides on *Nasutitermes costalis* (Tree Termites)**  
Danelvis Paredes, 15, Sophomore, University Gardens High School, Rio Piedras, Puerto Rico, T: Marina Miranda
- BI058** **Kinase Pathways Involved in Cannabinoid Inhibition of NF- $\kappa$ B**  
Anand Chan Baxi, 15, Sophomore, White Station High School, Memphis, Tennessee, T: Ryan Yates
- BI059** **The Glucose Dependence of CD4<sup>+</sup> T-Lymphocytes**  
# Rebecca Joy Vitale, 16, Junior, duPont Manual Magnet High School, Louisville, Kentucky, T: William Deines
- BI060** **Mutagenic Bypass Pathway Involved in the Eukaryotic Cellular Response to Anticancer Drug Resistance**  
Jeffrey Zhaoke Fei, 17, Senior, Ward Melville High School, Setauket, New York, T: Dr. George J. Baldo
- BI061** **Identification of Promoter Elements Required for Transcriptional Induction of Motility Related Genes**  
Tyler Thomas Rosensteel, 18, Senior, Brophy College Preparatory, Phoenix, Arizona, T: Dominique Beatriz Hoelzinger

- BI062** **The Effects of Oxidative Damage on Protein Translation Efficiency**  
Steven Siyi Hao, 17, Senior, Silver Creek High School, San Jose, California, T: Mark Okuda
- BI063** **An Evaluation of Single Nucleotide Polymorphisms (SNPs) within Gene EP300 of Human Chromosome 22q to Assess their Role in Pediatric Brain Tumors**  
Samantha Leigh Schneider, 18, Senior, Jericho Senior High School, Jericho, New York, T: Allen Laurence Sachs
- BI064** **Percent Conservation of the Human Insulin Molecule vs. CNS Development in Lower Organisms**  
Kathleen Curley Clement, 15, Sophomore, Langley High School, McLean, Virginia, T: Katherine F. Bowdring
- BI065** **Anti-Malarial Activity of the Leaves of *Calycopteris floribunda***  
Mrunmaye V. Math, 15, Sophomore, Mumbai, Maharashtra, India, T: Archana Ramesh Juvekar
- BI066** **A Silk of Color**  
Don Lawrence Plattner, 16, Sophomore, Webb School of Knoxville, Knoxville, Tennessee, T: Robert K. Brown
- BI067** **Effects of Reused Edible Oil on Human Health**  
Fatima Shami, 15, Freshman, Islamabad Convent School, Islamabad, Federal Area, Pakistan, T: Inayat ur Rehman
- BI068** **The Role of Kinesin II in Endomembrane Trafficking in Rabbit Lacrimal Acini**  
Jiamin Hu, 18, Senior, Alhambra High School, Alhambra, California, T: Duane Nichols
- BI069** **Repression of Oligodendrocyte Gene Expression: Role of Interferon- $\gamma$  and Molecular Mechanisms**  
Ann Kathryn Kennedy, 17, Senior, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia, T: Alfred D. Lampazzi
- BI070** **Correlation Between NK-3 Receptor Expression and a Rat Model for Tardive Dyskinesia**  
Rahul Guha, 18, Senior, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia, T: Alfred D. Lampazzi
- BI071** **TRAIL-Induced Apoptosis in Breast Cancer Cells: Role of XAF-1 Expression**  
# Christopher Scott Rogers, 18, Senior, Caddo Parish Magnet High School, Shreveport, Louisiana, T: Kris Clements
- BI072** **Presynaptic Localization of Metabotropic Glutamate Receptor 7**  
# Tabassum Ahamad Khan, 17, Senior, Chamblee Charter High School, Chamblee, Georgia, T: Patricia Mote
- BI073** **Human CYP2A6 and UGT2B7 Polymorphisms and the Metabolism of Tobacco Xenobiotics**  
Casey Marie Combs, 17, Senior, Honaker High School, Honaker, Virginia, T: Kevin Lee Stilwell
- BI074** **A Study of the Expression and Deletion of the Schlafen8 Gene**  
Boris Zinshteyn, 17, Senior, Central High School, Philadelphia, Pennsylvania, T: Dennis Erlick
- BI075** **Bioinformatics Discovery of Novel Stem Cell Regulatory Mechanisms**  
Michael Segal, 17, Senior, Central High School, Philadelphia, Pennsylvania, T: Dennis Erlick
- BI076** **Unwrapping Myelination: Myelination Regulation in TM-NRG1+/- Transgenic Mice**  
## Lev A. Shaket, 16, Junior, Chamblee Charter High School, Chamblee, Georgia, T: Pat Mote
- BI077** **Inhibition of Browning by Pupal Extract**  
Allison Marie Burns, 16, Sophomore, Notre Dame Academy, Park Hills, Kentucky, T: Mary Ethel Parrott
- BI078** **A Study of Possible Interactions Among Rev1, Rev3, and Rev7 Proteins from *Saccharomyces cerevisiae***  
John Cong Zhou, 16, Junior, Detroit Country Day School, Beverly Hills, Michigan, T: Marc Fazio
- BI079** **Faster Than a Speeding Proton. . . The Enzyme, Super Catalyst!**  
Margaret Janice Meehan, 16, Sophomore, Catholic High School, Huntsville, Alabama, T: Brian Joseph Finzel
- BI080** **Tasty Temperatures**  
Clay Robert Makelky, 15, Freshman, Beach High School, Beach, North Dakota, T: Britney Mae Geving
- BI081** **Elucidating the Proton-Transfer Mechanism of Human Manganese Superoxide Dismutase in Complex with Taurine**  
Sara Nikhil Shah, 17, Junior, Lecanto High School, Lecanto, Florida, T: Ronald Worthington
- BI082** **Identification of Bacterial Adhesion Antagonists for Contact Lens and Intraocular Lens**  
Fan Yang, 17, Senior, Davis Senior High School, Davis, California, T: Ann Moriarty
- BI301T** **The Biochemical Denaturing of Aspartylphenylalanine Methyl Ester**  
Julie Ann Liang, 18, Senior  
Meghan Malia Higgins, 17, Senior  
Vero Beach High School, Vero Beach, Florida  
T: Carol Haffield
- BI302T** **Recycling Coffee Grounds: A Sustainable and Environmentally Friendly Bioremediation for *Solenopsis invicta***  
Alejandro Pablo de la Villa, 14, Freshman  
Maria del Mar Vera, 15, Freshman  
Colegio De La Salle, Bayamon, Puerto Rico  
T: Wanda I. Aviles
- BI303T** **A Study of Teratogenesis in *Oryzias latipes***  
Sohan Venkat Mikkilineni, 16, Sophomore  
Shravani Mikkilineni, 14, Freshman  
Detroit Country Day School, Beverly Hills, Michigan  
T: Gene Menton
- BI304T** ***In vitro* Simulation of Immunological and Biochemical Attack on Pancreatic Cancer-Specific Antigen, PaCa-Ag1**  
Genna Anne Ableman, 17, Senior  
Maya Barsky, 17, Senior  
Midwood High School at Brooklyn College, Brooklyn, New York  
T: Alan Stack
- BI305T** **Frankenfoods**  
# Amy Elizabeth LaViers, 18, Senior  
Lisa Helene LaViers, 15, Freshman  
Jefferson County High School, Dandridge, Tennessee  
T: Jan Coley

## BOTANY

### GRAND AWARDS PRESENTED BY: INTEL FOUNDATION

- BO001** **The Effects of Different Growing Conditions on the Firmness, Diameter, Sugar Content, and pH of Ripening Grape Berries**  
### Megan Kathleen Bartlett, 17, Senior, F. W. Springstead High School, Spring Hill, Florida, T: Craig Gates
- BO002** **Enhancing Natural System to Increase Soil Fertility**  
# Courtney Zasha Monique Rumala, 16, Senior, Westgate Christian Academy, Spring Hill, Florida, T: Sande McNabb
- BO003** **Free Radical Reduction within the *Glycine max* with Aeroponically Induced Antioxidants**  
# Justin Andrew Townley, 16, Junior, Okaloosa-Walton Collegiate Charter High School, Niceville, Florida, T: Nancy Ann Townley
- BO004** **Augmented Imidacloprid: Improving Pest Management, Increasing Plant Health**  
# Austin Hensel, 16, Sophomore, Lincoln Park Academy, Ft. Pierce, Florida, T: Nancy Hosie
- BO005** **A Two-Year Study on the Photoreactivation of *Chlamydomonas reinhardtii* and *Euglena gracilis*: Photolyase's Role in DNA Repair**  
Nadine Sfeir, 18, Senior, Lake Brantley High School, Altamonte Springs, Florida, T: David Stock
- BO006** **Quackweed**  
Yun Liu, 14, Freshman, Houma Junior High School, Houma, Louisiana, T: Quarnell Liner
- BO007** **Peroxidase Activity in Fruits and Vegetables**  
Javid Gulmahamad, 18, Senior, McArthur High School, Hollywood, Florida, T: Beverly Grimm

- BO008 The Carbon Wars: Carbon vs. Tillage, Part Two**  
Kate Marie Gearhart, 17, Senior, Unioto High School, Chillicothe, Ohio, T: Mary Beth Mauer
- BO009 Hoya Offspring: Crossed-Pollinated or Self-Pollinated**  
## Crystal Lynn Swartzfager, 17, Junior, Wildwood High School, Wildwood, Florida, T: Susan McDonald Swartzfager
- BO010 What Is the Effect of pH Level of Soil on Plants?**  
Lena Brodsky, 15, Sophomore, Henry Grady High School, Atlanta, Georgia, T: Diane Gilchrist-Young
- BO011 Surviving Production Quotas and Free Trade Agreements: The Effects of Tillage Reduction on Sugarcane Yields in First Year Stubble**  
# Tate Benton-Michael Guillotte, 17, Junior, Catholic High School, New Iberia, Louisiana, T: Donald Voorhies
- BO012 *Tabernaemontana pandacaku* Poir (PANDAKAKI) as Rice Bug (*Leptocoris acuta*) Eradicator**  
Daisy Bayani Galapia, 16, Freshman, Sinai National High School, Sinai National High School, Ilocos Sur, Philippines, T: Jaime Jr. Delgado Campos
- BO013 Analyzing the Effect of the Non CO<sub>2</sub> Constituents in Car Exhaust on Plants**  
Eric Victor Griego, 18, Senior, Carbon High School, Price, Utah, T: Dan Taylor
- BO014 The Use of Seaweed Compost as Organic Fertilizer**  
Augusto Raul Perez, 17, Junior, Colegio San Jose, San Juan, Puerto Rico, T: Amarillys I. Diaz
- BO015 Do Your Vegetables Pump Iron?**  
Charlton Claire Starcke, 17, Junior, Seguin High School, Seguin, Texas, T: Donna Ann Boelter
- BO016 The Anti-Microbial Properties of *Aphanizomenon flos-aquae*, a Species of Micro-algae from Upper Klamath Lake**  
LueAnn Melinda Zaske, 17, Junior, Klamath Union High School, Klamath Falls, Oregon, T: Vince Daw
- BO017 Mechanisms of Flower-Stalk Lay-Down After Fertilization and Re-Erection After Seed Naturation in Dandelion**  
Miho Ishikawa, 17, Junior, Yachiyo Shoin High School, Yachiyo, Chiba Prefecture, Japan, T: Emi Ito
- BO018 A Cornucopia of a Green Salad of Cover Crops: Solicam Phytoremediation**  
Holli Joy Linman, 16, Sophomore, Hotchkiss High School, Hotchkiss, Colorado, T: Douglas R. Horton
- BO019 The *in vitro* Propagation of *A. palmatum* and Its Various Cultivars**  
Michael James Bernert, 15, Freshman, West Linn High School, West Linn, Oregon, T: Jamie Kelso
- BO020 What Mechanism Does the Bacterium *Xylella fastidiosa* Employ to Progress Throughout the Xylem? What Concentration of Gelrite Is Optimal for Viewing the Bacterium's Movement?**  
# Melanie Nicole Amerson, 17, Senior, Spalding High School, Griffin, Georgia, T: Kristine Helen Sdoia
- BO021 The Structural Analysis of Polka Dot and Wild Type *Ceratopteris richardii* by Electrophoretic Protein Comparison**  
Anna Pilishvili, 16, Junior, Forest Hills High School, Forest Hills, New York, T: Brigitte Brady
- BO022 Chemical Restoration of Chloroplast Function After Heat Damage**  
Casey Renee Morgan, 17, Junior, Latta High School, Ada, Oklahoma, T: Susie Stevens
- BO023 The Effects of Soil pH Value on *Triticum aestivum* L. Growth**  
Stacey Lee Vosters, 15, Freshman, North Daviess High School, Elnora, Indiana, T: Connie Jane Atkinson
- BO024 The Effects of Triclosan Dioxins (TD's) from Biome Chemical Soil Runoff Bioaccumulation: An Investigation for an Innovative Use of *Crinum americanum* as Bioremediation**  
# Zachary Mason Sandoval, 16, Junior, Dr. Michael M. Krop High School, Miami, Florida, T: David Buncher
- BO025 Effects of the Biocontrol Agent on the Growth of Water Hyacinth**  
Yuyi Lu, 17, Junior, Shanghai Jianping Century Middle School, Shanghai, Pudong District, China, T: Xiaoqing Cao
- BO026 The Use of Biocontrol Agents as an Alternative to Fungicide to Prevent the Growth of *Fusarium graminearum* on Seed Corn**  
Nicole Elizabeth Frisk, 16, Sophomore, Mankato West High School, Mankato, Minnesota, T: Eric J. Koser
- BO027 Growth of Plants in Response to Different Wavelengths of Light and Electromagnetic Fields**  
Christian Aric Larsen, 16, Sophomore, Bountiful High School, Bountiful, Utah, T: Dwight G. Brown
- BO028 The Effect of Caffeinated Water on a Seed's Ability to Repair Itself from DNA Damaging UV Rays**  
Brady L. Thompson, 15, Freshman, T.H. Bell Junior High School, Ogden, Utah, T: Alfred Ladeau
- BO029 How Effective Is Beta Carotene in Fighting Cancer in Plants?**  
Margarita N. Trevino, 16, Sophomore, Franklin High School, El Paso, Texas, T: Barbara Hayes
- BO030 Investigating the Properties of Endophytic Bacteria in *Brassica rapa***  
Hilary Anne Peterson, 18, Senior, Conrad Weiser Area High School, Robesonia, Pennsylvania, T: Raymond G. Edwards
- BO031 Flora Diversity Comparison: Riparian Restoration Project**  
Natalie Benally, 16, Junior, Wingate High School, Ft. Wingate, New Mexico, T: Patricia C. Sherrin
- BO032 Kudzu, the Ultimate Invader: Allelopathic Study of *Pueraria lobata* on the Germination of *Quercus palustris* and Selected Vegetables**  
Lindsay Marie Stewart, 14, Freshman, Grove High School, Grove, Oklahoma, T: Keli D. Steen
- BO033 Ebb, Flow, and Rafting: It's Not the Colorado! Hydroponics, Part II**  
Lauren Marie Maloney, 15, Freshman, Plymouth North High School, Plymouth, Massachusetts, T: Lois Catherine Levine
- BO034 Oxidative DNA Damage During Symbiosis Between *Sinorhizobium meliloti* and the Alfalfa Plant**  
## Balaji V. Sridhar, 17, Senior, Cherry Creek High School, Greenwood Village, Colorado, T: Timothy James Donahue
- BO035 Examining Foreign Germplasm to Control *Fusarium* Head Blight**  
Kimberly Skye Richards, 16, Sophomore, Walter Murray Collegiate, Saskatoon, Saskatchewan, Canada, T: Cathi Johnson
- BO036 The Allelopathic Effect of the *Albizia procera* Tree on *Panicum maximum***  
Niomi Michelle Rodriguez-Santa, 15, Sophomore, C.R.O.E.M. High School, Mayaguez, Puerto Rico, T: Brenda M. Cabrera
- BO037 The Effect of Bark Peelings and Marrow Extracts from the Four Types of Mangroves in Puerto Rico on Infections Caused by *Staphylococcus aureus*, Phase II**  
# Abimael Cruz-Maldonado, 15, Sophomore, Padre Anibal Reyes Belen, Hatillo, Puerto Rico, T: Diana Diaz-Mercado
- BO038 Environmental Differentiation of *Pinus contorta* on Serpentine Soil**  
Sheila Marie Van Prooyen, 15, Sophomore, Gold Beach High School, Gold Beach, Oregon, T: Mary L. Omberg
- BO039 The Effect of the Electromagnetic Field in the Germination and Stem Inclination of the *Lycopersicon esculentum* Mill and *Portulaca oleracea* Plants**  
Luis Alberto Vega Otero, 16, Junior, Colegio Congregacion Mita, San Juan, Puerto Rico, T: Juanita Hernandez Roman
- BO040 Buckminsterfullerenes: Friend or Foe?**  
Lindsay Mallissia Liles, 17, Junior, C.H. Yoe High School, Cameron, Texas, T: Toni G. Lafferty
- BO041 Rapid and Reversible Photobleaching in a Green Plant, the Spiderwort Boat-lily, *Tradescantia spathacea* (family Commelinaceae)**  
# Philip Christopher Redding, 17, Junior, Cookeville High School, Cookeville, Tennessee, T: Kathy Shanks
- BO042 A Comparative Study for Marketability of the F1 Generation of *Cucurbita pepo***  
Laura Jo Bruner, 18, Senior, Pettisville High School, Pettisville, Ohio, T: Donna Jean Meller
- BO043 In Search of a Natural Treatment for *Puccinia hemerocallidis***  
Kyle James Yawn, 14, Freshman, Warner Robins High School, Warner Robins, Georgia, T: Janine Marie Davis

- BO044 Parthenium, as a Friendly Plant!**  
Anitha Pannedoddi Ramesh, 17, Sophomore, Jawahar Navodaya Vidyalaya, Mandya, Karnataka, India, T: Remani Karthiyayani
- BO045 Nutraecutical Intervention of the NFkB Pathway to Reduce Adverse Effects of Inflammation and Tumorigenesis**  
# Aaron Tuc-Lon Cheung, 16, Senior, South Carolina Governor's School for Science and Math, Hartsville, South Carolina, T: Robert Trowell
- BO046 The Hormesis Phenomenon: Implications for Using Low Doses of Harmful Agents to Stimulate Plant Growth**  
Jordan Dexter Crafton, 17, Senior, Uniondale High School, Uniondale, New York, T: Paul Alan Lichtman
- BO047 Organic Fertilizers and Their Effects on the Pinto Bean Plant**  
Bryce William Robinson, 18, Senior, American Fork High School, American Fork, Utah, T: Don Curtis Bastian
- BO048 The Killer in the Garden: The Allelopathic Effects of *Acer saccharum* Marsh, *Cornus florida* L., and *Magnolia grandiflora* L.**  
Amanda Josephine Compadre, 17, Junior, Little Rock Central High School, Little Rock, Arkansas, T: Laura Cole
- BO049 Effect of Chlorophyll Content on Extent of Photosynthesis**  
Yun Song, 17, Junior, Herschel V. Jenkins High School, Savannah, Georgia, T: Lorraine Breen
- BO050 `Ohelo: Inhibition of Bacterial Growth**  
Jessie Ann Ka`iulani Pa`ahana, 16, Junior, Kamehameha High School, Honolulu, Hawaii, T: Justin Culley
- BO051 Effects of Ayurvedic Remedies on *Pisum sativum*, Phase II**  
Megha Vipul Patel, 15, Freshman, Brunswick High School, Brunswick, Georgia, T: Polly B. Cox
- BO052 An Ecofriendly Approach to Controlling the Filariasis and Dengue Fever Vector, *Aedes polynesiensis*, in American Samoa**  
Andrew Pati Ah Young, 17, Senior, Tafuna High School, Pago Pago, American Samoa, T: Joserose Sadasivanthampy Jyothibhavan
- BO053 The Agricultural Impact of Detrimental Weeds on Wheat Cultivars**  
## Andrew John Friskop, 18, Senior, Hankinson High School, Hankinson, North Dakota, T: Marcus John Friskop
- BO054 Plant Germination and Growth in Flyash-amended Soil**  
Natalie Marie Schuetz, 16, Sophomore, Notre Dame Academy, Park Hills, Kentucky, T: Mary Ethel Parrott
- BO055 Determining  $\gamma$  Sensitivity of Double Mutant *Arabidopsis thaliana* for DNA Repair Genes XPF and ERCC1**  
Vibha Mahendra, 17, Senior, Mira Loma High School, Sacramento, California, T: James Hill
- BO056 New Challenges to Fight Against Fungal Diseases of Plants**  
Zuzana Tvaruzkova, 18, Freshman, Gymnazium Kromeriz, Kromeriz, Czech Republic, T: Milena Levickova
- BO057 Effects of Indole-3-Butyric Acid on Wild and Domesticated Grapevine Root Formation**  
Sun Qiu, 14, Freshman, Greenwood Laboratory School, Springfield, Missouri, T: David Davison
- BO058 The Effects of Wounding on the Induction of *Agrobacterium tumefaciens***  
Nahid Aftab Shaikh, 16, Senior, Lawrence High School, Cedarhurst, New York, T: Jennifer Marie Lagnado
- BO059 The Effects of Elevated Humidity on the Rate of Plant Growth**  
Hudson Taylor Dunn, 17, Junior, Wolford High School, Wolford, North Dakota, T: Miranda Susan Norby
- BO301T Impact of Lichen (*Xanthoparmelia chlorochroa*) Toxicity on Elk Populations: Possible Role of Climate**  
Amy Kathleen Feller, 16, Sophomore  
Erin Dianne Michelena, 16, Sophomore  
Greybull High School, Greybull, Wyoming  
T: Joel M. Kuper
- BO302T Understanding Roles of Gene Families Through Studies of Gene *At1g68780* in *Arabidopsis thaliana* Development**  
Varun Rajendra Hippalgaonkar, 15, Freshman  
John James Hutchison, 15, Sophomore  
Lake Highland Preparatory School, Orlando, Florida  
T: Judith Faith Legault
- BO303T Biofuel: Fuels of the Future**  
Harold James Klausner, 17, Junior  
Darrick Richard Ohr, 17, Senior  
Woodlin High School, Woodrow, Colorado  
T: Nancy Pauline Gettman
- BO304T The Effect of Supplemental Plant Signaling Compounds on Stress Response in *Oryza sativa***  
## Basil Harbi Shadfan, 18, Senior  
# David Brooks Kaufman, 18, Senior  
## Khannan Kameshvaran Athreya, 18, Senior  
Keystone School, San Antonio, Texas  
T: Charles Scott Maderer
- BO305T The Effect of Age and Succession Type on Forest Overstory and Understory Composition**  
Robert Joseph Bosworth, 16, Sophomore  
Erika Ann O'Sullivan, 15, Sophomore  
Juneau-Douglas High School, Juneau, Alaska  
T: Jonathan Smith
- BO306T Ultrasonic Frequency Applications in the Field of Plant Development and Propagation**  
Jeremiah Wayne Huber, 17, Junior  
Joel Winchel Sorensen, 18, Senior  
Greybull High School, Greybull, Wyoming  
T: Joel M. Kuper
- BO307T Clonal Reproduction of Native and Endemic Plants in High Risk of Extinction in the High Andean Ecosystems of Chile**  
Camilo Jose Farias, 15, Sophomore  
Ivan Gaete, 15, Sophomore  
Franco Colon, 15, Sophomore  
Liceo Domingo Herrera Rivera - B13, Antofagasta, II Region, Chile  
T: Ivan Castillo
- BO308T The *Solanium nigrum* Plant: Natural Antacid**  
Debbiann Centeno, 14, Freshman  
Alondra Mar Abrams, 14, Freshman  
Colegio Evangelico Capitan Correa, Arecibo, Puerto Rico  
T: Irma Velez
- BO309T The Influence of Mycorrhizal and Fertilizer Treatments on Tree Seedlings in Fire-Affected Soils**  
## Chad Avery Schlottmann, 18, Senior  
## Michael R. Olson, 18, Senior  
Gold Beach High School, Gold Beach, Oregon  
T: Robyn Darbyshire
- BO310T Carbonic Anhydrase: Expression in *Dioscorea* and Molecular Evolution in *Arabidopsis thaliana*, *Oryza sativa*, and *Dioscorea* Species**  
Heather Ann Casper, 18, Senior  
Benjamin Alan Pollack, 16, Junior  
Plainview-Old Bethpage John F. Kennedy High School, Plainview, New York  
T: Mary Lou O'Donnell
- BO311T Response of Eight Different Mung Bean Lines Under Rain Fed Conditions**  
Danish Ramzan, 16, Sophomore  
Nasir Mehmood, 17, Sophomore  
Muhammad Tasleem, 15, Sophomore  
Government High School, Qutbal, Attock, Rawalpindi, Punjab, Pakistan  
T: Muhammad Nawaz
- BO312T The Effects of Allelochemicals Produced by *Lepidium latifolium* on Selected Crops Grown in North Toole County, Montana**  
Chris Lee McFadden, 18, Senior  
Ben Harmon Dubbe, 18, Senior  
North Toole County High School, Sunburst, Montana  
T: Lawrence Dexter Fauque

# CHEMISTRY

## GRAND AWARDS PRESENTED BY: INTEL FOUNDATION

- CH001** **A Comparative Analysis of Ethanol Production Potential: Recycled Cellulose vs. Innovative Biomass**  
Ashley Nicole Sylvester, 16, Sophomore, Greybull High School, Greybull, Wyoming, T: Joel M. Kuper
- CH002** **Synthesis and Characterization of Size- and Shape- Selected Metal Nanoparticles Using Inverse Diblock Copolymer Micelles**  
Grady Clark Slane, 17, Junior, Lake Highland Preparatory School, Orlando, Florida, T: Judith Faith Legault
- CH003** **Synthesis, Characterization, and Stability Analysis of Poly(acrylate) Nanoparticles Through Emulsion Polymerization Technique**  
Amit Ramesh Patel, 17, Senior, Astronaut High School, Titusville, Florida, T: Scott McCord
- CH004** **Analysis of Oxalic Crystals *in vitro***  
Saida Bibie Hussain, 17, Senior, McArthur High School, Hollywood, Florida, T: Beverly Grimm
- CH005** **Synthesis of Fullerene Derivatives for Design of Donor-Acceptor Dyads**  
Aleksy Borisovich Kornev, 16, Junior, Bryansky Lyceum #1, Bryansk, Bryansky Region, Russia, T: Pavel Anatolyevich Troshin
- CH006** ***In situ* Synthesis of Gold Nanoparticles in Polymeric Nanofibers**  
# Aldo Elias Briano, 16, Senior, Southwestern Educational Society, Mayaguez, Puerto Rico, T: Evelyn Montalvo
- CH007** **Isolation of Camphor from Camphor Tree (*Cinnamomum camphora*): Does It Obey the Law of Constant Composition?**  
Jonathan Adolfo Narvaez, 15, Junior, Bradenton Academy, Bradenton, Florida, T: Larry A. Gaudioso
- CH008** **Changes in Tear Surface Tension After Exposure to Second-Hand Smoke**  
Katherine Elizabeth Reichert, 14, Freshman, Columbia High School, Lake City, Florida, T: Charleen Marie Kelley
- CH009** **An Investigation of Bioactive Ceramic Materials: Efficient Media Milling Techniques for Bioglass 45s5<sup>®</sup> Composites**  
Kayla L. Paulk, 17, Junior, Blanche Ely High School, Pompano Beach, Florida, T: Doris Walden
- CH010** **Isolation, Characterization of  $\beta$ -Chitin from Squid Pens and Calcium Carbonate Crystallization on the Chitin Scaffold**  
YouJia Zhong, 17, Senior, Raffles Junior College, Singapore, Singapore, T: Gayathri Subramanyam
- CH011** **Evaluation of *cis-cis* HOONO Production through Modeling of Reaction Kinetics**  
Da Lin, 17, Senior, Westview High School, Portland, Oregon, T: Mitchio Okumura
- CH012** **From Synthesis to Analysis of Radical Inhibitors**  
Stephen Schulz, 19, Senior, Raffles Junior College, Singapore, Singapore, T: Klaus Guenter
- CH013** **Natural Dyes: The Delicious Way**  
Hoi Lam Anne Tsang, 18, Senior, St. Paul's Convent School, Hong Kong, Region of China, T: Siu Yan Lam
- CH014** **Digitally-Enhanced Thin-Layer Chromatography: An Inexpensive, New Technique for Qualitative and Quantitative Analysis**  
# Amber Victoria Irish Hess, 18, Senior, Robert Louis Stevenson School, Pebble Beach, California, T: Kimberley R. Cousins
- CH015** **Oxidation of Dopamine by High-Valent Manganese: A Link to Neurodegenerative Disorders?**  
# Smita Mascharak, 15, Sophomore, Santa Cruz High School, Santa Cruz, California
- CH016** **The Use of Denitrifying Bacteria in the Removal of Nitric Oxides from Biomass Power Generation Emissions**  
# Timothy Paul Kendrick, 18, Senior, Lakeview High School, Lakeview, Oregon, T: Clair Oliver Thomas
- CH017** **Stable Dispersions of Crystalline Titanium Dioxide Nanoparticles**  
Suhail Malhotra, 15, Sophomore, duPont Manual Magnet High School, Louisville, Kentucky, T: Glenn Edwin Zwanzig
- CH018** **Implication and Formulation of Silane Based Optical Coatings with Organic and Inorganic Compounds to Prohibit UV Radiation**  
Chen Wang, 16, Sophomore, Huron High School, Ann Arbor, Michigan, T: Dee Drake
- CH019** **Cyclodextrin-Based Nanoporous Polymers: A Filtration Agent for Organic Contaminants, Year Two**  
# Wesley T. Hong, 15, Sophomore, Foothill High School, Pleasanton, California, T: Lisa Bertram
- CH020** **Cesium Phase Transition Study**  
Michelle Shyhmei Hour, 17, Junior, Central Virginia Governors School, Lynchburg, Virginia, T: Cheryl A. Lindeman
- CH021** **Charge Transfer of Chlorophyll-Functionalized Gold Nanoparticles**  
Ching-Hua Wang, 18, Senior, National Taichung Girls Senior High School, Taichung City, Taiwan, Chinese Taipei, T: Meng-Jun Xu
- CH022** **A Study Involving the Synthesis of Carbon Nanotube Filters in the Macroclae with Measurements Concerning the Effectiveness of Metal Derived Catalysts**  
## Jennifer Lee Nagel, 17, Junior, Dekalb High School, Waterloo, Indiana, T: Richard Lee Barber
- CH023** **Analysis of Protein Content in Potential Food Allergens**  
# Serge Alexander Shkuro, 18, Senior, Grants High School, Grants, New Mexico, T: Shelby Lee Alexander
- CH024** **Grass for Biomass, Phase Three**  
## Danielle Marie Wilson, 18, Senior, Stuart-Menlo High School, Stuart, Iowa, T: Larry C. Schwinger
- CH025** **Application of Cyclopolygon in Chemistry and in Combination of Chemistry and Music**  
Shen Wang, 18, Senior, Lanzhou No.1 High School, Lanzhou, Gansu, China, T: Jianping Wang
- CH026** **Experimental and Computational Studies on the Silicon Surface Chemistry of Allyl Alcohol C<sub>3</sub>H<sub>6</sub>O**  
Breanne M Fretz, 17, Senior, Spanish Springs High School, Sparks, Nevada, T: Sean M. Casey
- CH027** **The Construction of a Self-Assembling DNA Nano-hexagon Capable of Protein Storage and Release**  
Shane Evan Mulligan, 17, Senior, Staples High School, Westport, Connecticut, T: Alfred J. Scheetz
- CH028** **Crystals: Effect of Varying pH in the Crystallization of Lysozyme**  
Rachel Suzanne Hopkins, 17, Junior, Ridgeview High School, Orange Park, Florida, T: Robert S. Smith
- CH029** **Preparation of Hollow Spheres of TiO<sub>2</sub> Nanocrystals as Highly Efficient Photocatalyst and Its Applications**  
Qizhe Shao, 19, Senior, No.2 Secondary School Attached to ECNU, Shanghai, Shanghai, China, T: Shengqing Chen
- CH030** **Fuel Cell Practicality**  
Wade Edward Miller, 17, Senior, Alden-Conger High School, Alden, Minnesota, T: David Duane Bosma
- CH031** **Study of Electrolyte-Cathode Compatibility in a New Solid Oxide Fuel Cell**  
Megan Elizabeth Burger, 18, Senior, Academy of Science and Technology at Oak Ridge High School, Conroe, Texas, T: Larry Walker
- CH032** **Fundamental Properties of O<sub>2</sub>(-)**  
Charles Henry Herder, 18, Senior, The Kinkaid School, Houston, Texas, T: Herman Keith
- CH033** **Remediation of Trichloroethylene Contaminants via Fenton's Reagent**  
Nicole Eglin Pappano, 17, Senior, Dominion High School, Sterling, Virginia, T: Denise Wingfield
- CH034** **Diesel Fuel from Vegetable Oil**  
Nicholas Charles Bruno, 17, Junior, Leonardtown High School, Leonardtown, Maryland, T: Andrew Koch
- CH035** **Synthesis of Porous Platinum Nanowires for Gas Sensing and Catalysis**  
Stephanie Michelle Livers, 17, Senior, Sidney High School, Sidney, Montana, T: David McDonald

- CH036 Can the Stoichiometric Point of a Neutralization Titration Be Determined Using Conductivity of the Solution?**  
Amanda Margaret Strickland, 16, Junior, Charlottesville High School, Charlottesville, Virginia, T: Jenine Marie Pendleton
- CH038 The Effects of Corrosion on Type One Superconductors**  
Samantha Kay Lawrence, 16, Sophomore, Christian Heritage School, Riverdale, Utah, T: Jeff Strahan
- CH039 Fatal Un-Attraction: Hydrogen and Magnetism**  
Amanda Marie Graham, 15, Sophomore, Belton Honea Path High School, Honea Path, South Carolina, T: Lester McCall
- CH040 Analyzing the Effectiveness of Sun Screens Using Silver Nitrate and Spectrophotometry**  
Jessica Carter, 15, Freshman, Roy Junior High School, Roy, Utah, T: Kathleen Ochsenbein
- CH041 Reversible Membrane Cell: Phase Three**  
## Lacey Lloyd, 17, Senior, Ogden High School, Ogden, Utah, T: Barry Alan Lloyd
- CH042 Biosorption of Zinc in Contaminated Soil by Phosphatized Bat Guano**  
Mohammad Al-Mahdi Tan Kho, 15, Sophomore, Arturo Eustaquio Memorial Science High School, Zamboanga City, Philippines, T: Veronica Velasco Cinches
- CH043 pH-Triggered Assembly of Gold Nanorods**  
Patrick Leon Hankins, 17, Senior, Irmo High School, Columbia, South Carolina, T: Stephen Orr
- CH044 Fabric Flammability**  
Kathryn Marie Clark, 15, Freshman, Memorial High School, Victoria, Texas, T: Jill A. Elliott
- CH045 The Use of Sacrifice Metals Combined to Gate Painting Against Corrosion**  
Marina de Mattos Lourenco, 15, Sophomore, Colegio Koelle, Rio Claro, Sao Paulo, Brasil, T: Carlos Eduardo Oliveira
- CH046 Biodegradable Detergent Elaboration from *Solanum claviceps* Fruits**  
Gabriel Dario Saez, 15, Sophomore, Instituto Argentino de Enseñanza Superior, Concepcion, Tucuman, Argentina, T: Angela Aurelia Frontini
- CH047 Well Water: Does It Contain Arsenic and Lead?**  
Jennifer Lynn Longtree, 17, Senior, Turtle Mountain Community High School, Belcourt, North Dakota, T: Renee C. Aalund
- CH048 Synthesis and Magnetic Properties of Metal Fluoride Complexes**  
Daniel Jonathan Smaltz, 17, Senior, Wachusett Regional High School, Holden, Massachusetts, T: Carol W. Sullivan
- CH049 Dimethicone Paint**  
Melanie Rose Clemenz, 17, Senior, Dutch Fork High School, Irmo, South Carolina, T: Laura Lanni
- CH050 Water Quality of McGaffey Water Shed that Leads to the Rio Puerco**  
Primrose McCray, 17, Senior, Wingate High School, Ft. Wingate, New Mexico, T: Patricia Sherrin
- CH051 Cyanide Detection Using a Myoglobin Biosensor**  
Daniel James Cromer, 17, Junior, Cherry Creek High School, Greenwood Village, Colorado, T: Timothy James Donahue
- CH052 Interfacial Phenomena in -(Ni-Fe-Cu)- Giant MagnetoResistance Systems**  
Dylan Reed Conradson, 17, Junior, Los Alamos High School, Los Alamos, New Mexico, T: Steven Conradson
- CH053 Reduction of Cellulosic Fiber Flammability Using Aluminosilicates**  
Katie Marie Herbage, 18, Senior, Gold Beach High School, Gold Beach, Oregon, T: Mary L. Omberg
- CH054 Electrolysis: Production and Composition**  
Wesley Norman Fassmann, 17, Junior, East High School, Salt Lake City, Utah, T: John R. Peterson
- CH055 Mechanical Properties of Isobornyl Methacrylate Modified Liquid Crystal**  
Yang Zhou, 19, Senior, John Marshall High School, San Antonio, Texas, T: Roy A. Baldwin
- CH056 What Are the Effects of Salt in Electrolysis?**  
Hunter Hays Shaffer, 14, Freshman, Chengdu International School, Chengdu, SiChuan, China, T: Brian Liskey
- CH057 The Effects of Reduction Chamber Volume During Synthesis on the Effectiveness of 3-aminophthalhydrazide's Chimluminescent Reaction**  
Ethan Alonzo Williams, 15, Freshman, Chengdu International School, Chengdu, Sichuan, China, T: Leslie A. Williams, III
- CH058 Toward Self-Assembling Nanocircuitry Using Liquid Crystal Solvents**  
Karl James Plank, 17, Senior, Squalicum High School, Bellingham, Washington, T: Ted Flint
- CH059 The Effects of Various Filtration Media on Arguileh Smoke**  
Allister Edwin Wilton, 17, Sophomore, Westview High School, Martin, Tennessee, T: Marion S. Pitts
- CH060 Nature's Recipes: Ethanol as Fuel**  
William Curtis Young, 15, Freshman, Farmington High School, Farmington, New Mexico, T: Laura Howe
- CH061 Development of Novel DNA Sensitive Dye Sensors Using Combinatorial Approach**  
Rohan Kirit Panchamia, 17, Senior, Herricks Senior High School, New Hyde Park, New York, T: Mary Margaret Dillon
- CH062 The Study of Polyethylene Crystal Growth**  
Brian Christopher Czornyj, 15, Sophomore, Roy C. Ketcham High School, Wappingers Falls, New York, T: Frank Guglieri
- CH063 Obtaining Fuel by Electrolytic Decomposition of Sea Water**  
Claudio Bravo, 16, Senior, Eagle School, Antofagasta, Chile, T: Katherine Rodriguez
- CH064 Prevention of Marine Corrosion by Photogalvanic Action**  
# Mary Katherine Soltys, 16, Junior, Notre Dame Academy, Park Hills, Kentucky, T: Mary Ethel Parrott
- CH065 The Potential for Schwertmannite as a Catalyst in the Low Temperature Conversion of Ammonia to Nitrates**  
Adeline Mary Grace, 18, Senior, Newstead Wood School for Girls, Orpington, Kent, United Kingdom, T: Anne Unsel
- CH066 Is Biodiesel an Efficient Energy Source?**  
Michael Lawrence Schulte, 18, Senior, Terre Haute North Vigo High School, Terre Haute, Indiana, T: Glen M. Cook
- CH067 Characteristics of Different Varieties of Biodiesel**  
Joel Matthew Carr, 18, Senior, Velva High School, Velva, North Dakota, T: Wendy Peterson
- CH068 A Viable Method of Extraction of 12-O-*f*-Fumitremorgin C from *A. fumigatus***  
Srikanth Aravamuthan, 17, Senior, Kalamazoo Area Mathematics and Science Center, Kalamazoo, Michigan, T: John Goudie
- CH069 Rambutan Ink from Fruit Rinds of *Naphelium lappaceum***  
Esther Chiew Yee Chiong, 17, Sophomore, Sekolah Menengah Kebangsaan Batu Lintang, Kuching, Sarawak, Malaysia, T: Mi Ing Wong
- CH301T How Safe Is Your Drinking Water?**  
Leigh Taylor Wamble, 17, Junior  
Ashley Kember Helms, 16, Junior  
West Lauderdale High School, Collinsville, Mississippi  
T: Faye D. Kinard
- CH302T Stimulate Me: The Methylxanthine Content of Commonly Consumed Beverages and Chocolate Bars**  
Moriah Lee Patterson, 14, Freshman  
Amy Marie Harrington, 15, Freshman  
Sheridan Freshman Academy, Sheridan, Arkansas  
T: Vickie Lea Nelson
- CH303T Hydrogen Fuel Cell with Use of Stainless Steel Cathode that Bears Palladium "Thorn"**  
Shigenori Imafuku, 17, Junior  
Yutaro Nagai, 17, Junior  
Atsushi Miyazaki, 17, Junior  
Awa High School, Tateyama, Chiba Prefecture, Japan  
T: Tomoyuki Nosohara

- CH304T Sulfuric Acid Greater Increases the Efficiency of Electrolysis of Water**  
Tucker Mason Armstrong, 17, Junior  
John Ritter, 16, Junior  
Sherando High School, Stephens City, Virginia  
T: Paul Murphy; T: Susan Ellen Ritter
- CH305T Patagonic Fragrance: New Essence from a Native Plant**  
Silvina Araceli Racigh, 18, Senior  
Alejandro Troncoso, 19, Senior  
Colegio Provincial de Educacion Polinodal No. 1,  
Comandante L., Santa Cruz, Argentina  
T: Julio Nicolas Arganaraz
- CH306T Atmospheric Chemical Instabilities**  
# Sharat Ganapati, 18, Senior  
# Shiliang Chen, 18, Senior  
Sunset High School, Beaverton, Oregon  
Skyview High School, Vancouver, Washington  
T: Kirk Soule; T: Robert Obrien
- CH307T Termite Terminator Te-Te**  
Ehimwenma Nosakhare, 15, Freshman  
Onyine Etoniru, 16, Freshman  
Osemwingie Omonuwa, 16, Freshman  
Igbinedion Educational Centre, Benin City, Edo State, Nigeria  
T: Philomine Mary Joseph
- CH308T Vitamin C and a Juicy Dilemma**  
Ravi Arvind Viradia, 16, Junior  
Mark Osborne Flannery, 17, Junior  
Capital High School, Charleston, West Virginia  
T: Patricia Darnell
- CH309T Characterization of Cyclometalated Ir(III) and Pt(II) Complexes as Efficient Singlet Oxygen Sensitizers**  
## Henry Fong, 18, Senior  
## Allen Hing Tran, 17, Senior  
Alhambra High School, Alhambra, California  
T: Duane Nichols
- CH310T Design and Synthesis of Second and Third Generation Taxoids**  
Nora Iordanova Micheva, 16, Junior  
Tina Ho, 17, Senior  
Ward Melville High School, East Setauket, New York  
Smithtown High School, Smithtown, New York  
T: George J. Baldo; T: Joanne Figueiredo
- CH311T You Are Now in the Zone: Investigating the Factors that Influence Liesegang Rings**  
Aaron Mark Weaver, 15, Sophomore  
Skylar Davis Williams, 17, Junior  
Miami High School, Miami, Oklahoma  
T: Sally Ann Fenska
- CH312T Microscale Analytical Systematic Method in Non-Sulphidric Acid Conditions**  
Claudia Marily Gonzalez, 18, Senior  
Isaura Velasquez Bautista, 18, Senior  
Colegio de Estudios Cientificos y Tecnologicos, San Pablo Apet,  
Tlaxcala, Mexico  
T: Maria de los Angeles Perez
- CH313T Inhibiting the Growth of Microbes Through the Application of a Colloidal Silver-Based Paint**  
Miki Duruz, 16, Junior  
Kara Morgenstern, 16, Senior  
Long Beach High School, Lido Beach, New York  
T: Linda Trusz
- CS002 Integrating Neural Networks with Pattern Recognition to Predict Stock Market Movements**  
Benjamin Louis Brinkopf, 16, Sophomore, Canterbury School,  
Fort Myers, Florida, T: Mary Elizabeth Mirro-Glass
- CS003 UDC: Multifunctional Cryptanalytic Tool**  
Rostislav Igorevich Chutkov, 16, Junior, Centre of Mathematical  
Education, Saint-Petersburg, Russia, T: Ilya Aleksandrovich  
Chistyakov
- CS004 Novel Investigations for N-Gram-Based Automatic Identification of Written Language**  
Marek Blahus, 18, Junior, Gymnazium Uherske Hradiste,  
Uherske Hradiste, Czech Republic, T: Stanislav Ohera
- CS005 Discretization-polymorphic Data Concealment and Protection System "Stealth"**  
Danil Aleksandrovich Somsikov, 16, Sophomore, Gymnasium  
#1, Alla Bystrina, Odessa, Ukraine, T: Irina Yuriyevna Potapova
- CS006 What Factor Has the Most Influence on the Speed of a Computer?**  
Bakari Benjamin Hill, 16, Junior, Frederick Douglass High  
School, Atlanta, Georgia, T: William V. Bagot
- CS007 WebEnglish: A PHP and MySQL-Based English-To-Web Application Converter**  
# David Joseph Denton, 18, Senior, Saint Joseph Central High  
School, Saint Joseph, Missouri, T: Jay Meyers
- CS008 Screen Navigation for the Visually Impaired**  
## Daniel Jonathan Parrott, 17, Junior, Bartlesville High School,  
Bartlesville, Oklahoma, T: Betty Henderson
- CS009 Artificial Intelligent Traffic Light Simulation**  
Harun Tosun, 17, Junior, Dove Science Academy, Oklahoma  
City, Oklahoma, T: Omer Kadir Ozmeral
- CS010 Leonar3Do 3D for All!**  
Daniel Ratai, 19, Senior, John von Neumann Computer Science  
High School, Budapest, Hungary, T: Gyorgy Balint
- CS011 Voice-Controlled Home**  
Jay Mitchell Wood, 16, Sophomore, Hope Academy, Talladega,  
Alabama, T: Cynthia Herring Thomas
- CS012 A Correlation Study of CPU Fans and Its Effects on the Heat Removal as Tasks Are Performed**  
Micheal S. Eichelberger, 17, Junior, Noxubee County High  
School, Macon, Mississippi, T: Shirley Y. Granger
- CS013 Analysis of Driver Strategy on Traffic Flow**  
Megan Ruth Emmons, 16, Sophomore, Del Norte High School,  
Del Norte, Colorado, T: Laura Stuemky
- CS014 The Effect of RAM Memory on the Overall Computer Performance Speed**  
Juan Carlos Melendez-Otero, 17, Junior, Colegio San Jose,  
San Juan, Puerto Rico, T: Amarillys Diaz
- CS015 Improving EEG Signal Recognition for Human/Machine Control Using a Rat Model**  
Farre Nixon, 16, Junior, Pleasant Grove High School,  
Texarkana, Texas, T: Shali Martindale
- CS016 The Role of Initial Chromosome Size in a Variable-Length Crossover and Encoding Scheme in a Genetic Algorithm**  
Nathan Christopher LeClaire, 15, Sophomore, duPont Manual  
Magnet High School, Louisville, Kentucky, T: Glenn Zwanzig
- CS017 Designing a General Purpose Equation Solver Using Field Programmable Gate Arrays on NASA's HC-36 Hypercomputer**  
Vivek Mukherjee, 18, Senior, Tabb High School, Yorktown,  
Virginia, T: Olaf O. Storaasli
- CS018 Handwritten Number Recognition: Ants vs. Templates**  
Holly Kristine Zelnio, 17, Junior, Chaminade-Julienne Catholic  
High School, Dayton, Ohio, T: Barbara Groene
- CS019 Braille Accessible Learning System: A Distance Learning Approach**  
# Ahmad Shakir Manshad, 15, Junior, Las Cruces High School,  
Las Cruces, New Mexico, T: Muhanad Shakir Manshad
- CS020 An Intensity Equalization Procedure to Improve the Display of Color Images**  
Katharine Anne Symanow, 16, Junior, Divine Child High  
School, Dearborn, Michigan, T: Patricia Pauline
- CS021 Suffix Tree Based Web Information Search System**  
Lianlong Wu, 18, Senior, The Affiliated Middle School of  
Fujian Normal Univ, Fuzhou, Fujian, China, T: Cheng Zhou
- CS001 Examining the Specifics of High Performance Computer Clusters Under Different Operating Systems: A Second Year Study**  
# Andrew Williams Powell, 15, Sophomore, Trinity Catholic High  
School, Ocala, Florida, T: Helen Lowe

## COMPUTER SCIENCE

GRAND AWARDS PRESENTED BY:  
INTEL FOUNDATION

- CS022 A Technique for Grouping Clients Based on Machine Learning**  
Hyun-Ho Jung, 17, Senior, Kwangnam High School, Seoul, South Korea, T: Young-Chun Kim
- CS023 Virtual Studio**  
Gyeong-Yun Bae, 17, Junior, Changdong High School, Seoul, South Korea, T: Byung-Hyuck Pang
- CS024 Distributed Computing Low-End Clustering**  
Timothy John Van Cott, 17, Senior, Arkansas School for Mathematics, Science, and Arts, Hot Springs National Park, Arkansas, T: Daniel Moix
- CS025 A Practical Implementation of Gradient-Based Convolutional Neural Networks in Handwriting Recognition**  
Yuetian Xu, 18, Senior, Stuyvesant High School, New York, New York, T: Bruce Winokur
- CS026 Investigation of Post-Operative Gait Dynamics in Femoro-tibial Surgery Patients Using Three Dimensional Modeling Software**  
Jay Kiran Parekh, 17, Senior, Coral Reef Senior High School, Miami, Florida, T: Laura Vogl
- CS027 A New Approach to the Identification of Computer Virus Using Artificial Neural Networks**  
## Benjamin Alan Frison, 17, Junior, Carlisle High School, Carlisle, Pennsylvania, T: Grant William Braught
- CS028 Construct a Kernel-Service-Accelerator with SW&HW Meshing and Reality Multi-Threading Parallel Processing for FPGA-based Reconfigurable Systems**  
Yizhong Zhang, 19, Senior, Kongjiang Senior High School, Shanghai, China, T: Jiande Wang
- CS029 Age of Acquisition in Facial Identification: A Connectionist Approach**  
Brenden Manker Lake, 17, Senior, Torrey Pines High School, Encinitas, California, T: Garrison Cottrell
- CS030 Project CHASM: Creation of a Chess Heuristic/Algorithm State Machine**  
Paul Young Jarrett, 17, Senior, Academic Magnet High School, North Charleston, South Carolina, T: William Bruce Newton
- CS031 Writing a Mathematical Expression Compiler**  
Ramzi Sami Mukhar, 17, Senior, Eleanor Roosevelt High School, Greenbelt, Maryland, T: William Martin
- CS032 Statistical Analysis and Graphing Engine**  
Grant Tyler England, 18, Senior, Hart County High School, Munfordsville, Kentucky, T: Linda Ann Gosser
- CS033 Modeling Environment for Particles Configuration Control in Magnetic and Electric Fields**  
Maxim S. Tkachenko, 17, Junior, Lyceum of Information Technologies #1533, Moscow, Russia, T: Anatoly M. Umnov
- CS034 15-Passenger Vans: Predicting the Probability and Timing of Rollovers Using Artificial Neural Networks**  
Nicholas Samir Ekladyous, 13, Freshman, Cranbrook Kingswood School, Bloomfield Hills, Michigan, T: Albert Ekladyous
- CS035 "Darshan" Command Interpreter for the Blind**  
Catalina Sanchez Navarro, 18, Senior, CBTis No. 139, San Francisco del Rincon, Fuanajuato, Mexico, T: Jose Gerardo Carpio Flores
- CS036 DNB: The Script Generator**  
Sergio Luiz Wermuth Figueras, 16, Sophomore, Escola Estadual Dom Alano Marie du Noday, Palmas, Tocantins, Brasil, T: Monique Wermuth Figueras
- CS037 VORTECS 3D: VLSI Object Recognition Trainable Embedded CMOS System**  
Malcolm Christopher Ross Stagg, 16, Sophomore, Calgary Christian School, Calgary, Alberta, Canada, T: Gideon Choi
- CS038 IIN-KRIIP-SHE6N B12 SIIL-E6-BE6LZ: Encryption by Syllables**  
Jacob Donald Mitchell, 17, Junior, Westfield High School, Westfield, Massachusetts, T: Renee A. Coombs
- CS039 Pixel Filtration and Image Analysis Utilizing Artificial Intelligence**  
Daniel Stephen Smith, 17, Junior, Episcopal High School, Jacksonville, Florida, T: Marion Zeiner
- CS040 The Prisoner's Dilemma**  
Michael Dymkar Brandt, 16, Sophomore, Lincoln Park High School, Chicago, Illinois, T: Justin Lessek
- CS041 New Binarization Technique for Digital Camera Captured Image Based OCR**  
Nat Piyapramote, 16, Sophomore, Sarasit Phithayalai School, Banpong, Ratchaburi, Thailand, T: Narumon Panlumlers
- CS042 Development of an Improved Computerized Color Transfer Process**  
Andrew Ryan Nadlman, 18, Senior, Blue Valley North High School, Overland Park, Kansas, T: Jan Cyr
- CS043 Efficiency Trends of Distributed Processing in Java**  
Christopher Gunnar Siden, 16, Sophomore, Southside High School, Greenville, South Carolina, T: Thomas Kent Rogers
- CS044 Smart Soaring: Flocks of Autonomous Airplanes**  
Elliot Robert Kroo, 14, Freshman, Henry M. Gunn High School, Palo Alto, California, T: Lisa Wu
- CS045 Solution for Levels-of-Detail Mesh Rendering Through Remeshing**  
Muhammad Sadan Nasir, 18, Senior, ADP Iqra, Quetta, Balochistan, Pakistan, T: Talha Shams
- CS046 The Babelfish Sings Version 2.0**  
# Nikhil Krishnaswamy, 18, Senior, Piedra Vista High School, Farmington, New Mexico, T: Joyce Pritchard
- CS047 The Anitra Computer: A Complete Minimalist Computer System Designed, Built and Programmed at a Low Level of Abstraction**  
Eirik Bakke, 20, Senior, Bergen Katedralskole, Bergen, Norway
- CS048 Development of CD-ROM-based PC Cluster System for MPI Parallel Processing**  
Haruo Sakuda, 18, Senior, Hiroshima Prefecture Kokutaiji Senior High School, Hiroshima, Japan, T: Terushige Yamada
- CS049 Artificial Cognition and Memory: Tissue Image Analysis for Tumor Diagnosis**  
### Kimberly Elise Reinhold, 17, Senior, Saint Joseph's High School, Hilo, Hawaii, T: Pamela Arlinda Lyman
- CS050 Decompiling Java, Part II: Control Flow**  
David Lawrence Foster, 18, Senior, Chamblee High School, Chamblee, Georgia, T: Ann Marie Johnson
- CS051 Identification of Differential Surface Properties on a Triangle Mesh for Facial and Object Recognition**  
Justin Moore Solomon, 17, Junior, Thomas Jefferson High School for Science and Technology, Alexandria, Virginia, T: Joshua Strong
- CS052 Collaborative Nurse Scheduling: A Novel Approach to Improve Utilization of Existing Nurse Resources through Secure Data Transactions and Hospital Clustering**  
# Sonia Nijhawan, 16, Senior, duPont Manual Magnet High School, Louisville, Kentucky, T: Glenn Zwanzig
- CS053 Reverse Engineering the Microsoft Xbox to Enable Linux-based Clusters: Analyzing the Efficiency of Processing Distribution Over an Xbox Cluster**  
Bennet Grill, 17, Junior, Rio Rancho High School, Rio Rancho, New Mexico, T: Teresa Walker
- CS054 The Use of Data Compression to Determine the Subject of an Unknown File for a Database Search Engine**  
Jacob Evan Meacham, 17, Senior, Big Sky High School, Missoula, Montana, T: James Lawrence Harkins
- CS055 A New Multidimensional Feature-Mapping Algorithm**  
T: Sukran Aktas
- CS056 The Allocated System of Automatic Control and Modelling of Technical Structures**  
Alexey Korobitsyn, 17, Junior, Specialized School in Math, Physics & Informatics, Ust-Kamenogorsk, East Kazakhstan, Kazakhstan, T: Sergey Prishtepshik
- CS057 Stereographical Stereometry**  
Saken Kungozhin, 18, Junior, The Republic Specialized School in Mathematics and Science, Almaty, Kazakhstan, T: Yerulan Zhiyenbayer
- CS058 Using the Subset-Sum to Develop Secure Encryption Algorithms**  
Christopher M. Mullins, 17, Junior, Meeker High School, Meeker, Colorado, T: Bob Dorsett

- CS301T Generating 3D Anatomical Virtual Models for Medical Training Systems, Phase III**  
# Alexa Danielle Sider, 16, Junior  
# Neha Rajendra Hippalgaonkar, 16, Junior  
Lake Highland Preparatory School, Orlando, Florida  
T: Judith Faith Legault
- CS302T The Effect of Network Interruption on Effectiveness of Bundling vs. TCP/IP Data Transmission Protocols**  
Daniel Flynn Caughran, 17, Senior  
Anna S Chan, 17, Senior  
Christopher Colin Applegate, 18, Senior  
Yorktown High School, Arlington, Virginia  
T: Jeffrey Elkner; T: Michael Zito
- CS303T Search for Tomorrow: A Study of Associative Linguistics to Optimize Search Technology**  
Jason Hamid Rezvani, 18, Senior  
Harish Mayur Srinivasan, 17, Senior  
duPont Manual Magnet High School, Louisville, Kentucky  
T: Glenn Edwin Zwanzig
- CS304T A Content-Based Grayscale Image Retrieval System Based on Vector Quantization**  
Guan-Long Wu, 16, Junior  
Hsiao-Ting Yu, 16, Junior  
National Taichung First Senior High School, Taichung, Taiwan, Chinese Taipei  
T: Min-Chen Liang
- CS305T HiBridge: Bridging Multiple Hierarchies Through Structured XML Messages**  
Michael Borohovski, 17, Senior  
Petko Nikolov, 18, Senior  
Sean Evan Cleary, 17, Senior  
Stuyvesant High School, New York, New York  
T: Michael Zamansky
- CS306T Multi-Frequency Optical Data Storage System**  
# Rodrigo Luger, 17, Junior  
# Giuliano Sider, 17, Junior  
Escola Americana de Campinas, Campinas, Sao Paulo, Brasil  
T: Douglas Takeuti
- CS307T Analysis the Defect of Current Computer Keyboard and New-type Keyboard Design**  
Zhenfeng Han, 18, Senior  
Wangyang Su, 18, Senior  
Yimo Gao, 19, Senior  
Attached Senior School of Shandong Normal Univ., Jinan, Shandong, China  
T: Maochang Xue
- CS308T INFOLIBRAS**  
Vinicius D Agostin, 19, Senior  
Augusto Simon, 18, Senior  
Juliano Firpo, 19, Senior  
Fundacao Escola Tecnica Liberato Salzano Vieira da, Novo Hamburgo, Rio Grande do Sul, Brasil  
T: Deise Margo Muller
- CS309T DespertARTE**  
Jose Alberto Medina Hernandez, 17, Senior  
Jobad Adbeel Sayas Hernandez, 19, Senior  
CBTis No. 168, Aguascalientes, Mexico  
T: Antonio Diaz de Leon Gonzalez
- CS310T RCE: A System for Crypted Communications**  
Enrico Cesare Maggioni, 20, Freshman  
Claudia Maria Colciago, 19, Freshman  
Riccardo Mottadelli, 20, Freshman  
Liceo Scientifico E. Majorana, Desio, Milano, Italy  
T: Domenico Ciceri
- CS311T Collaborating Robots in Virtual Environment: Multi-Agent Approach**  
Vladimir A. Bazhin, 17, Junior  
Ivan S. Zakharov, 17, Junior  
Lyceum of Information Technologies #1533, Moscow, Russia  
T: Alexander V. Giglavy
- CS312T What Characteristics in a Digital Images Allow for Higher Compression Ratios Using the JPEG Lossy Algorithm?**  
Alex Mao Zhang, 14, Sophomore  
Luis Miguel Suarez, 15, Sophomore  
Dreher High School, Columbia, South Carolina  
T: Catherine Williams
- CS313T Minimizing Total Weighted Tardiness on a Single Machine with Job Release Dates and Equal Processing Times**  
Vinayak Muralidhar, 15, Junior  
Andrew David Gamalski, 16, Sophomore  
Corona del Sol High School, Tempe, Arizona  
Hamilton High School, Chandler, Arizona  
T: Steve Morgan; T: Teresa Clark
- CS314T Combining Handwriting Recognition Methods for Increased Accuracy**  
Nathaniel John Broussard, 16, Sophomore  
Alan Garrett Pierce, 15, Sophomore  
School of Science and Technology, Beaverton, Oregon  
T: James Richard Gardner
- CS315T Dyptherix Panamensis: Technological Innovation for the Monitoring and Control**  
Emmanuelle Vargas-Valenciano, 17, Junior  
Virgilio Enrique Solis- Rojas, 18, Junior  
Fabian Norberto Vasquez-Sancho, 17, Junior  
Colegio Cientifico Costarricense, Sede San Carlos, San Carlos, Alajuela, Costa Rica  
T: Leonardo Viquez

## EARTH SCIENCE

### GRAND AWARDS PRESENTED BY: SHELL OIL

- EA001 Eye of the Storm: A Comparative Study of the Relationship Between Sea Surface Temperature and Hurricane Intensity**  
John Christopher Turner, 15, Sophomore, Lincoln High School, Tallahassee, Florida, T: Adam Lane
- EA002 Geochemistry of the Southern Juan de Fuca Ridge: Isotopic Mantle Source Investigations**  
# Sarah Rose Langberg, 18, Senior, Canterbury School, Fort Myers, Florida, T: Michael Perfit
- EA003 Testing Duluth Gabbro Zircons for a Hafnium Isotopic Standard for Laser Ablation Multiple-Collector Inductively Coupled Plasma Mass Spectrometry**  
Vijay Vedvyas Rao, 17, Junior, Nova High School, Davie, Florida, T: Abby O'Connor
- EA004 Research of Influence of Solar Activity and Weather Affects on Human Health (Chronophysiological Aspects)**  
Ksenia Dolzenkova, 17, Junior, School # 140, Saint-Petersburg, Russia, T: Marina Trubina
- EA005 How Carbon Source Affects the Process of Microbial Sulfate Reduction in Mine Tailings**  
Sara Elizabeth Bogert, 15, Freshman, Juneau-Douglas High School, Juneau, Alaska, T: Jonathan Smith
- EA006 Characterizing Martian Soil Analogues with Optical Microscopy**  
Paul Macdonald Magyar, 17, Senior, Classical High School, Providence, Rhode Island, T: Cheryl Gomes
- EA007 Investigations of Oxide-Reduction During Lightning-Induced Fulgurite Formation**  
# Britta Elyse Jones, 18, Senior, Eastside High School, Gainesville, Florida, T: Ann Marie Heller
- EA008 Wind-Renewable Alternative Energy: It's About Time!**  
# Kasey Blythe Painter, 17, Junior, Enid High School, Enid, Oklahoma, T: Dusty Hugaboom
- EA009 The Connection Between Solar Variability and Annular Modes**  
# Thomas Franklin Christian III, 17, Senior, Houston County High School, Warner Robins, Georgia, T: Laura Pinaud Byrd

## ENGINEERING

### GRAND AWARDS PRESENTED BY: INTEL FOUNDATION

<p><b>EA010</b> <b>Mining the Past: Geochemical Analyses of Fossil Teeth and Sediment Illuminate Ancient Environments</b> # Yingqiuqi Lei, 18, Senior, Robert F. Kennedy Community High School, Flushing, New York, T: Joel Blickstein</p> <p><b>EA011</b> <b>Breaking Strength and Porosity of Prehistoric Ceramic Reproductions: Assessing Variation in Clay Sources and Tempering Materials, Phase Five</b> # Amy Elizabeth Marquardt, 18, Senior, Mediapolis High School, Mediapolis, Iowa, T: Marcia Kay Marquardt</p> <p><b>EA012</b> <b>Global Warming: The Effects of Increased Temperature and Carbon Dioxide</b> Ryan Reynolds Neely, 18, Senior, North Carolina School of Science and Math, Durham, North Carolina, T: Myra Sue Halpin</p> <p><b>EA013</b> <b>Global Warming: Analysis and Modeling of Bird Migratory Patterns as a Predictive Tool</b> Nina Ellen Lintermans, 15, Freshman, Staples High School, Westport, Connecticut, T: A. J. Scheetz</p> <p><b>EA014</b> <b>The Amount of Particulate Matter of Iron Creek in the Sweet Grass Hills to Determine Erosion</b> Meghan Combs, 17, Junior, Joplin-Inverness Public Schools, Joplin, Montana, T: Amanda J. Becker</p> <p><b>EA015</b> <b>Comparison of Growth Rate Between Modern Corals and Fossil Corals of the Species <i>Montastrea faveolata</i> and <i>Siderastrea siderea</i></b> Andreica Maldonado, 17, Senior, Ines Maria Mendoza High School, Cabo Rojo, Puerto Rico, T: Ivan Montalvo</p> <p><b>EA016</b> <b>The Derivation and Interpretation of Geochemical Ratios Generated by Meteoritic Impact</b> Terik Daly, 15, Sophomore, Oak Grove High School, San Jose, California, T: Carol Evans</p> <p><b>EA017</b> <b>Friction Limited Landslide Model: An Analysis of Historic Landslides in the Central Idaho Batholith</b> Paul Jaewook Park, 16, Junior, Massapequa High School, Massapequa, New York, T: Mark Ballerini</p> <p><b>EA018</b> <b>Phytoplankton Community Response to Nutrient Enrichment</b> Nicholas Robert Apau Jachowski, 18, Senior, West Potomac High School, Alexandria, Virginia, T: Jinmyun Jo</p> <p><b>EA019</b> <b>Measuring Resistivity Using Subsurface Features to Find a Thrust Fault</b> Hannah Louise Wolf, 14, Freshman, Parkland High School, Allentown, Pennsylvania, T: Wendy Smith Simpson</p> <p><b>EA020</b> <b>Alluvial Fan Evolution of the Sandia Mountains Using StarLogo Simulation, Phase III</b> Nicole Ann Lopez, 17, Junior, Rio Rancho High School, Rio Rancho, New Mexico, T: Terrylynn Vigil</p> <p><b>EA301T</b> <b>The Changes in Geography from the View of Antique Maps</b> Marketa Hornakova, 19, Junior Michaela Konradova, 18, Junior Grammar School Nymburk, Nymburk, Czech Republic T: Zdenek Kucera</p> <p><b>EA302T</b> <b>The Likelihood of Exotic Earthworm Invasions on Forest Ecosystems Due to Leaf Pact Type, Phase III</b> ## Jillian Rita Beaufeaux, 18, Senior ## Kirsti Anna Hakala, 18, Freshman Cloquet Senior High School, Cloquet, Minnesota T: Cynthia Ann Welsh</p> <p><b>EA303T</b> <b>The Effect on Greenhouse Gas Levels by the Modification of Photosynthetic Marine Organisms</b> Elizabeth Gilpin Roberts, 17, Junior Rachel Leigh Preston, 16, Junior Thomas Collins Meyer, 15, Junior Keystone School, San Antonio, Texas T: Charles Scott Maderer</p> <p><b>EA304T</b> <b>Vortex Shedding: A Possible Driving Force for El Nino?</b> Yu-Chun Yeh, 17, Junior Yen Chun Lin, 17, Junior Kaohsiung Municipal Girl Senior High School, Kaohsiung, Taiwan, Chinese Taipei T: Ching-Yi Tsai</p>	<p><b>EN001</b> <b>The Power of the Joule</b> Julian Paul Bourg, 16, Sophomore, Allen J. Ellender Memorial High School, Houma, Louisiana, T: Carolyn O. Babineaux</p> <p><b>EN002</b> <b>Signal Amplification Strategies for Long Distance Wi-Fi Networking</b> Steven Patrick Buss, 18, Senior, Martin County High School, Stuart, Florida, T: Bob Dawson</p> <p><b>EN003</b> <b>A Wind Tunnel Model of an Adjustable Soffit System's Effect on Hurricane Damage</b> Thomas Kent Fichtelman, 16, Sophomore, Vero Beach High School, Vero Beach, Florida, T: Carol Haffield</p> <p><b>EN004</b> <b>Is It Ripe Yet?</b> Allen J. Bordelon, 16, Sophomore, Saint James High School, St. James, Louisiana, T: Mitchell J. Blanchard</p> <p><b>EN005</b> <b>A Ferris Wheel Gone Chaotic: The Connection Between Fluid Dynamics Within an Independent Lorenzian Waterwheel to Renewable Sources of Power</b> Zachary Brook Howland, 18, Senior, Burnsville Senior High School, Burnsville, Minnesota, T: Jennifer Jo Hugstad-Vaa</p> <p><b>EN006</b> <b>High Frequency Electromagnetic Waves Powered by Renewable Resources to Produce an Efficient Water Heating System</b> # Cassandra Arien Lynn Abel, 16, Junior, Hobson Public School, Hobson, Montana, T: John Monroe Galahan</p> <p><b>EN007</b> <b>Image Quality</b> Megan Marie Pendleton, 16, Sophomore, Vista Ridge High School, Cedar Park, Texas, T: Michele Johnson Mann</p> <p><b>EN008</b> <b>Utilizing Audio Profile Matching Technology for Replicating Body Kinesis</b> Robert Vaughan Glissmann, 17, Junior, Peak to Peak Charter School, Lafayette, Colorado, T: Steve Goldhaber</p> <p><b>EN009</b> <b>The Evaluation of a Multi-Freewing UAV with the Concurrent Development of a Flying Test Platform to Assist in Evaluation of Turbulence Reduction and Flight Performance</b> # Ryan Thomas Olson, 18, Senior, Southwest Virginia Governor's School, Dublin, Virginia, T: Carl Chandler</p> <p><b>EN010</b> <b>Adjustable Prosthetic Socket</b> Craig Dean Hawes, 18, Senior, Perham High School, Perham, Minnesota, T: Shawn Andrew Stafki</p> <p><b>EN011</b> <b>Energy at the Speed of Wind</b> David Quintana, 18, Senior, Southeast High School, Oklahoma City, Oklahoma, T: Elizabeth Brooks</p> <p><b>EN012</b> <b>Drainage and Hydraulic Computations by Computer, Version III</b> Insun Chong, 15, Freshman, Caddo Parish Magnet High School, Shreveport, Louisiana, T: Jill Pernel</p> <p><b>EN013</b> <b>Camera Stabilization: Take Two</b> # Adam Daniel Sidman, 17, Junior, Palmer High School, Colorado Springs, Colorado, T: Brad Bogard</p> <p><b>EN014</b> <b>Design and Characterization of a Littrow Configuration External Cavity Diode Laser</b> Wenxian Hong, 17, Senior, Raffles Junior College, Singapore, Singapore, T: Oskar J. Painter</p> <p><b>EN015</b> <b>Self-control Deformity-assistance Reader</b> Wanxu Lin, 18, Junior, Liaoning Provincial Experimental Middle School, Shenyang, Liaoning, China, T: Biao Tang</p> <p><b>EN016</b> <b>Tilting Car: Development of a Concept</b> Andreas Hauge, 18, Senior, Danielsen Videregaaende Skole, Bergen, Hordaland, Norway, T: Arnt Frode Stava</p> <p><b>EN017</b> <b>Dynamic Balance Function and Surface Adaptation for General Humanoid Robot Platform</b> Yang Ge, 17, Senior, Beijing Jingshan School, Beijing, Beijing, China, T: Le Huilan</p> <p><b>EN018</b> <b>Gravity Pressing Roller Skate</b> Rong Huang, 17, Junior, Bengbu No.2 Senior Middle School, Anhui, China, Bengbu, Anhui, China, T: Jun Qi Zhang</p>
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- EN019 Toothpaste Whiteners: Which One Whitens Best?**  
Brian Taylor McCarthy, 17, Junior, Westover High School, Albany, Georgia, T: Stacy Brooks Brunelle
- EN020 How Wing Curve Affects Lift**  
Sam Matthew Post, 14, Freshman, Juneau-Douglas High School, Juneau, Alaska, T: Jonathan Smith
- EN021 The Googler**  
# George Francis Hotz, 15, Sophomore, Bergen County Academies, Hackensack, New Jersey, T: Bahadir Karuv
- EN022 Testing the Biomechanics of Broiler Chickens' Tibia Due to Increased Activity**  
Katherine Amy Thompson, 18, Senior, Cedar Shoals High School, Athens, Georgia, T: Stella Guerrero
- EN023 Point and Click, Literally**  
Christopher Dean Messick, 15, Sophomore, Sargent Senior High School, Monte Vista, Colorado, T: Cammie Wilson
- EN024 Automated Infrared Steering System**  
Adam Victor Mierzwa, 17, Senior, Thomas Stone High School, Waldorf, Maryland, T: Janis Rowell Milman
- EN025 The Detection of Alkaline Phosphatase Using an Electrochemical Sensor**  
Joanne Helen Wang, 15, Sophomore, Hathaway Brown School, Shaker Heights, Ohio, T: Patricia Hunt
- EN026 Emergency Vehicle Alert System, Part Three**  
# Justine Alyson Fortier, 15, Sophomore, LaSalle Academy, Providence, Rhode Island, T: Leslie Martinelli
- EN027 A Study of Fluid Dynamics to Elucidate the Effects of Four Diverse Surfaces on a Hydrofoil**  
# Kaleb Matthew Stunkard, 18, Senior, Osceola High School, Kissimmee, Florida, T: Harry L. Moore
- EN028 Does Lowering a Truck's Tailgate Increase Its Fuel Efficiency?**  
John Christopher Tarleton, 16, Sophomore, Union Grove High School, McDonough, Georgia, T: Leon Louis Olivier, Jr
- EN029 The House that Doesn't Burn**  
Heather Ashley Martin, 16, Junior, Jeffersontown High School, Louisville, Kentucky, T: Laura Lea Brown
- EN030 To Build a Better Harbor**  
Elise Dawn Sorum, 16, Sophomore, Valdez High School, Valdez, Alaska, T: Ruth E. Knight
- EN031 The Age of Axum Empire**  
Michael Getahun Haillemariam, 16, Junior, Piney Woods School, Piney Woods, Mississippi, T: Larry Webb Liddell
- EN032 Automotive Innovation: Wireless AutoAttendant**  
Marc L. Ingram, 18, Senior, Ballard High School, Louisville, Kentucky, T: Robert Baar
- EN033 Low Reynolds Number Aerodynamics, Phase 4: Development and Optimization of a Micro Air Vehicle**  
# John Pease Moore, IV, 17, Junior, Dayton Christian High School, Miamisburg, Ohio, T: Tom William Minor
- EN034 Automatic Tracking Device**  
Samuel Jang, 15, Freshman, Nicolet High School, Glendale, Wisconsin, T: Gary Alan Stresman
- EN035 Fishing Available for People with Functional Limitations!**  
# Christopher Michael Ballard, 15, Sophomore, Northside High School, Roanoke, Virginia, T: Patricia Cash Armentrout
- EN036 Alarm Triggered Shut Off Appliance System (ATSAS)**  
Yunchao Susan Lou, 16, Junior, Wylie E. Groves High School, Beverly Hills, Michigan, T: Lenny Klein
- EN037 Synthesis, Spin-Coating, and Annealing Studies of Iron Platinum Nanoparticles**  
Michael Andrew Nix, 18, Senior, Paul W. Bryant High School, Cottdale, Alabama, T: Gregory B. Thompson
- EN038 Elevating Wheelchair Seat**  
Richard William Entwisle, 18, Sophomore, Canford School, Dorset, United Kingdom, T: Neil Watkins
- EN039 Diamond Syntheses with Noble Gases Through Hot Filament Chemical Vapor Deposition**  
Antonio Rodolph Bighetti Mei, 17, Junior, Escola Americana de Campinas, Campinas, Sao Paulo, Brasil, T: Vitor Baranauskas
- EN040 Dusty Problem Misty Solution: The Design and Testing of a PM-10 (Particulate Matter) Suppressant**  
James John Robillard, 17, Junior, Clovis West High School, Fresno, California, T: Wayne Garabedian
- EN041 How Do You Like Your Eggs?**  
Hannah Marie Schweiss, 15, Freshman, Herculeum High School, Herculeum, Missouri, T: Jan Kappen Schweiss
- EN042 Hybrid Rocketry: Enhancing Performance of Paraffin as a Fuel**  
Kirk Michael Davenport, 17, Junior, Tullahoma High School, Tullahoma, Tennessee, T: Harold Liner
- EN043 Electrical Engineering Multipurpose Transmitter**  
Blessing Ilobekeme Otobbiale, 16, Freshman, Idia College, Benin City, Edo State, Nigeria, T: Mike Segun Omoregie
- EN044 Modifying Factors in the Proton Exchange Membrane of the Direct Methanol Fuel Cell, Including the Evaluation of a Carbon Nanofoam Electrode, to Maximize Power Densities**  
Jordan Andrew Hurwich, 17, Junior, John Adams High School, South Bend, Indiana, T: Nevin E. Longenecker
- EN045 Induced EMF Generator: The Creation of a Magnetic Induction Regenerative Energy Capture Device**  
# Richard Lee Shillington, 17, Senior, Dr. Michael M. Krop High School, Miami, Florida, T: David L. Buncher
- EN046 Determination of Efficient Blade Geometry for Use with Marine Current Turbines**  
Nicholas David Araujo, 18, Senior, Dr. Michael M. Krop High School, Miami, Florida, T: David L. Buncher
- EN047 A New Notebook Computer CPU Cooling Device**  
Shaoxuan Wang, 17, Junior, Hangzhou Xuejun High School, Hangzhou, Zhejiang, China, T: Yong Sun
- EN048 A Computer Model for Optimization of a Non-Isothermal Chlorination Reactor**  
Raj Gautam Ranade, 17, Junior, East Lyme High School, East Lyme, Connecticut, T: Jyotsna Ranade
- EN049 Grease It Up**  
Amber Bullard, 17, Senior, Purnell Swett High School, Pembroke, North Carolina, T: Fannie Lowry
- EN050 Does a Hot Motor Equal Hot Performance?**  
John Michael Simpson, 16, Sophomore, Owensboro High School, Owensboro, Kentucky, T: Mary George Thomaskutty
- EN051 The Titan: Electronic Lock And Key Mechanism**  
Horisane Bohane Marivate, 17, Senior, St. Alban's College, Pretoria, T: Louis Pennington
- EN052 Wings: What a Drag. . .**  
Mark Richard Fleming, 14, Freshman, Loyola High School, Mankato, Minnesota, T: Tami Lynn Gerdes
- EN053 Design and Development of an Analog-Based Robot: A Step into the Future**  
# Zachary Michael Walchuk, 17, Senior, Mankato West High School, Mankato, Minnesota, T: Eric J. Koser
- EN054 Great Musicians, Great Instruments: An Understanding of Sound Quality Using an Analytical Approach**  
Ashlee Noelle Brewer, 17, Senior, New Prairie High School, New Carlisle, Indiana, T: Kimberly Marie Holifield
- EN055 Real Time Analysis and Optimization of Solid Fuel Rocket Engines**  
Anthony James Neuberger, 16, Sophomore, Torrey Pines High School, San Diego, California, T: Vickie Coordt
- EN056 Enzymatic Electrodes for Biofuel Cells**  
### Daniel Clayton Appel, 18, Senior, Eldorado High School, Albuquerque, New Mexico, T: Valerie Duran
- EN057 An Innovative Flat Sequential Color Video Display**  
Enhao Li, 16, Junior, Plano West Senior High School, Plano, Texas, T: Joe Arnett
- EN058 Development of a Planar Perfused Tumor Bioreactor**  
Lucas Hudson Hofmeister, 16, Junior, Martin Luther King, Jr. Magnet High School, Nashville, Tennessee, T: John Kyuson Lee
- EN059 Enhanced Stability Effects of Micro-Foils on Supercavitating Torpedoes**  
Robert Francis Minehart, III, 16, Junior, Sterling, Virginia, T: Denise Wingfield
- EN060 F.I.N.D.-2: The Development of an Autonomous Surveying Vessel**  
# Benjamin Thomas Unsworth, 16, Junior, Kingswood Academy, Sulphur, Louisiana, T: Thomas Robert Unsworth
- EN061 Construction of a Magnetic Linear Accelerator**  
Andrew Scott Meyers, 15, Freshman, Hamilton Junior High School, Parkersburg, West Virginia, T: Robin Stout

- EN062** **Investigating the Possibilities of Utilizing NASA's X-20 for Future Manned Space Exploration, Phase Five**  
# Derik Thomas Bowen, 16, Junior, Longshore Homeschool, Billings, Montana, T: Kari Lynn Longshore
- EN063** **A Clear Choice: A Polycarbonate-Polyhedral Oligomeric Silsesquioxane Nanocomposite**  
### Blake Allen Campbell, 18, Senior, Stevens High School, Rapid City, South Dakota, T: Roberta K. Gaines
- EN064** **Airfoils: They're Only Natural!**  
Kristin MacKenzie Hope, 17, Junior, Saint Joseph's Catholic High School, Ogden, Utah, T: Pamela Stewart
- EN065** **An Ear to the Track: An Ultrasonic Train Wreck Avoidance System**  
# Courtney Anne Rafes, 17, Junior, Northwest High School, Justin, Texas, T: Tommye Lou Rafes
- EN066** **Wind Power**  
Pavel Sergeevitch Krasnov, 17, Senior, Saint Joseph's Catholic High School, Ogden, Utah, T: Edward Macner
- EN067** **Spider Robot**  
Carlos Manuel Mineiro Arsenio, 18, Senior, Escola Tecnologica e Profissional de Sico, Avelar, Beira Litoral, Portugal, T: Joao Paulo Mendes
- EN068** **What's Up with Bumpy Wings?**  
Ian S. Johnson, 15, Sophomore, Susquenita High School, Duncannon, Pennsylvania, T: Kathleen A. Becker
- EN069** **Digital Compass Clinometer**  
Peter Jonathan Kirkland, 19, Senior, Dalriada School, Ballymoney, County Antrim, Northern Ireland, T: James Surgenor
- EN070** **The Industrial Use of Natural Gas**  
Manuel Alejandro Tavera, 16, Senior, Colegio Cientifico Albert Einstein, Lima, Peru, T: Omar Castanon
- EN071** **3, 2, 1, Ignition: Phase II**  
# Phillip Andrew Latus, 16, Sophomore, Sulphur Rock High School, Sulphur Rock, Arkansas, T: Gayle C. Ross
- EN072** **The Invention of Neodymium Magnetic Suspension System**  
Josh Paul Jones, 17, Junior, Huntley, Nebraska, T: Randall G. Lienemann
- EN073** **Pressure Braking**  
Alexander Winslow Mavrogordato, 18, Junior, Hilton Head Preparatory School, Hilton Head Island, South Carolina, T: Tina Webb-Browing
- EN074** **Can Flow Control Devices Significantly Reduce Drag?**  
Sumontro Lal Sinha, 14, Freshman, Oxford High School, Oxford, Mississippi, T: Judy T. Nicholas
- EN075** **The Development of a Bandage Using a Polymer, Polyvinyl Pyrrolidone, and an Antibiotic, Polysporin**  
Cuong Viet Nguyen, 17, Senior, Sarasota High School, Sarasota, Florida, T: William Shelley
- EN076** **Rolla-Clean: A Paint Roller Cleaner**  
Jason David Lowe, 19, Senior, Lancaster Royal Grammar School, Lancaster, Lancashire, United Kingdom, T: Craig Reid
- EN077** **A Study of the Antireflective Coating on Solar Cell Use**  
Iheoma Uchanma Umez-Eronini, 15, Sophomore, Benjamin Banneker Academic High School, Washington, District of Columbia, T: Betty Perry-Glass
- EN078** **Predicting Material Failure Correlation Between Deformation Luminescence and Hysteresis**  
Geoffrey Hubert Woo, 16, Sophomore, Palos Verdes Peninsula High School, Rolling Hills Estates, California, T: Peter Starodub
- EN079** **Ion Thruster Development and Analysis**  
# Thomas Andrew Trudel, 17, Senior, Muhlenberg High School, Laureldale, Pennsylvania, T: Kevin Berger
- EN080** **OBSERVER Robotic Prototype Locomotion System Based on Biomimetismo**  
Francisco Chiva Querol, 14, Sophomore, Colegio Marista Sant, Uruguaiiana, Rio Grande do Sul, Brasil, T: Flavio Eber da Silva Bilhalva
- EN081** **Illumination Kit for Remote Places**  
Paulo Henrique Marques de Oliveira, 16, Sophomore, Colegio Militar de Manaus, Manaus, Amazonas, Brasil, T: Carlos Augusto Silva de Oliveira
- EN082** **Crash Monitoring Device for Vehicles with Four or More Wheels**  
Allison Pauline Smyth, 17, Junior, Massachusetts Academy of Mathematics and Science, Worcester, Massachusetts, T: Jerry Horton
- EN083** **Bifurcation of Oil-Water Emulsions Using Electrostatic Forces, Year Two**  
Leanne Louise Thompson, 15, Sophomore, Bishop Kenny High School, Jacksonville, Florida, T: Susana Suarez
- EN084** **Factors Affecting Cooperative Robotic Behavior, Year Three**  
## Donald Stuart Eng, 17, Senior, Stanton College Preparatory School, Jacksonville, Florida, T: John Hegeman
- EN085** **Solar Hydroelectric Generator**  
Marianne Poling Kempes, 17, Junior, McCurdy High School, Espanola, New Mexico, T: Dennis Smith
- EN086** **And All the Little Houses Went Splat**  
Malina Kay Simmers, 16, Sophomore, Cornerstone Christian School, San Angelo, Texas, T: Gretchen Carter
- EN087** **Cost vs. Safety of Outdoor Lighting**  
Brandon Eric Northcut, 14, Freshman, Monterey Senior High School, Lubbock, Texas, T: William D. Northcut
- EN088** **The Effects of Free Volume Due to Relaxation on the Amorphous Metal Pd40Ni40P20**  
Wayland Chen, 17, Junior, Baltimore Polytechnic Institute, Baltimore, Maryland, T: Charlotte Vernelle Saylor
- EN089** **The Capturing and Utilization of Wasted Energy**  
Janelle Marie Goettman, 15, Sophomore, Burkburnett High School, Burkburnett, Texas, T: Pamela Francis
- EN090** **Trap Me If You Can**  
Riawphai Chantarachit, 15, Freshman, Kanlayanee Si Thammarat, Nakhon Si Thammarat, Thailand, T: Nittaya Thaweekitjakan
- EN091** **Fuel Cell System Using Hydrogen from Aqueous Sodium Borohydride Solution for Portable Communication Applications**  
Shengbo Xu, 17, Senior, Hamilton High School, Chandler, Arizona, T: Teresa Clark
- EN092** **The Effects of Blade Design and Angles on Wind Turbine Energy Performance**  
# Andrew Charles Schlievert, 18, Senior, Algona High School, Algona, Iowa, T: Walter Reemtsma
- EN093** **Foot Operated Vehicle Device for the Physically Challenged**  
Malavika Vinod Tiwari, 16, Sophomore, St Mary's Convent High School, Kanpur, Uttar Pradesh, India, T: Kali Vinod Tiwari
- EN094** **Initial Assessment of the Biocompatibility of HT/HP Co/Cr/Nb/C Phases**  
## Richard Winston Larson, 17, Junior, Provo High School, Provo, Utah, T: Ty Robinson
- EN095** **Preventing Degradation in Proton Exchange Membrane Fuel Cells: A Novel, Multi-cartridge Air Contaminant Control System**  
# Jonathan Brandon Burke Cross, 17, Junior, James W. Robinson, Jr. Secondary School, Fairfax, Virginia, T: Robert W. Fenton
- EN096** **Biodiesel: Fuel of the Future? Phase V**  
# Joshua James Chilson, 18, Senior, Florence High School, Florence, South Dakota, T: James Leonard Chilson
- EN097** **Extracting Melody from MIDI Files**  
Benjamin Min-Jia Chang, 16, Junior, Sewanhaka High School, Floral Park, New York, T: David A. Sexton
- EN098** **Can a Fuel Cell Fly?**  
Cynthia Susan Spahn, 15, Sophomore, W. T. Woodson High School, Fairfax, Virginia, T: Donna Marie West
- EN099** **Innovations in Prosthetics for Complete and Partial Phalanges: Approximation of Complex Arcs and Simulation of Human Movement in Engineering**  
Brandon Joseph Peart, 17, Junior, Hillcrest High School, Midvale, Utah, T: Darwin Craig Cottle
- EN100** **Iris Recognition for Individual Identification**  
# Nina Maria Huffman, 17, Senior, Langley High School, McLean, Virginia, T: Jeffrey Michael Brockett
- EN101** **Communal Aptitude Evolution System for Autonomous Robots**  
Jessica Lauren Malone, 17, Junior, Berea High School, Berea, Ohio, T: Terry L. Malone

- EN102 Unmanned Aerial Vehicle: Design, Construction, and Flight Optimization**  
Stephen Joseph Carlson, 18, Senior, American Fork High School, American Fork, Utah, T: Don Bastian
- EN103 The Alkali Fuel Cell in a Car**  
Adam Ayesh Shanah, 15, Sophomore, Rawdat Al Ma, Amman, Khaldi, Jordan, T: Khalid Hasan
- EN104 Autonomous Robotic Arm with Network Capabilities: A Dependable Crane and Mobile Construction System**  
# Jennifer Lee Worley, 18, Senior, Keyser High School, Keyser, West Virginia, T: Tabitha L. Woy
- EN105 Accelerated Angular Scanning in Holographic Data Storage**  
# Philip Alejandro Munoz, 18, Senior, School of Science and Technology, Beaverton, Oregon, T: James Richard Gardner
- EN106 Multi-terrain Navigating Micro Air Vehicle with Take-off and Landing Capabilities**  
Brian Jonathan Ho, 16, Junior, Suncoast High School, Riviera Beach, Florida, T: Beth S. Cozzi
- EN107 Nano-Fibrous Poly (L Lactic Acid) Scaffolds**  
Jacquelyn A Gold, 18, Senior, Spanish River Community High School, Boca Raton, Florida, T: Susan Mary Devick
- EN108 Designing an Instrument for Genetic Tests: The Optical Waveguide**  
Matthew Edwin Trusheim, 17, Junior, Breck School, Golden Valley, Minnesota, T: Lois Fruen
- EN109 Design Parameters Affects Building Resistance to Raleigh, Love and Shear Waves Under Simulated Earthquake Events**  
Wilmarelis Perez, 14, Freshman, Colegio Radians, Cayey, Puerto Rico, T: Eddie Laboy
- EN110 Electromagnetic Limb**  
# Boris Andres Simmonds, 17, Senior, Boris Andres Simmonds, Huntsville, Alabama, T: Brian Joseph Finzel
- EN111 Aerodynamics and Racing . . . What a Drag**  
Steven James Schmidt, 18, Senior, Mohall-Lansford-Sherwood High School, Mohall, North Dakota, T: Dan Allen Dew
- EN112 The Power of a Vortex**  
# Andrez Benito Montoya, 16, Junior, Alamogordo Senior High School, Alamogordo, New Mexico, T: Robert Tinguely
- EN113 Stressed Out Again!**  
# Keri Elizabeth Hernandez, 18, Senior, Ellendale Public High School, Ellendale, North Dakota, T: Peter Sykora
- EN114 Wood Arches Have a Difference?**  
Shannon Lee Klein, 15, Freshman, Wishek Public School, Wishek, North Dakota, T: Bill A. Malaski
- EN115 Smart Canes for the Visually Impaired**  
# Brittney Dyanne Black, 17, Senior, Black Homeschool, Williston, North Dakota, T: Charles Duane Black
- EN116 Fume Hood for the Science Lab, Phase II: Improving Airflow**  
Erik Michael Knutson, 18, Senior, Edinburg Public School #106, Edinburg, North Dakota, T: Warren Lee Nelson
- EN117 Residential Cogeneration**  
Alex J. Doll, 15, Freshman, Mandan High School, Mandan, North Dakota, T: Julie A. Fleck
- EN118 Television Camera Wiper System**  
Cody Alan Fleckenstein, 17, Sophomore, New Salem High School, New Salem, North Dakota, T: Jon David Gums
- EN119 High-Speed FSO Data Link**  
Jan Svab, 19, Junior, Gymnazium Jaroslava Heyrovskeho, Prague, Czech Republic, T: Vilem Bauer
- EN120 Personal VTOL Vehicle: The Concept of Counter-Acting Torque Effect Positively**  
Mohamed Zohair Ammar, 16, Senior, Modern Education School, Cairo, Egypt
- EN121 Airfoil Design**  
Ashley Brianna Sicard, 17, Senior, Windsor High School, Windsor, Vermont, T: Jennifer S. Townsend
- EN122 Electronic Rangers: Assistance for Visually Impaired Canines**  
# Ryan Benjamin Rainville, 17, Senior, Rutland High School, Rutland, Vermont, T: Stephen Briggs
- EN301T Increasing Efficiency of Rotorcraft by Using Y-Shaped Winglets**  
Nikoloz Gia Maghaldadze, 16, Junior  
Davit Avtandil Khatiashvili, 17, Junior  
42nd Physical-Mathematical School, Tbilisi, Georgia Republic  
T: Tornique Ioseb Mchedlishvili
- EN302T Solar Power System Load Controller Development**  
Jonathan David Troup, 17, Senior  
James Dean Morton, 18, Senior  
Faith Baptist High School, Longmont, Colorado  
T: Jeffrey R. Hashberger
- EN303T The Bat Hat: An Economic Aid for the Visually Impaired**  
Taylor Michael Ducote, 15, Freshman  
Dylan James Ducote, 16, Junior  
Catholic High School, New Iberia, Louisiana  
T: Donald J. Voorhies
- EN304T Programming the Past: The Development of a Programmable Catapult**  
Max Krakauer, 14, Freshman  
Daniel Evan Beard, 15, Freshman  
Palmer High School, Colorado Springs, Colorado  
T: Martha J. Alvarez
- EN305T A Study on Improving Efficiencies of Pulsed Electro-Magnetic Linear Accelerators**  
Guangyan Gao, 15, Sophomore  
Woo Han Ong, 15, Sophomore  
Raffles Institution, Singapore, Singapore  
T: Li-Kheang Neo
- EN306T Do the Car's Spoiler and the Car's Front Wing Affect the Amount of Down Force Produced by the Car?**  
Ryan Coleman Abernethy, 15, Sophomore  
Mark Andrew Peterson, 16, Sophomore  
Lincoln Park Academy, Fort Pierce, Florida  
T: Mark Hueter
- EN307T A Rotary Implementation of the Stirling Concept**  
# Stephen Joseph Leotis, 17, Senior  
# Lauren Ashley Byrd, 18, Senior  
Houston County High School, Warner Robins, Georgia  
T: Laura Byrd
- EN308T Enhanced Cooling of Microelectronic Devices by Using the Thermoacoustic Effect**  
Pen-Yuan Hsing, 18, Senior  
Wei-Kang Huang, 18, Senior  
Taipei Municipal Lishan Senior High School, Taipei, Taiwan, Chinese Taipei  
T: Liang-Chao Chang
- EN309T The Portable Emergent Piping Dealer**  
Zhang Xu, 18, Senior  
Guo Yuanyuan, 19, Senior  
Xiao Xiao, 18, Senior  
No. 1 Middle School of Yuanjiang City, Yuanjiang, Hunan, China  
T: Guo Jianda
- EN310T Is the Sun the Answer?**  
Kelsey Rae Chambers, 14, Freshman  
Quincy Li Murphy, 15, Freshman  
La Veta High School, La Veta, Colorado  
T: Dan A. Smith
- EN311T Electricity Load Forecasting Using the Support Vector Machine**  
Adam Shabti Charles, 17, Senior  
Yuriy Novodvorskiy, 17, Senior  
David Dengyu Wang, 17, Senior  
Stuyvesant High School, New York, New York  
T: Bruce Winokur

- EN312T Designing a Single Networked Webcam Capable of Rotating and Tilting to View Multiple Robots**  
Amanda Sarah Hersh, 15, Sophomore  
Rogaite Shafi, 17, Senior  
Dilruba Akther, 17, Senior  
Yeshivah of Flatbush Joel Braverman High School, Brooklyn, New York  
Brooklyn Technical High School, Brooklyn, New York  
Fort Hamilton High School, Brooklyn, New York  
T: Vikram Kapila
- EN313T Development of a Continuously Variable Transmission**  
Hendrik Petrus Becker, 17, Senior  
Kieran George Mace, 18, Freshman  
Saint John's School, Johannesburg, Gauteng, South Africa  
T: Warwick Taylor
- EN314T The Incorporation of Nanofiber Materials in Air Filtration Applications**  
James Z. Wang, 17, Junior  
# Albert Roberts Christian, 18, Senior  
North Canton Hoover High School, North Canton, Ohio  
T: Connie Hubbard
- EN315T Maglevs: What's Up with That?**  
Mark Gregory Mathews, 16, Sophomore  
Joshua Elliot Braband, 16, Sophomore  
Glencoe-Silver Lake High School, Glencoe, Minnesota  
T: Roxanne Marie Stensvad
- EN316T Red Dirt Bricks as an Alternative to Clay: Cleaning the Environment While Building Affordable Homes**  
Christian Joel Bracy, 15, Sophomore  
Robert Harry Thompson, 16, Sophomore  
The Good Hope School, Frederiksted, Virgin Islands  
T: Leslie Greene
- EN317T Milk Pasteurizer**  
Hugo Gualterio Chiardola, 19, Senior  
Ignacio Gabriel Rodriguez, 19, Senior  
Technical School NO. 139 De Produccion Agro-Ind., Viale, Entre Rios, Argentina  
T: Humberto Javier Jose
- EN318T Biomedical Application of Shape Memory Polymer**  
Tracey Anne Fischer, 16, Junior  
Leslie Roselyn Dias, 17, Junior  
Centaurus High School, Lafayette, Colorado  
T: Diana Wiant; T: Abby Scott
- EN319T Need a Lift? Comparison of Original Wingtip Designs**  
Erik Bruce Kurtz, 16, Sophomore  
Christopher James Todd, 16, Sophomore  
Hilton Head High School, Hilton Head, South Carolina  
T: Matthew Thomas Lindner
- EN320T Increasing the Efficiency of a Robotic System Using a Visual Aid Program**  
Richard William Odlum, 17, Senior  
Christopher Denis McCann, 18, Senior  
Yorktown High School, Yorktown Heights, New York  
T: Michael Jay Blueglass
- EN321T Convertible Wheel Chair**  
Martin Nicolas Bricchi, 18, Senior  
Leandro Gabriel Martinez, 20, Senior  
Technician School NO. 9 "Ing. Luis A. Huergo", Buenos Aires, Argentina  
T: Edgardo Eduardo Jose Vazquez
- EN322T Automated Drilling Workstation**  
Manuel Huerta Ruiz, 18, Senior  
Alejandro Machorro Rojas, 18, Senior  
Erick Gerson Hernandez Romero, 17, Senior  
Colegio de Estudios Cientificos y Technologicos, La Magdalena, Puebla, Mexico  
T: Ruben Tellez
- EN323T Does Wing/Body Type Have an Affect on the Performance of an Airplane?**  
Glenn Allen Traner, 17, Senior  
Jared Michael Loeb, 17, Senior  
Francis Howell North High School, St. Charles, Missouri  
T: Donna Jo Malkmus
- EN324T MT - Milk Tester**  
Carlos Augusto Bugs, 20, Senior  
Clodoaldo de Borba Lambiase, 19, Senior  
# Pedro Turibeo Castagna, 19, Senior  
Fundacao Escola Tecnica Liberato Salzano Vieira da, Novo Hamburgo, Rio Grande do Sul, Brasil  
T: Leo Weber
- EN325T Digital Multi-Movement Transmitter**  
Davi Miguel Teixeira Roberto, 17, Junior  
Manir Miguel Curi Junior, 17, Junior  
Valmir Meneses Guimaraes Neto, 17, Junior  
Centro Educacional de Pedreira, Sao Paulo, Brasil  
T: Moises Oliveira dos Santos
- EN326T The Development of an Aquatic Prosthesis for SCUBA and Skin Diving**  
# Rhett Lee Rumery, 19, Senior  
# Lucas James Cavin, 18, Senior  
# John Thomas Thurmon, 18, Senior  
Chillicothe High School, Chillicothe, Missouri  
T: Greg Lynn Thurmon
- EN327T A Pressure Suit for the Handicapped**  
Daniel Mazor, 18, Senior  
Harel Victor Cohen, 18, Senior  
Maayan-Shahar, Emeq Hefer, Israel  
T: Reuven Dinovich
- EN328T Effects on Cooling Ability and Energy Efficiency of Refrigerators by Using Aluminum to Increase the Surface Area of the Condenser Coils**  
Lindsey Reed Koril, 16, Sophomore  
Erin F. Eppard, 16, Freshman  
Thunderbird High School, Phoenix, Arizona  
T: Renee M. Kaye
- EN329T Improvised Artificial Limb**  
Mihir Tandon, 15, Sophomore  
Riddhiman Yadava, 15, Sophomore  
Modern School, Vasant Vihar, New Delhi, India  
T: Anuradha Mathur
- EN330T Reinventing Edison: Optimization of Light Bulb Filament Material**  
Teresa Elizabeth Sartor, 17, Junior  
Elizabeth Anne Mrizek, 17, Junior  
Presentation High School, San Jose, California  
T: John C. Howe
- EN331T Hovercraft Symmetry and Lift/Load Capacity**  
Amy Minh-Tran Duong, 18, Senior  
Samantha Lindsey Saenger, 17, Senior  
W. T. Woodson High School, Fairfax, Virginia  
T: James Anderson McLeod
- EN332T The Peltier Effect: Eliminating the Use of Freon in Automobile Air-conditioning Systems**  
# Tyler Glen Lyon, 18, Senior  
# Daniel Rees Winegar, 18, Senior  
Riverton High School, Riverton, Utah  
Copper Hills High School, West Jordan, Utah  
T: Kari Maruji Lewis
- EN333T Smart Irrigation System**  
Akrum Idrees Al-Homoud, 18, Senior  
Hasan Yousef Ikhleif, 18, Senior  
AlWaleed Bin Abd AlMalek Secondary School, Zarka, Jordan  
T: Eyad Ismael AlTirawi
- EN334T Computer Analysis of Bacterial Colony Growth Over Time**  
Devin Lane, 17, Senior  
Ben Wilson Buford, 18, Senior  
Benson Polytechnic High School, Portland, Oregon  
T: Jean Sang Eames
- EN335T Study of Safe and Comfortable Electric Wheelchair that Overcomes Road Conditions:-Development of a Wheel that Can Easily Climb Curbs**  
Kentaro Yoshifuji, 17, Junior  
Yuki Miura, 16, Sophomore  
Tsuyoshi Hino, 16, Sophomore  
Nara Prefecture Oji Technical High School, Nara, Japan  
T: Kenji Kubota

- EN336T Create a Collapsible Wheelchair**  
Joshua Robert Turner, 17, Junior  
William Caleb Rodgers, 17, Junior  
Shawn Ryan Matthews, 17, Senior  
Paulding County High School, Dallas, Georgia  
Hiram High School, Hiram, Georgia  
T: Leon R. Grant
- EN337T Silicon Metal-Insulator-Semiconductor Field-Effect Transistor Prototypes for SrTiO<sub>3</sub> MISFET Fabrication**  
Daniel Page McKeon, 18, Senior  
Colin Patrick Drummond, 18, Senior  
Breck School, Golden Valley, Minnesota  
T: Lois Fruen
- EN338T The Wireless Power Source**  
Nathan Lundell Chadburn, 17, Senior  
Daniel Thomas Garner, 18, Senior  
Brennen Reese Chadburn, 15, Sophomore  
Riverton High School, Riverton, Utah  
T: Nate Justis
- EN339T Using Supercritical Carbon Dioxide to Enhance Polymer Compatibilization and Metallization in Ultra-Thin Films**  
# Chelsea Gloria Gordon, 17, Senior  
# Feini Qu, 17, Senior  
Half Hollow Hills High School East, Dix Hills, New York  
T: Chrysi Notskas
- EN340T Two Cycle Engine Emissions**  
Scott Anthony Horton, 17, Senior  
Thomas William Bereza, 17, Senior  
Aaron Lee Ridenour, 16, Junior  
Harper Creek High School, Battle Creek, Michigan  
Pennfield High School, Battle Creek, Michigan  
T: David MacQuarrie
- EV009 Potential Amelioration of Fescue Toxicosis by Inclusion of Clays in Diet**  
Loren Kaye Liebrecht, 17, Senior, Southwest Virginia Governor's School, Dublin, Virginia, T: Rebecca Ann Phillips
- EV010 The Complex Monitoring of the State of Different Wooden Kinds in the City Conditions with the Usage of Botanical and Chemical Methods**  
Uladzimir Bury, 16, Junior, Secondary School #95, Minsk, Belarus, T: Evgeniya Nikolaevna Yaroshevich
- EV011 The Use of Barley Straw to Control Algal and Macrophyte Growth on Wild Rice Lake: Pre and Post Eutrophic Conditions, Phase V**  
## Elizabeth Jean Welsh, 17, Senior, Proctor High School, Proctor, Minnesota, T: Cynthia Ann Welsh
- EV012 The Effect of a Selected Herbicide (Trifluralin) on the Flagellar Regeneration and Resorbition of *Chlamydomonas reinhardtii***  
Cherry Dawn Tomscheck, 17, Senior, North Toole County High School, Sunburst, Montana, T: Lawrence Dexter Fauque
- EV013 The Effects of Pollutants on Freshwater Algae and Planaria from Local Eutrophic Waters**  
Veniece LaShawn Kirksey, 16, Sophomore, Yazoo City High School, Yazoo City, Mississippi, T: Kevin Gaylor
- EV014 Sarcodine Bioremediation in Streams, Phase II: Determining the Uptake of Heavy Metal Contaminants**  
Anne Marie Thaemert, 18, Senior, Merino High School, Merino, Colorado, T: Penny Propst
- EV015 Selective Feeding of *Procambarus clark* on Three Dominant Submerged Macrophytes**  
Sai Ge, 17, Junior, Wuchang Experimental High School, Wuhan, Huibei, China, T: Shuangqing Qu
- EV016 Change of Photoelectric Properties of Semiconductors as a Tool for the Control of Environmental Pollution by Extraneous Admixtures and IR-illumination**  
Marina Andreevna Novikova, 17, Junior, Secondary School #33, Odessa, Odessa, Ukraine, T: Yuriy Nikolaevich Karakis
- EV017 Proactive Treatment of Agricultural Nitrate Runoff: Improving the Practicality and Efficiency of Riparian Buffers for Sustainable Water Quality and Watershed Health**  
# Jason Frederick Kniss, 18, Senior, Southridge High School, Beaverton, Oregon, T: Joel Morgan
- EV018 The Effect of Heavy Metals on the Growth of Hyacinth Roots**  
Precious Kanika Raspberry, 14, Freshman, Wisconsin Career Academy, Milwaukee, Wisconsin, T: Omer Lutfi Yazgan
- EV019 Plant Derived Corrosion Inhibitor**  
Samuel Batista, 18, Senior, Colquitt County High School, Moultrie, Georgia, T: Thomas Edison Hall
- EV020 The Effect of Varying Phosphate Concentrations in Growth Mediums on *N. europaea* Nitrification Activity as Indicated by the Nitrite Concentration Using Spectral Analysis**  
Kathleen Elizabeth Fleming, 16, Junior, Yorktown High School, Arlington, Virginia, T: Michael Joseph Zito
- EV021 Copper Tolerance of Non-mycorrhizal and Mycorrhizal Eucalyptus and Acacia Seedlings**  
Brian James Siababa Aggangan, 15, Junior, University of the Philippines Rural High School, Bay, Laguna, Philippines, T: Ma. Lourdes Miranda Rebulanan
- EV022 Germination and Seed Viability of *Coleogyne ramosissima* (Blackbrush)**  
Kristin Sorensen, 18, Senior, Pine View High School, Saint George, Utah, T: Sandy Ferrell
- EV023 Stream Riparian Zone Influence on Drift-Feeding Fish and Their Terrestrial Invertebrate Prey, Phase III**  
# Christina Lynn Faust, 17, Senior, Cedar Shoals High School, Athens, Georgia, T: Stella Guerrero
- EV024 Poisonous Playgrounds, Part Two: Playing with Arsenic**  
Kaitlyn Rebecca Milman, 15, Sophomore, Thomas Stone High School, Waldorf, Maryland, T: Janis Rowell Milman
- EV025 A Novel, Cost Effective Approach for Removing Arsenic from Drinking Water in Bangladesh**  
### Douglas Calvin Naftz, 18, Senior, Park City High School, Park City, Utah, T: Kevin King

## ENVIRONMENTAL SCIENCE

### GRAND AWARDS PRESENTED BY:

RICOH

- EV001 Water-Borne PAH Concentrations Associated with Fossil Fuel Production and Their Impact on Apoptosis-Related Proteins**  
Megan Marie Kuper, 17, Senior, Greybull High School, Greybull, Wyoming, T: Joel M. Kuper
- EV003 A Study of the Effects of Light on Temperature Stressed *Acropora valida***  
## Thomas Lee Powell, 17, Junior, Trinity Catholic High School, Ocala, Florida, T: Francis Gammara
- EV004 Assessing the Risk of a Potential Biological Control Agent: Oviposition Tests on Wetland Plants**  
Sheena Bhalla, 15, Sophomore, Lincoln Park Academy, Fort Pierce, Florida, T: Steven Stoica
- EV005 The Effects of Increased Nutrient Levels on Aquatic Organisms: A Bioassay of Cave Springs Branch and Honey Creek**  
Molly Katheryn Steen, 15, Sophomore, Grove High School, Grove, Oklahoma, T: Keli Don Steen
- EV006 Phytoremediation of Arsenic in Drinking Water Using *Pteris cretica***  
Jared David Reigle, 15, Sophomore, Evangelical Christian School, Fort Myers, Florida, T: Ellen Stegeman
- EV007 Effect of Salinity on Benthic Foraminifera in the Indian River Lagoon**  
Phaedra Calista Tinder, 16, Junior, Sebastian River High School, Sebastian, Florida, T: Joyce M. Miller
- EV008 An Analysis of Shallow Groundwater Chemistry in Betsch Fen**  
## Sara K. Sullivan, 17, Junior, Unioto High School, Chillicothe, Ohio, T: Mary Beth Mauer

- EV026 Copper Conducted Dehydration System Capable of Reducing Formaldehyde Levels of Water and Soil in Cemeteries**  
# Pedro David Gil de Rubio, 17, Junior, Colegio San Jose, San Juan, Puerto Rico, T: Dorimar Morales-Torres
- EV027 A Comprehensive Analysis of Insect Diversity as a Result of Terrestrial Features and Aquatic Vegetation**  
Elise Laine Larson, 18, Senior, Bagley High School, Bagley, Minnesota, T: Olin Miles Anderson
- EV028 Water Quality in a Variety of Very Diverse Aquatic Habitats**  
Cory Ray Knowles, 17, Junior, Drew Central High School, Monticello, Arkansas, T: Dennis Von Thurman
- EV029 Oil Well Bacteria**  
Stephanie Elizabeth Rector, 15, Freshman, Deer Creek-Lamont High School, Lamont, Oklahoma, T: Lindsay J. Jones
- EV030 Determining the Environmental Impact of Sodium Chloride from Road De-icing in Northern Areas**  
# Laura K. Jones, 18, Senior, University School of Milwaukee, Milwaukee, Wisconsin, T: Ronald C. LeMay
- EV031 Bioremediation of Crude Oil in Pristine and Contaminated Soil Environments with Natural Enhancement of Degradation**  
Srishti Deepak Mirchandani, 15, Junior, duPont Manual Magnet High School, Louisville, Kentucky, T: Glenn Edwin Zwanzig
- EV032 Immobilization of Hazardous Materials Utilizing *Gallionella sp.*, *Klebsiella sp.*, and *Desulfovibrio sp.* Bacteria**  
Morgen Elizabeth Anyan, 17, Junior, Selah High School, Selah, Washington, T: David McMillen
- EV033 Comparative Assessment of *in vitro* Growth of *Perkinsus* Species**  
Kiran Jay Harding, 17, Senior, River Hill High School, Clarksville, Maryland, T: Barbara Joanne Jewett
- EV034 The Effect of Soil Texture on the Adsorption of *Escherichia coli***  
Jonathan Edward Chester, 17, Senior, The Peddie School, Highstown, New Jersey, T: Irina E. Lyublinskaya
- EV035 Contamination of Proximate Wells in the Piedmont Region**  
Afton Kerry Vechemy, 15, Sophomore, Glenleg High School, Glenelg, Maryland, T: Deano Ray Smith
- EV036 Stormwater Drainage Systems**  
# Kacee Jo Bootsma, 17, Senior, Sunnyside High School, Sunnyside, Washington, T: Joyce E. Stark
- EV037 Automobile Pollution: High Mileage vs. Low Mileage**  
Randi Jo Riegel, 16, Junior, Reserve High School, Reserve, New Mexico, T: Roger Skaggs
- EV038 One "Mite"y Mission: Compensation Suppression of *Convolvulus arvensis* Implementing Host-Specific *Aceria malherbae***  
Kaitlyn Jeanne Lingus, 15, Freshman, Branson High School, Branson, Colorado, T: Vicki Lea Goebel
- EV039 Freshwater, Road Salt & Spineless Creatures**  
# Eric Lee Keeling, 16, Sophomore, La Veta High School, La Veta, Colorado, T: Dan Smith
- EV040 Pollution Solution: A Study of the Chemicals in the Detroit River**  
Dilara Kadriye Uskup, 14, Freshman, Renaissance College Preparatory High School, Detroit, Michigan, T: Ermelda Polk
- EV041 Bulrush Burning as a Solids Removal Management Technique: A Study of Ruby Lake National Wildlife Refuge, Year Three**  
Lindsay Rose Gilbertson, 17, Junior, Elko High School, Elko, Nevada, T: Dave Meisner
- EV042 Treeless Paper**  
Katherine Karie Denham, 16, Freshman, Spring Creek High School, Spring Creek, Nevada, T: Jeff VanOrman
- EV043 A Comparison of Herbs and Bti as Larvicides on *Culex pipiens* and Their Effect on *Daphnia magna*, Year Two**  
# Abigail Marie Hines, 15, Sophomore, Orchard Day School, Fort Wayne, Indiana, T: Maria Louise Hines
- EV044 Effects of Walls and Wall Architecture on Wind Speed for Energy Generating Turbines**  
Matthew George Czapar, 18, Senior, Rochester High School, Rochester, Illinois, T: Mark Butcher
- EV045 Identification of a Benthic Microbe Utilizing Bioremediation and MFCs**  
Abigail Frances Groff, 16, Sophomore, Conestoga Valley Sr High School, Lancaster, Pennsylvania, T: James M. Hovan
- EV046 Effects of Paper Sludge on Effluent from Reclaimed Surface Mine Sites**  
# Jared Benjamin Steed, 16, Junior, Buckeye Valley High School, Delaware, Ohio, T: Edward Kapraly
- EV047 Lichens and Biomonitoring: The Effects of Vehicle Emissions**  
# Drew Elijah Kamper, 17, Senior, Kingston High School, Cadet, Missouri, T: Tamara King
- EV048 Monitoring Water's Health**  
Larkin Elizabeth Hottel, 15, Sophomore, James Wood High School, Winchester, Virginia, T: Jill M. Barker
- EV049 Boards and Branches: A Multivariable Study of Snow Interception**  
Erica Elizabeth David, 15, Freshman, Pinedale High School, Pinedale, Wyoming, T: Elizabeth J. David
- EV050 A Natural Space: an Environmental and Leisure Purpose**  
Bibiana Maite Petry, 17, Senior, Fundacao Escola Tecnica Liberato Salzano Vieira da, Novo Hamburgo, Rio Grande do Sul, Brasil, T: Rosana Benvenuti Jacques
- EV051 The Effects of Freeway Pollution**  
Darryl LeAndrew White, 19, Senior, Campagna Academy Charter School, Schererville, Indiana, T: Katryn Hedges
- EV052 Cobus Creek Restoration: Periphyton and Macroinvertebrates as Lotic Indicators**  
Auna Rae Badke, 16, Junior, Marian High School, Mishawaka, Indiana, T: Kenneth William Andrzejewski
- EV053 Toxins of the Round Goby, Phase I**  
Amanda Marie Bennett, 15, Freshman, Marysville High School, Marysville, Michigan, T: Larry J. Mavis
- EV054 Effects of *Pinus monophylla* and *Juniperus osteosperma* Expansion on the Composition of Sagebrush Plant Communities in Eastern Nevada**  
Owen William Baughman, 17, Junior, White Pine High School, Ely, Nevada, T: Chelise Crookshanks
- EV055 Acid Mine Drainage Remediation Techniques & Their Effective Reduction in Concentrations of Lead, Cadmium, Chromium, Zinc and pH**  
### Aaron M. Ritter, 18, Senior, Bedford-North Lawrence High School, Bedford, Indiana, T: Carroll D. Ritter
- EV056 Effects of Toxic Riparian Weeds on the Survival of Aquatic Invertebrates**  
David Colin Conway Llewellyn, 17, Senior, Great Lakes College, Tuncurry Senior Campus, Tuncurry, New South Wales, Australia, T: Gregory Smith
- EV057 Multi-Tiered Wetlands: A Technique for Improving the Efficiency of Artificial Wetlands**  
### Andrew James Stewart, 17, Senior, Karabar Distance Education Centre, Queanbeyan, New South Wales, Australia, T: Kevin Ronald Stewart
- EV058 The Impact of Antibiotic Use on the Aqueous Environment of Scott County**  
# Hannah Marie Schneider, 15, Sophomore, Belle Plaine High School, Belle Plaine, Minnesota, T: Susan M. Stier
- EV059 Do Livestocks Antibiotics Affect Soil Bacteria? A Comparison of Oxytetracycline-Resistance in Organic vs. Commercial Cattle Farms**  
Laura Ann Huppert, 17, Junior, Piedmont High School, Piedmont, California, T: Michael Dominick Geluardi
- EV060 Determination of the Ability to Use *Pontederia cordata* (Blue Broad Leaf Pickerel Rush) Plants as Biomonitorers for Monitoring Trace Heavy Metal Contaminants in Drainage Canals**  
# Elizabeth Anne Lopez, 17, Junior, East Jefferson High School, Metairie, Louisiana, T: Cheryl Offner
- EV061 Phytoremediation of Sulfolane, Nonylphenol, and Trichloroacetic Acid and Their Entrance into the Human Food Chain, Phase III**  
### Blake Robert Wilde, 18, Senior, Fremont High School, Plain City, Utah, T: Bryce Dixon Ballif

- EV062 An Investigation of Titanium Dioxide Suspensions for Use in a Flowing Catalytic Heavy Metal Reduction Apparatus**  
Megan Moulding, 14, Freshman, Wahlquist Junior High School, Ogden, Utah, T: Julie Quinn
- EV063 Alimentary Behavior of *Belostoma elongatum* and Their Sanitary Importance**  
Antonio de la Cruz Caceres, 16, Junior, Normal "Juan Garcia de Cossio", San Roque, Corrientes, Argentina, T: Ramon Leonardo Amarilla
- EV064 Phytopurification: A Sustainable Natural System for the Treatment of Urban Wastewater**  
Olivia Reyna, 19, Senior, Bachillerato Tecnologico Industrial Servicios 165, Coatepec, Veracruz, Mexico, T: Manuel Guevara
- EV065 Does Bubble Size Affect Recycling Paper?**  
Tanner Michael Hento, 15, Freshman, Avon High School, Avon, South Dakota, T: Paul Robert Kuhlman
- EV066 Inhibition of Photosynthesis by Air Pollutants Quantified by the Photoacoustic Method**  
Aaron Tzeyang Kuan, 17, Senior, Horace Greeley High School, Chappaqua, New York, T: Paul Bianchi
- EV067 Barnacles Be Gone, Two: Does Ultrasonic Activation Prevent the Adhesion of the *Balanus glandula*?**  
Ryan John Clark, 15, Freshman, Hilton Head Preparatory School, Hilton Head Island, South Carolina, T: Tina Webb-Browning
- EV068 Black Murex Snails (*Hexaplex nigritus*) as a Habitat for Juvenile Pacific Calico (*Catrina*) Scallop, *Argopecten ventricosus***  
Chelsey Ann Yingling, 17, Senior, Tucson Magnet High School, Tucson, Arizona, T: Margaret Wilch
- EV069 Movement of Nitrates in the Soil Profile**  
Andrew Masatoru Abe, 17, Senior, Pearl City High School, Pearl City, Hawaii, T: Aaron Tominaga
- EV070 Naturally Occurring Radioactive Material: Where Are You Safe?**  
Nancy Nichole Wallace, 18, Senior, Andrews High School, Andrews, Texas, T: Vickie J. Gardner
- EV071 What Is the Effect of Acid Rain on the Cell Structure of *Spirogyra*?**  
John A. Burns, 15, Freshman, Yucca Junior High School, Clovis, New Mexico, T: Sharon Blair
- EV072 A Watershed in Recovery?**  
# Sarah Katherine Fisher, 16, Junior, Catholic High School, Huntsville, Alabama, T: Brian Joseph Finzel
- EV073 Optimizing Bioremediation: Chemical Effects on the Biostimulation of *Pseudomonas fluorescens***  
Caaminee Mayank Pandit, 17, Junior, Noblesville High School, Noblesville, Indiana, T: Charles Leon Emmert
- EV074 Determination of Antibiotic Presence in the Tennessee River and Inflowing Waters**  
# Jennifer Ann Taylor, 17, Junior, Florence High School, Florence, Alabama, T: Linda J. Kanipe
- EV075 Methodology of Phytomining by Growing *Avena sativa* and *Medicago sativa* to Nucleate Gold Nanoparticles for Nanoapplications, Phase II**  
## Rachael Ann Scott, 17, Senior, Northwest Mississippi Home Educators Association, Como, Mississippi, T: Wanda Faye Scott
- EV076 Dyeing to Keep a Safe Environment**  
Reya Jessica Das, 16, Junior, Hamilton High School, Chandler, Arizona, T: Teresa Clark
- EV077 Lake Traverse Watershed Assessment**  
## Neal Jerome Konda, 19, Senior, Sisseton High School, Sisseton, South Dakota, T: Elizabeth Ebert
- EV078 An Analysis of Personal and Pharmaceutical Care Products (PPCP's) in Effluent Wastewater**  
Jaime Marie Weaver, 17, Senior, Mercy Cross High School, Biloxi, Mississippi, T: Deborah Longo Worrel
- EV079 The Effects of *Uiola paniculata* and *Bitter panica* on the Stabilization of Sand Dunes**  
Lindsey Marie Peresich, 17, Senior, Mercy Cross High School, Biloxi, Mississippi, T: Deborah Longo Worrel
- EV080 Sustainable Development in an Unstable World: Helping Economically Disadvantaged Families Produce Their Own Food**  
# Travis Lopez, 17, Senior, Skyline Technical High School, Phoenix, Arizona, T: Joyce Baldwin
- EV081 The Pipe Dream? An Analysis of Haloacetic Acids in Wastewater Effluent**  
# Sky Breeden Vanderburg, 17, Junior, Moberly Senior High School, Moberly, Missouri, T: Gena L. McCluskey
- EV082 Muskrats and Wild Rice, Phase II**  
Aurelia Eugenia-Glory DeNasha, 14, Freshman, Fond du Lac Ojibwe School, Cloquet, Minnesota, T: Leslie Margaret Hoffman
- EV083 M&M (Methyl Mercury) with Cold Vapor Atomic Absorption**  
Jason C. Wu, 17, Senior, North Quincy High School, Quincy, Massachusetts, T: Matthew John Croft
- EV084 It's Raining . . . Carbon?**  
# Dustin George Harwood Hughes, 16, Junior, Timmins High and Vocational School, Timmins, Ontario, Canada, T: Jane Elizabeth Hughes
- EV085 Do You Really Know What Is in Your Drinking Water?**  
Marissa Nichole Darvis, 17, Junior, Plentywood High School, Plentywood, Montana, T: Harold Johnson
- EV086 Multigenerating Energy System, Phase III**  
# Gabriel Soto, 17, Senior, Luis Munoz Marin High School, Barranquitas, Puerto Rico, T: Leticia Rodriguez
- EV087 Bioenergy, Phase II**  
Nataly Soto, 16, Junior, Luis Munoz Marin High School, Barranquitas, Puerto Rico, T: Leticia Rodriguez
- EV088 Growth of Fungus in the Air Conditioners of an Educational Facility**  
Angelina Marie Estela, 15, Freshman, Segunda Unidad Macana, Guayanilla, Puerto Rico, T: Iris Delia Cintron
- EV089 Environmental Problems that Affect the Quality of Punta Salina Estuary in P.R. and Their Effects in the Productivity of the Benthics Community, Marine Life and Human Health**  
Alexis Colon, 17, Senior, Jose Santos Alegria, Dorado, Puerto Rico, T: Blanca Iris Hernandez
- EV090 Ammonia Emissions from Agricultural Waste**  
# Tara Ellen Gloyna, 16, Sophomore, Temple High School, Temple, Texas, T: Susan Sobehrad
- EV091 Ladybugs Don't Fly Away, Live in Organic Spray: The Effectiveness of Organic Pesticides on Ladybugs**  
Ebony-Shanielle LaDion Wafford, 16, Junior, Gaffney Senior High School, Gaffney, South Carolina, T: Summer Yeargin
- EV092 Efficient and Environmentally Safe Removal of Toxic Ammonia Using Aquatic Plants**  
Catharina Rose Grubaugh, 16, Junior, White Station High School, Memphis, Tennessee, T: Angel Perkins
- EV093 The Effects of Temperature on the Degradation of Petroleum**  
Stephanie Robyn Seman, 15, Freshman, Burkburnett High School, Burkburnett, Texas, T: Pamela Francis
- EV094 The Effects of Nitrogen Inputs on Microbial Activity in Bark Beetle Infested Forests: Implications for Global Carbon Cycling**  
Kevan Lew Chirstensen, 17, Junior, Corona del Sol High School, Tempe, Arizona, T: Mark Madsen
- EV095 Toxic Nanoparticles?**  
Annick Michelle McIntosh, 17, Junior, Academy of Science and Technology at Oak Ridge High School, Conroe, Texas, T: Richard Perzan
- EV096 Inhibition of Spawning of the *Corbicula fluminea* by 5-Hydroxytryptamine**  
Ellen Ruth Owen, 17, Senior, Gleason School, Gleason, Tennessee, T: Betty Hopkins Jackson
- EV097 Hydroponic Phytofiltration of Arsenic in Drinking Water**  
# Stephen Goodwin Honan, 16, Sophomore, W. T. Woodson High School, Fairfax, Virginia, T: Darlene Donelson
- EV098 Allelopathic Kinetics: A Novel Approach Developing Herbicides Using Natural Plant Toxins**  
Ana Luisa Cisneros, 15, Sophomore, Uniondale High School, Uniondale, New York, T: Paul A. Lichtman

- EV099 Design for Biodegradation: Harnessing Natural Decay by Managing Physical and Chemical Dynamics**  
David I. Marash-Whitman, 13, Freshman, Kehillah Jewish High School, San Jose, California, T: Steve Garcia
- EV100 Comparison of Zebra and Quagga Mussel Feeding**  
Tim Walter Wilke, 16, Sophomore, Liverpool High School, Liverpool, New York, T: Carol Matthews
- EV101 That Is the Smell of Inspiration**  
Andrew David Hix, 17, Sophomore, Maryville High School, Maryville, Tennessee, T: Sarah Agnes Jones
- EV102 # Phytoremediation: The Section Street Spring**  
Jessica Marie McEnaney, 18, Senior, Northwestern High School, Springfield, Ohio, T: Karen Smith
- EV103 Analysis of Macroinvertebrate Population and Diversity with Hydrological Parameters and Their Influence on Water Quality: A Watershed Study, Phase Three**  
Christine Weizer Li, 17, Junior, Cookeville High School, Cookeville, Tennessee, T: Steven Bradford Cook
- EV104 A Comparative Study of Nitrates and Phosphates Due to Blue River Watershed Runoff**  
Angie Marie Sells, 16, Junior, Eastern High School, Pekin, Indiana, T: Sharon Anne McElroy
- EV105 The Ability of *Ceratopteris richardii* to Tolerate and Accumulate Chromium**  
Alina Yinan Lou, 15, Sophomore, Mecosta Osceola Math, Science & Technology Center, Big Rapids, Michigan, T: Matthew Williams
- EV106 Bio-electromagnetism: Sustainable Electricity Production Using a Magnetic Field Generated by Magnetotactic Bacteria in a Microbial Generator**  
# Kartik Madiraju, 15, Sophomore, Centennial Regional High School, Greenfield Park, Quebec, Canada, T: Janet Bray
- EV107 Establishment of a New Cultivation Method Using Deep Ocean Water and Slightly Acidic Electrolyzed Water**  
Tomoyuki Suzuki, 18, Senior, Kanagawa Prefecture Hiratsuka Senior High School, Kanagawa, Japan, T: Akio Fujimori
- EV108 Where Has All the Water Gone? Analytical Comparison of Non-native Tamarisk and Native Willow**  
Sammia Renee Largo, 17, Junior, Fort Wingate High School, Ft. Wingate, New Mexico, T: Patricia Sherrin
- EV109 Sampling and Analysis of Agriculture Related Chemicals in Bulloch County Farm Ponds as Indicators of Accumulation from Runoff, Phase II**  
Abby C. Blocker, 17, Junior, Statesboro High School, Statesboro, Georgia, T: Beth N. Joyner
- EV110 Growing Energy: The Production of Hydrogen from the Green Algae *Chlamydomonas reinhardtii***  
Radha Ramjeawan, 15, Freshman, Uniondale High School, Uniondale, New York, T: Paul Lichtman
- EV111 Impacts of Accidental Aquaculture Release on the Habitat Utilization of Native Species: Environmental Management Considerations**  
## Marla Maxine Valentine, 18, Senior, Murphy High School, Mobile, Alabama, T: Wanda Griffis
- EV112 UV and H<sub>2</sub>O<sub>2</sub> Remediation of Strong Orange-Contaminated Wastewater**  
Adria Katrin Schwarber, 15, Freshman, Notre Dame Academy, Covington, Kentucky, T: Mary Ethel Parrott
- EV113 The Effects of D-Limonene on *Solenopsis invicta***  
Amarette Hope Aube', 16, Junior, Seminary Attendance Center, Seminary, Mississippi, T: Cherie Humphrey
- EV114 A Succession Study of Soils Involving Micro Invertebrates Populations for Wetlands Restoration**  
Jaime Lea Jensen, 17, Senior, Jensen Homeschool, Devils Lake, North Dakota, T: Shaun Nicole Prince
- EV115 The Effect of Mass Percentage of Water Treatment Residues on the Phosphorous Levels and Green Bean Growth**  
Casey Lynn Smith, 18, Senior, Blissfield High School, Blissfield, Michigan, T: Ken Bollinger
- EV116 # Scorched Earth - Toxic Water: An Investigation of Atmospheric Mercury Deposition and Wildfires**  
Kyle Nathan Jaffa, 15, Sophomore, Sandia High School, Albuquerque, New Mexico, T: Chris Hilleary
- EV117 Water Purification Systems for Rural Areas**  
Sarah DeWitt Nagel, 15, Sophomore, Mecosta Osceola Math, Science & Technology Center, Big Rapids, Michigan, T: Matthew Williams
- EV118 A Study of the Effects of Selected Treatments of Oilfield Water on the Vascular Contractions and Behavior of California Blackworms**  
Kari Lynn Gillespie, 17, Junior, North Toole County High School, Sunburst, Montana, T: Lawrence Dexter Fauque
- EV119 The Effects of Fluorescent Light on Water Quality**  
Sarah Jo Moquist, 18, Senior, Valley High School, Hoople, North Dakota, T: Kathleen Melaas
- EV120 Correlation Between Colors of Glow and Degrees of Air Pollution**  
Han-Ki Oh, 17, Senior, Taejeon Science High School, Daejeon City, South Korea, T: Sang-Hwa Yoon
- EV121 Biological Oxygen Demand at International Paper's Point Source Discharge**  
Lauren Wooten Smith, 16, Sophomore, John S. Davidson Fine Arts Magnet School, Augusta, Georgia, T: Cynthia Pousman
- EV122 Effects of Temperature on Dietary Accumulation and Toxic Effects of Methylmercury in Red Swamp Crayfish (*Procambarus clarkii*)**  
# William Patrick Jagoe, 17, Junior, A. R. Johnson Health Sciences and Engineering High, Augusta, Georgia, T: Paul Martin
- EV301T A Pesticidal Survey of the West St. James Waterways**  
Ciara M. Sutherland, 17, Junior  
Jahara I. Pierre, 17, Junior  
Saint James High School, St. James, Louisiana  
T: Kermit J. Gauthreaux
- EV302T Assessment and Analysis of Water Quality in the Chain of Lakes in Minneapolis, Minnesota**  
Kalia Her, 16, Sophomore  
Erik Michael Halvorson, 15, Sophomore  
John A. Johnson High School, St. Paul, Minnesota  
Como Park Senior High School, St. Paul, Minnesota  
T: Sonja Dunlap
- EV303T Are There Dissolved Oxygen Deficits in Lake Panasoffkee?**  
David Wesley Swartzfager, 14, Freshman  
Russell Wayne Swartzfager, 15, Senior  
Wildwood High School, Wildwood, Florida  
T: Susan Mcdonald Swartzfager
- EV304T Studies on Water Quality Profile of Estuarines Systems in Puerto Rico**  
Angela Rosa Figueroa, 15, Sophomore  
Loipa Ramos, 15, Sophomore  
Academia Nuestra Senora de la Providencia, San Juan, Puerto Rico  
T: Miguel R. Deliz
- EV305T A Nutritional Comparison of Historic Lesser Scaup Foods to the Zebra Mussel**  
Matt Moraco Weegman, 16, Sophomore  
Mitch Dale Weegman, 16, Sophomore  
Winona Senior High School, Winona, Minnesota  
T: Ken Mann
- EV306T An Inferential Study of the Efficiency of the Natural Filtration Process of the OES Wetlands as Determined by the Bioluminescent Capabilities of the Dinoflagellate *P. noctiluc***  
Matthew Aaron McKinney, 17, Junior  
Cole Thomas Streiff, 16, Senior  
Oregon Episcopal School, Portland, Oregon  
T: Rosa Hemphill
- EV307T Evaluation of Innovative Nitrification Inhibitors**  
John Daniels Ruzic, 17, Junior  
David Day Song, 17, Junior  
Ballard High School, Louisville, Kentucky  
T: Ronda K. Fields
- EV308T The Effects of Sources of Innoculems on Methane Production**  
# Nathan Abay Kebede, 17, Junior  
Berhanemeskel Alemu Nida, 17, Junior  
Piney Woods School, Piney Woods, Mississippi  
T: Zere J. Ezaz

- EV309T Effects of Phosphate on Crawfish**  
Alisha Marie Bailey, 15, Sophomore  
Shanee Tranise Turner, 16, Sophomore  
Saint James High School, St. James, Louisiana  
T: Kermit J. Gauthreaux
- EV310T Air Quality in Port Huron and Its Effects on the Population**  
Elizabeth Wells Busdicker, 14, Freshman  
Rachna Beeravolu Reddy, 14, Freshman  
Port Huron Northern High School, Port Huron, Michigan  
T: Brian Jamison
- EV311T The Relationship of the Behavior of Tadpole of *Rana omeimontis* with the Concentrations of the Water in Rice Paddy**  
Xiang Shi, 17, Junior  
Fei Duan, 17, Junior  
Yi Wang, 17, Junior  
Chendu Number 7 High School, Chendu, Sichuan, China  
T: Zong Wen
- EV312T Barren Land**  
Casey Eugene Hunewill, 14, Freshman  
Tyler Hunewill Elliott, 14, Freshman  
Smith Valley High School, Smith, Nevada  
T: Randi Hunewill
- EV313T Lead . . . Inadvertent Polluting Agent**  
Jose Eduardo Bogado Mercado, 16, Sophomore  
Eisis Maria del Carmen Cabrera Chacez, 16, Sophomore  
Fatima Aidee Chavez Lescano, 16, Junior  
Colegio Tecnico Nacional, Encarnacion, Paraguay  
T: Beatriz Antonia Paniagua de Zaracho
- EV314T Wat'r You Filtering?**  
Brian Thomas Stelly, 15, Sophomore  
Perry Emerson Mullins, 16, Sophomore  
Eric James Kauffman, 16, Sophomore  
Williams High School, Plano, Texas  
T: Vashka Desai
- EV315T The Solution to Phosphorus Pollution**  
Johrdashe Journey Walsh, 18, Senior  
Bernard Phuoc Tinh Nguyen, 18, Senior  
Sumner High School, Sumner, Washington  
T: Gregory Pile
- EV316T Zoom-Zoom-Doom: What Effect Will Asphalt Runoff Water Have on Pond Ecosystems?**  
Cassandra Beumler Pardee, 17, Senior  
Jessica Alice Mason, 17, Senior  
Buena High School, Sierra Vista, Arizona  
T: Virginia Caretto Bealer
- EV317T Environmental Impact of the Ecosystem of the Coastal Edge of the City Antofagasta Region Chile by Emissions Organic**  
Gonzalo Raul Aravena Rojas, 15, Sophomore  
Diego Alex Latrille Martinez, 15, Sophomore  
Jonathan Andres Fortt Ahumada, 15, Sophomore  
Colegio Part. Antofagasta, Antofagasta, Region de Antofagasta, Chile  
T: Vilma Tapia Pizarro
- EV318T Presence of Coliform Bacteria in Shoreline Soils and Public Beach Resorts in Puerto Rico**  
Roxanne Alvarado, 17, Senior  
Angel Manuel Suarez, 18, Senior  
Miguel Melendez Munoz High School, Cayey, Puerto Rico  
T: Vilma Luz Fonseca
- EV319T Anchor Pit: A Correlation Between Density and Total Dissolved Solids**  
Katherine Rose Aurand, 15, Sophomore  
Jessica Janet DeVries, 16, Sophomore  
Stevens High School, Rapid City, South Dakota  
T: Roberta Gaines
- EV320T On Golden Pond: The Study of Micronutrient Deficiency in Golden Alga, *Prymnesium parvum***  
Summer Dawn Sink, 17, Senior  
Crystal Daisy Wong, 18, Senior  
Burkburnett High School, Burkburnett, Texas  
T: Pamela Francis
- EV321T Conversion of Hazardous Petrochemical Sludge Waste as a New High Dielectric Constant Material**  
Khairul Ihsan Bin Talib, 18, Junior  
Ahmad Syafiq bin Ahmad Hazmi, 18, Junior  
NurulFarhana bte Zulkifli, 18, Junior  
Mara Junior Science College Taiping, Taiping, Perak, Malaysia  
T: Siti Khadijah Binti Raja Baharom
- EV322T Traditional Spices as Biopesticides**  
Mallika Dhillon Desai, 16, Junior  
Suvrata Desai, 16, Junior  
Jawahar Navodaya Vidyalaya, Goa, India  
T: Sudarshan Vishwanathan Iyer
- EV323T The Effectiveness of Artemia and Vibrio Bioassays for Low Levels of Lead Pollution**  
Christopher Demos Kostoulas, 16, Sophomore  
Marisol Ryu, 17, Junior  
Manhasset High School, Manhasset, New York  
T: Peter Guastella
- EV324T *Moringa oleifera*: Nature's Coagulant**  
#  
Shane Suazo, 18, Senior  
Yo Miyamoto, 17, Senior  
Hillsdale High School, San Mateo, California  
T: Steve Maskel
- EV325T Engineering Environmentally Safe Self Extinguishing Polymers**  
Daniel Hefter, 16, Junior  
Aryeh Sokolov, 16, Senior  
Davis Renov Stahler Yeshiva High School for Boys, Woodmere, New York  
Hebrew Academy of the Five Towns & Rockaway, Cedarhurst, New York  
T: Rosalie Peck; T: Ronald Occhiogrosso
- EV326T Comparative Effects of UHF EMR on Plants of the Order Dicotyledonae**  
Johnny Ng, 16, Junior  
Ery Anguiano, 17, Junior  
Itineris Early College High School, West Jordan, Utah  
West High School, Salt Lake City, Utah  
T: Tamara Goetz
- EV327T Development of a Qualitative TNT Sensor by Using Natural Cow Gelatine and TNT Determination**  
Enis Eray Ercag, 17, Sophomore  
Ismail Sizer, 16, Sophomore  
Private Fatih Science High School, Istanbul, Turkey  
T: Okan Gercek
- EV328T Get the Lead Out!**  
Tyce Landon Foster, 15, Sophomore  
Diana Michelle Caldera, 15, Sophomore  
Sarah Janay Brashear, 15, Sophomore  
San Jon High School, San Jon, New Mexico  
T: Steve Goodgame
- EV329T Bioremediation of Polluted Water with Hydrocarbons**  
Marisol Perez Rangel, 19, Senior  
Maria del Rocio Duarte Castillo, 19, Senior  
Cecyteg, Irapuato, Gto., Mexico  
T: Alejandro Leopoldo Gonzales Perez
- EV330T The Bioremediation Principles and Its Application to a Microbial Bioreactor**  
#  
#  
Vaseem Basilio Anwar, 18, Senior  
Kevin Y.W. Luu, 17, Senior  
Maryknoll High School, Honolulu, Hawaii  
T: William McFeeley

- EV331T Identification and Assessment of Urban Development on an Aquatic Ecosystem**  
Susan Margaret Barfield, 17, Junior  
Cailyn Annalece Estey, 16, Sophomore  
Grenada High School, Grenada, Mississippi  
T: Sherry H. Cook; T: Melanie Ales Harlow
- EV332T Tortave, Less Pollution in the Avicole Industry**  
Darwin Trejos Castro, 17, Senior  
Jonathan Mendez-Garcia, 17, Senior  
Colegio Tecnico Profesional Guaycara, Rio Claro, Puntarenas, Costa Rica  
T: Bolivar Ulate Mejia
- EV333T D-Tape, D-Bore and D-Ensiy**  
Whitney Jane Stevens, 14, Freshman  
Allison Marie Jones, 15, Freshman  
Stenensville High School, Stevensville, Montana  
T: Maria Lynn Schmidt
- EV334T Calculus for Optimum Can Designs: A Solution for Various Needs**  
Daniel Camilo Rojas-Quiros, 17, Junior  
Yuen Wa Wong-Lei, 18, Junior  
Fany Simha Siss-Zomer, 17, Junior  
Colegio Cientifico Costarricense -San Pedro, San Jose, Costa Rica  
T: Pedro Rodriguez-Arce
- EV335T From Household Waste to Garden Gold, Phase Two**  
Sean Chang Sung Wong, 16, Freshman  
Kelvin Tak Lek Chiong, 15, Freshman  
Sekolah Menengah Kebangsaan Batu Lintang, Kuching, Sarawak, Malaysia  
T: Mi Ing Wong

- MA011 Triangles: Beyond Sierpinski**  
# Neysha Marie Burgos-Vazquez, 17, Junior, Carmen Belen Veiga High School, Juana Diaz, Puerto Rico,  
T: Maria de Lourdes Plaza-Boscana
- MA012 Calculating Prime Numbers Using Hexagons**  
Andres O. Fontanez, 15, Sophomore, Ramon Power Y Giralt Sr High S, Las Piedras, Puerto Rico, T: Pedro Andino
- MA013 Polyhedrons, Graphs and Euler**  
Diana Maria Rosario-Torres, 16, Junior, Carmen Belen Veiga High School, Juana Diaz, Puerto Rico,  
T: Maria de Lourdes Plaza-Boscana
- MA014 The  $n$ th Term of Successions and Series with Finite Ratios**  
Nelson Morales-Lugo, 17, Senior, Aurea E. Quiles Claudio, Guanica, Puerto Rico, T: Henry Hicks
- MA015 On Universality Properties of Positive-Definite Integral Quadratic Forms**  
Scott Duke Kominers, 18, Senior, Walt Whitman High School, Bethesda, Maryland, T: Susan Schwartz Wildstrom
- MA016 Combating Gerrymandering: A Novel Mathematical Approach**  
# Daniel David Graves, 18, Senior, Nicolet High School, Glendale, Wisconsin, T: Eliot Scheuer
- MA017 Computational Modeling of Physical Interactions in Three Dimensions**  
# James Halligan Powell, 18, Senior, Terre Haute South Vigo High School, Terre Haute, Indiana, T: Daniel K. Wunderlich
- MA018 Investigating the Changes in the Poincar Algebra and Group by Enlarging the Space-Time Dimensions**  
Niket Ranjan Pandey, 16, Junior, Bethel High School, Hampton, Virginia, T: Khin Maung
- MA019 Car Parking Made Hard!**  
Chun-Ju Lai, 18, Senior, Taipei Municipal Chien-Kuo Senior High School, Taipei City, Chinese Taipei, T: Sen-Peng Eu
- MA020 Classification of Determinantal Sequences**  
# Samuel Mohun Bhagwat, 16, Senior, Winston Churchill High School, Livonia, Michigan, T: Mary Buda
- MA021 Modeling Joint Behavior of Defaultable Entities: Multivariate Copula Methodology**  
Revaz Levan Surguladze, 17, Senior, Stuyvesant High School, New York, New York, T: Bruce Winokur
- MA022 Investigating Cubes and the "Mystery of Space"**  
Kenneth Beniacar, 15, Sophomore, The Bronx High School of Science, Bronx, New York, T: John Reutershan
- MA023 Identifying Trends and Anomalies in Puget Sound Marine Temperature Data**  
Benjamin Luke Small, 17, Senior, Bellarmine Preparatory School, Tacoma, Washington, T: Ron Nilsen
- MA024 Factoring Large Numbers**  
Jeffrey Marshall Gaston, 15, Freshman, South Windsor High School, South Windsor, Connecticut, T: James Alanson Gaston
- MA025 Generalizations of Koch Curve and Its Applications**  
XinRan Zhu, 17, Junior, Shanghai Southwest Weiyu Middle School, Shanghai, Shanghai, China, T: JieLiang Wang
- MA026 Some Results on Inclusive and Exclusive Partitions of Complete Graphs**  
## Robert Thomas Cordwell, 18, Senior, Manzano High School, Albuquerque, New Mexico, T: Robert Wayne Myers
- MA027 Some Results of the  $3x+1$  Conjecture**  
Daniel Zi Wang, 15, Sophomore, Jasper High School, Plano, Texas, T: Rachel Carlson
- MA028 Is There a Correlation Between Body Mass Index and Oxygen Saturation Levels of Sleep Apnea Patients?**  
Rachel Elyse Rhodes, 16, Junior, Spruce Creek High School, Port Orange, Florida, T: Andrea White
- MA029 The Fractal Nature of Music**  
Vinay Venkatesh Ramasesh, 15, Freshman, North Crowley High School, Fort Worth, Texas, T: David M. Perry
- MA030 Graph Isomorphic Lattice Paths**  
# Paul Francis Jacobs, 18, Senior, Good Hope School, St Croix, Virgin Islands, T: Mary Jane Coles
- MA031 Monids of Endomorphisms**  
# Alexey Yu. Shubnikov, 16, Junior, Mathematical Education Centre, St. Petersburg, Russia, T: Ilya A. Chistyakov

## MATHEMATICS

### GRAND AWARDS PRESENTED BY: SCIENCE NEWS

- MA001 Unique Triangle**  
Tornike Iuri Mosiashvili, 16, Sophomore, Georgian-American High School, Tbilisi, Georgia Republic, T: Mamuka Radish Meskhishvili
- MA002 Diophantine Rectangular Parallelepiped**  
Lasha Emmanuel Margishvili, 18, Junior, Georgian-American High School, Tbilisi, Georgia Republic,  
T: Mamuka Radish Meskhishvili
- MA003 Quantum Computing: A New Class of Algorithms for the Systematic Evaluation and Search of Functions**  
# Nimish Pradipkumar Ramanlal, 16, Junior, Seminole High School, Sanford, Florida, T: Jeane Swaynos
- MA004 Combinational Order**  
Robert Harold Lucy, 14, Freshman, Dove Science Academy, Tulsa, Oklahoma, T: Mesut Ekici
- MA005 Phase II: How High Will It Go?**  
Mitchell Andrew Kaundart, 16, Sophomore, Northside High School, Fort Smith, Arkansas, T: Linda Ann Newsome
- MA006 Graphs and Mappings: Generalization of Graph Coloring**  
Alexandr Kazda, 20, Senior, Gymnasium, Prague 6, Czech Republic, T: Dana Topferova
- MA007 Minimization of a Shift as a Problem of Harmonic Analysis**  
Alexander Rotkevich, 17, Junior, Center of Mathematical Education, Saint Petersburg, Russia, T: Alexander Shashkin
- MA008 A Day at the Carnival**  
Nathaniel Morck Beaver, 14, Freshman, Perham High School, Perham, Minnesota, T: Shawn Andrew Stafki
- MA009 A New Algorithm for Digital Signatures**  
Gerold Gruenauer, 18, Senior, Kepler Gymnasium, Weiden, Bavaria, Germany, T: Karl Prell
- MA010 Finding Varieties in Nonlinear Systems Using Algebraic-Geometry and Maple**  
Matthew Ryan Tierney, 17, Senior, Westview High School, Portland, Oregon, T: Mark Geren

- MA032 A Mathematical Analysis of Gender Differences in Color Perception**  
Katherine Louise Bouman, 15, Sophomore, West Lafayette Junior-Senior High School, West Lafayette, Indiana, T: Marshall Overley
- MA033 Minimizing Inconvenience in Directed Meshes: A Model for Traffic Optimization**  
Matthew Huang, 16, Junior, Scarsdale High School, Scarsdale, New York, T: Jeremy Szerlip
- MA034 Discrepancy of Planar Parallelepipedal Meshes**  
Valentina N. Dobrovolskaya, 16, Junior, Advanced Education and Science Center of Moscow St, Moscow, Moscow, Russia, T: Alexander A. Rusakov
- MA035 A Classification of Maps from Graphs to the Plane with Disjoint Images**  
Nikita Yu. Odnobokov, 16, Junior, Advanced Education and Science Center of Moscow St, Moscow, Moscow, Russia, T: Arkadiy B. Skopenkov
- MA036 An Exploration of Archimedes' Stomachion**  
Kaitlyn Tuley, 16, Junior, Mathematics and Science High School at Clover Hill, Midlothian, Virginia, T: Judy Roskowski
- MA037 Durer's Unsolved Geometry Problem**  
Daniel Bezdek, 15, Freshman, St. Brigid Elementary and Junior High School, Calgary, Alberta, Canada, T: Luigi Fortini
- MA038 A New Look at Cayley's Problem: Investigation of the Convergence of the Newton Algorithm Using Quaternions**  
Elad Oster, 18, Senior, Israeli Arts and Science Academy, Jerusalem, Israel, T: Nahum Friedman
- MA039 Upon Special Parabolic Functions**  
Jose Ronaldo Vazquez, 17, Senior, Lysander Borrero Terry High School, Villalba, Puerto Rico, T: Salvador Pacheco
- MA040 Tactic Sabermetrics: Handedness in Baseball**  
Gideon Edward Rosenberg Klionsky, 16, Junior, Lincoln Park High School, Chicago, Illinois, T: Patricia A. Riley
- MA041 Sinking Battleship**  
Christopher Edward Tucker, 17, Junior, Huntington High School, Huntington, West Virginia, T: Larry Oyster
- MA042 Nonagonal Numbers in the Fibonacci Sequence and Related Diophantine Equations**  
John Michael Sillcox, 18, Senior, Jericho High School, Jericho, New York, T: Allen Laurence Sachs
- MA043 Primality Testing: Utilizing Characteristics of Prime Numbers that Allow for Optimal Deterministic and Probabilistic Primality Testing Algorithms in Polynomial Time**  
# Anarghya A Vardhana, 16, Junior, Jesuit High School, Portland, Oregon, T: John Robert Gorman
- MA044 Complete Sequences of Positive Integers**  
Kledin Dobi, 16, Junior, Julia R. Masterman High School, Philadelphia, Pennsylvania, T: Ranjini Weerasooriya
- MA045 Exploring the Properties of Random Walks in Multiple Dimensions**  
## Charles Michael Addicott, 17, Senior, Wellington Community High School, Wellington, Florida, T: Charlsa Ann Henderson
- MA046 Pythagorean Triples**  
Benjamin Lawrence Mikell, 15, Sophomore, Oxford High School, Oxford, Mississippi, T: Gail Keith
- MA301T Determining End Behavior of Cellular Automata Using Grid Computing**  
Andrew Joseph Duchi, 16, Sophomore  
Erich John Kreutzer, 17, Junior  
Upper Arlington High School, Upper Arlington, Ohio  
T: Laura Brennan
- MA302T Classification of Rational Associative Operations**  
Vladimir N. Trubnikov, 17, Junior  
Oleg V. Mikhaylovsky, 16, Junior  
Mikhail A. Ptichkin, 17, Junior  
Centre of Mathematical Education, Saint-Petersburg, Russia  
T: Ilya Aleksandrovich Chistyakov
- MA303T The Power Domination Problem on Trees and Other Bipartite Graphs**  
Edward Fu Schmerling, 16, Junior  
Jennifer Fu Schmerling, 17, Junior  
Sarah Daphna Spikes, 17, Senior  
Lyndon B. Johnson High School, Austin, Texas  
Seymour High School, Seymour, Texas  
T: Gregory D. Foley
- MA304T Sub-Series Sums of Absolutely Convergent Series**  
# Stepan Ismakaev, 16, Junior  
Fedor Mikhaylovskiy, 15, Sophomore  
Center of Mathematical Education, Saint Petersburg, Russia  
T: Sergey Ivanov
- MA305T On Structures Determined by Configurations on  $\mathbb{R}^n$**   
## Carlos Manuel Fonseca, 18, Senior  
# Manuel Luis Rivera, 16, Junior  
Colegio San Ignacio de Loyola, San Juan, Puerto Rico  
T: Wilma M. Giol
- MA306T Reflexive Four (4)**  
Daniel Diaz, 16, Senior  
Andres Millan, 16, Senior  
Centro Residencial de Oportunidades Educativas, Mayaguez, Puerto Rico  
T: Edwin Benvenuti
- MA307T Application of Modular Crypto-function in Secret Code Theory**  
Kevin Joel Rodriguez-Torres, 16, Junior  
Artemio Jose Lopez-Gonzalez, 16, Junior  
Carmen Belen Veiga High School, Juana Diaz, Puerto Rico  
T: Miguel Angel Rosario-Garcia
- MA308T Serial Numerical Recombinations, Phase Two**  
Daniel B. Beksha II, 18, Senior  
Matthew J. Hall, 18, Senior  
Bishop Feehan High School, Attleboro, Massachusetts  
T: Michael Gerard Giammarco
- MA309T Dynamic Geometry for the New Millennium**  
Viviana Padilla, 17, Senior  
Veronica Acosta, 17, Senior  
Aurea E. Quiles Claudio, Guanica, Puerto Rico  
T: Henry Hicks
- MA310T Patterns with Prime Numbers**  
Eileen J. Colon, 17, Senior  
Yanira B. Colon, 17, Senior  
Francisco Zayas Santana High School, Villalba, Puerto Rico  
T: Pedro J. Berrios
- MA311T Fishy Reflections**  
Thoa Thi Nguyen, 17, Junior  
Duc Thi Nguyen, 16, Junior  
Kristin Kimiko Osaki, 16, Junior  
Oak Grove High School, San Jose, California  
T: John C. Allen
- MA312T Bee the Builder**  
Rachael Joann Emory, 17, Senior  
John Oscar Hilton, 18, Senior  
Wagoner High School, Wagoner, Oklahoma  
T: Karla D. Ford
- MA313T The Maltese Cross and Problems on Comparison of Areas**  
Aslan Kalabayev, 17, Junior  
Ulan Kozybakov, 17, Junior  
Aktobe Kazakh-Turkish Lyceum, Aktobe, Kazakhstan  
T: Muammer Gul

## MEDICINE AND HEALTH

### GRAND AWARDS PRESENTED BY: MERCK RESEARCH LABORATORIES

- ME001** **Eliminating Pathogenic Vibrio and Coliform Bacteria from *Crassostrea virginica*: Prevention of Gastroenteritis and Septicemia from Seafood Poisoning**  
Esther Yeeway Hsiang, 14, Freshman, Niceville Senior High School, Niceville, Florida, T: Jerral Amos Horton
- ME002** **Carotid Plaque Morphology and Population Demographics: A Possible Link in the Detection of Vulnerable Plaques**  
## P. Justin Rossi, 18, Senior, Rossi Home School, New Port Richey, Florida, T: Daniel Noyes
- ME003** **Estimation of Percent Body Fat Using a Stereoscopic Photogrammetric Technique**  
Alison Conway Buchanan, 16, Junior, Myers Park High School, Charlotte, North Carolina, T: Dale C. Buchanan
- ME004** **The Effects of 2-Hydroxy Estrone Eicosonate on Weight Gain with Zucker Rats**  
Alison Lea Siler, 17, Junior, Garinger High School, Charlotte, North Carolina, T: Yvette Maria Huet-Hudson
- ME005** **Risk Factors for Adolescent Obesity**  
Ami Natvarlal Dalsania, 17, Junior, Titusville High School, Titusville, Florida, T: Nancy Yates
- ME006** **Curbing the Embryonic Stem Cell Controversy: Cardiac Differentiation of Adult Bone Marrow Stem Cells Following Epigenetic Modification**  
# Shiv Mukesh Gaglani, 16, Junior, West Shore High School, Melbourne, Florida, T: Sherie Jenkins
- ME007** **The Effect of p53 on the Sensitivity of Cancer Cells to Chemotherapy**  
Jennifer Jody Chen, 16, Junior, Upper Arlington High School, Upper Arlington, Ohio, T: Laura Brennan
- ME008** **Genetic Characterization of Spondylothoracic Dysplasia Syndrome**  
Edrick Josue Acevedo, 16, Sophomore, Southwestern Educational Society, Mayaguez, Puerto Rico, T: Evelyn Montalvo
- ME009** **Does Consumption of Supplemental Folic Acid Affect Reproductive Success in Senescent *Drosophila melanogaster*?**  
Kyla Davis Horn, 14, Freshman, Cocoa Beach High School, Cocoa Beach, Florida, T: Veronica Duys
- ME010** **Hemodynamics and Heart Failure: Utilization of Impedance Cardiography to Measure Therapeutic Response in Patients with Chronic Heart Failure, Year Two**  
### Winston Harmon Messer, 18, Senior, Presbyterian Christian High School, Hattiesburg, Mississippi, T: Sandra Kay Wentworth
- ME011** **A Continuation: Prolonging the Onset of Diabetes Mellitus and Prevention of Complications Using  $\alpha$  Lipoic Acid and Acetyl L-Carnitine**  
Casey Leigh Dwiggin, 18, Senior, Moore High School, Moore, Oklahoma, T: Macie R. Viets
- ME012** **The Effects of a Daily Diet on Antibiotic Resistance in Human Beings**  
Janaki Vasudevan, 15, Junior, Bartlesville High School, Bartlesville, Oklahoma, T: Betty Henderson
- ME013** **Curcumin Sensitizes Human Colon Cancer MOSER Cells to the Anti-tumor Drug Vinblastine by Inhibiting the Expression of the Multidrug Resistance 1 Gene (MDR-1)**  
Vikram Agarwal, 17, Senior, Caddo Parish Magnet High School, Shreveport, Louisiana, T: Kris Purdy Clements
- ME014** **Tracking Dyslexia with a DNA Probe**  
Patrick A. Herklotz, 18, Senior, Pine Creek High School, Colorado Springs, Colorado, T: Carol Wheeler
- ME016** **Do Homeopathic Remedies Inhibit the Growth of *Streptococcus pyogenes*?**  
Tia Marie Filhiol, 17, Senior, Wetumpka High School, Wetumpka, Alabama, T: Virginia Ann Vilardi
- ME017** **A Study of Stimulant Response Correlations: Arthritis, Diabetes, & Hypertension Implications**  
Phillip Michael Jamison, 17, Junior, Noxubee County High School, Macon, Mississippi, T: Shirley Y. Granger
- ME018** **Deducing Comparable Metabolic Pathways Through Hormone Fluctuations in *Drosophila melanogaster***  
# Dominique Hazard Eghlidi, 17, Senior, Southridge High School, Beaverton, Oregon, T: Melissa Carmella Potter
- ME019** **The Beneficial Effects of Fish Oil on Breast Cancer: A Fourth-Year Study**  
Triparna Ghosh-Choudhury, 17, Senior, Northside Health Careers High School, San Antonio, Texas, T: Nandini Ghosh-Choudhury
- ME020** **Anti-Cancer Activity of a Chinese Herb, *Coptis chinensis***  
Qiaozi Yang, 17, Senior, Westfield High School, Westfield, New Jersey, T: Changshun Shao
- ME021** **Effect of Mandibular Gland Secretion of *Aedes Aegyptii* Salinas Wild Type in Different Blood Types**  
Edgardo Angel Melendez, 16, Sophomore, Academia Nuestra Senora de la Providencia, San Juan, Puerto Rico, T: Miguel R. Deliz
- ME022** **The Role of Enolase Phosphorylation in *Salmonella typhimurium***  
Taruna Singh, 17, Junior, Hathaway Brown School, Shaker Heights, Ohio, T: Patricia Hunt
- ME023** **Reducing Cancer Deaths: Development of a Laxative Free Colorectal Screening Exam Using Virtual Colonoscopy**  
# Kristina Therese Johnson, 18, Senior, Mayo High School, Rochester, Minnesota, T: Debra DeYoung
- ME024** **Exploring the Borreliacidal Factor of Various Blood Sera on *Borrelia burgdorferi*, the Agent of Lyme Disease, and *Borrelia lonestari*, the Putative Agent of Lyme-like Illness**  
## Chelsea Nicole Grigery, 18, Senior, Sikeston High School, Sikeston, Missouri, T: Wanda Rainey Throop
- ME025** **Speed "Pigeons or Ducks": Foot Position in Females Affecting Sprinting Speed**  
Macy Ann Allen, 15, Freshman, North Lamar High School, Paris, Texas, T: Jack Brown
- ME026** **Correlation Between Blood Pressure & Intelligence Based on the Northwest Population of India & 2nd & 3rd Generation of United States: Is Intelligence Artificial or Biological?**  
Supal Janak Desai, 16, Junior, Celebration High School, Celebration, Florida, T: Leslie Ann Rivera
- ME027** **The Effects of Phosphorus and Caffeine on the Bioavailability of Calcium**  
Amy Therese Servas, 18, Senior, Dallastown Area High School, Dallastown, Pennsylvania, T: Robert Moreland
- ME028** **Mechanisms of Regulatory T Cells in Autoimmune Diseases**  
Leslie Wen-Hsien Tse, 16, Junior, Detroit Country Day School, Beverly Hills, Michigan, T: Gene Menton
- ME029** **Dendritic Polymer-Insulin Conjugates/Nanodevices for Oral Insulin Delivery: A System for Optimal Bioavailability in Type 1 Diabetes**  
Shilpa Naresh Raja, 17, Senior, West Bloomfield High School, West Bloomfield, Michigan, T: Nicole Marie Hays
- ME030** **The Effect of Parental Social Economic Status on the Phenylalanine Levels of Infants with Phenylketonuria (PKU)**  
Michelle Hornig, 17, Senior, West Linn High School, West Linn, Oregon, T: Jamie Kelso
- ME031** **Gene Therapy Meets Chemotherapy: Exposure of Malignant Glioma Cells to Transgenic Embryonic Stem Cells and Temozolomide**  
Milana Zaurova, 17, Senior, The Bronx High School of Science, Bronx, New York, T: Susan Brauerman
- ME032** **Prolonged Effects of Radio Frequency Radiation Exposure: Are Cell Phones and Radar Guns Safe?**  
Danna Elisabeth Thomas, 15, Sophomore, Broadneck Senior High School, Annapolis, Maryland, T: Sujata Ives
- ME033** **Significance of *M. tuberculosis* Lipoprotein Processing in TLR2 Stimulation, Macrophage Proinflammatory Response, and Mycobacterial Growth**  
Jacob Hill Bagley, 17, Senior, Stuyvesant High School, New York, New York, T: Anne Manwell

- ME034 Effects of Kava and Alcohol on Heart Rate Variability of *Daphnia magna***  
Parth S. Vyas, 16, Junior, William L. Dickinson High School, Jersey City, New Jersey, T: Michael James Corcoran
- ME035 The Effects of Betaseron and Pycnogenol on Nitric Oxide Levels in Multiple Sclerosis Cells**  
# Katherine Joy Nicholas, 17, Junior, Ephrata Senior High School, Ephrata, Pennsylvania, T: Patricia Hachten Wee
- ME036 An Analysis of the Risk Reduction of Transmission of Nosocomial Pathogens with the Application of Selected Antiseptic Agents on Environmental Equipment: A Second Year Study**  
## Louis Paul Derousie, 16, Junior, Orange Park High School, Orange Park, Florida, T: Margaret Hansen
- ME037 Implications of Nicotine's Pro-Angiogenesis Activities: The Good and the Bad**  
Sarah S. Mousa, 17, Junior, Columbia High School, East Greenbush, New York, T: Cindy Taylor
- ME038 Immunostimulation Through NF- $\kappa$ B Activated Cytokine Synthesis from an Herbal Polysaccharide from *Tinospora cordifolia***  
### Reshma Ramachandran, 17, Senior, Coral Reef Senior High School, Miami, Florida, T: Noelle Gerstman
- ME039 The Antibacterial Properties of *Curcuma longa* and Its Effects on *Escherichia coli***  
Nhila Jagadeesan, 15, Sophomore, Lake Central High School, St. John, Indiana, T: Marjorie Lynn Thompson
- ME040 *In vitro* Analysis of Sugar Substitute Mutagenicity via a Mouse Lymphoma Thymidine Kinase Gene Mutation Assay**  
## Kaleb Markus Naegeli, 17, Junior, Northwestern High School, Kokomo, Indiana, T: Patricia Zeck
- ME041 The Cytotoxic Effects of Frankincense Oil in Malignant Glioblastoma: A Mechanistic Approach**  
# Carrie Elizabeth Shaw, 17, Junior, Career Center, Winston-Salem, North Carolina, T: Constantinos Koumenis
- ME042 An Investigation of Nicotine and Its Impact on Learning: Potential Interference on Cypin Generated Neuronal Branching**  
Myriah Lynn Sylvester, 17, Junior, Greybull High School, Greybull, Wyoming, T: Joel M. Kuper
- ME043 Can Lasers Be Used to Measure Blood Glucose Levels?**  
Julie Krystine Loza, 15, Sophomore, Kouts High School, Kouts, Indiana, T: Andrea Clinkenbeard
- ME044 The Role of Human Endothelial Cell Specific Gene in Neutrophil Inflammation**  
Saranya Sathananthan, 16, Junior, Martin Luther King, Jr. Magnet High School, Nashville, Tennessee, T: John Kyuson Lee
- ME045 Improving Cancer Treatment Through Telomerase Inhibition**  
Jimmy Chen Yang, 17, Senior, Plano Senior High School, Plano, Texas, T: Karen Schiller
- ME046 The Correlation with Hypoxia Inducible Factor-1  $\alpha$  and the Reduction in Malignant Tumor Growth**  
# Andrew Allen Gilbert, 15, Sophomore, Northern Utah Academy for Math Engineering and Science, Roy, Utah, T: Andrew Lavin
- ME047 The Neurochemical Effect of Diabetes on Parkinson's Disease**  
Joshua Edward Tripp, 14, Freshman, Sheridan High School, Sheridan, Arkansas, T: Vikie Lea Nelson
- ME048 Characterization of Bone Marrow-Derived Stem Cells**  
Janet Wing Yui Li, 17, Senior, Wayzata High School, Plymouth, Minnesota, T: Princesa VanBuren
- ME049 Cord Blood Stem Cells Alter Cytokines in the Blood and Thymus After a Stroke**  
Justus Roberts II, 17, Junior, Paul R. Wharton High School, Tampa, Florida, T: Carmen S. Austin
- ME050 Atrial Natriuretic Peptide Induces Death of Alveolar Cancer Cells: A Second-Year Study**  
Poorav Kumar Rohatgi, 17, Junior, Hillsborough High School, Tampa, Florida, T: Aimee Laskowski
- ME051 The Classification of Early Stages of Breast Cancer with Marker Connexin 43**  
Eugenia Gabrielov, 16, Junior, West Lafayette Junior-Senior High School, West Lafayette, Indiana, T: Marshall D. Overley
- ME052 Cognitive Impairment Due to Epileptic Foci in the Neocortex**  
# Max Lawrence Christie, 17, Senior, Ossining High School, Ossining, New York, T: Angelo Piccirillo
- ME053 ScFv Antibodies for the Therapy of IgA Nephropathy**  
Christina Eloisa Tartaglia, 17, Senior, Rye Neck High School, Mamaroneck, New York, T: Nora Eva Leonard
- ME054 Can a New Medicine Be Discovered in a Plant Native to Montana? A Study of the Enzymatic Inhibition Activity in Phenolic Compounds Isolated from *Yucca glauca*, Phase II**  
Kels Gordon Phelps, 17, Junior, Butte High School, Butte, Montana, T: Andrea Stierle
- ME055 The Role of Nicotinic Acetylcholine Receptors in Behaviors Associated with Autism**  
Samuel Phillips Lawrence, 14, Freshman, Alice Deal Junior High School, Washington, District of Columbia, T: Amy Helm
- ME056 The Effect of 670nm LED Photobiomodulation on the Growth of Mitochondrial Mutant *S. cerevisiae***  
# Keely Ann Goodgame, 16, Sophomore, San Jon High School, San Jon, New Mexico, T: Steve Gregory Goodgame
- ME057 Osteoporosis: A Study of Calcium Absorption and Depletion in *Odocoileus virginianus* Bone**  
Lacy Beth Casteel, 16, Junior, Brooks High School, Killen, Alabama, T: Vicki Ballard Farina
- ME058 Therapeutic Efficacy of Serotonin Precursor Loading to Mitigate MDMA-Induced Neurotoxicity: Rescue of Serotonin Neurons and Treatment of Anxiogenesis**  
# Diana Lynn Eheart, 18, Senior, Hamilton High School, Chandler, Arizona, T: Teresa Clark
- ME059 Effects of Cholesterol Treatment with Tea on Mice**  
Claudia Titze Hessel, 17, Junior, Colegio Sinodal, Sao Leopoldo, Rio Grande do Sul, Brasil, T: Alexandre Maslinkiewicz
- ME060 CA MEK5 Signal Pathways in Antiestrogen Resistance in Breast Cancer**  
Patricia Tsai, 16, Sophomore, Benjamin Franklin High School, New Orleans, Louisiana, T: LaWana Rutland Stewart
- ME061 Preventing Diabetic Complications Through Endothelial Cell Research**  
Mark G. Evans, 16, Sophomore, Hillcrest High School, Midvale, Utah, T: Lorin Mullins
- ME062 Using Viruses to Kill Cancer: Investigating the Role of *in vitro* Cell Differentiation in HSV-1 Double-Mutant KM110red Infection of hFOB and U2OS Cells**  
Natalie Mary Raso, 16, Sophomore, St. Thomas More Secondary School, Hamilton, Ontario, Canada, T: Jeffrey Hummel
- ME063 Dopaminergic Neurons from Bone Marrow Stem Cells: An Acceptable, Potential Therapy for Parkinson's Disease**  
Sami Obaid, 16, Junior, College Regina Assumpta, Montreal, Quebec, Canada, T: Francois Marceau
- ME064 Hostile Habitat: Can They Take It? Herbs III**  
# Hannah Euphrates Worriax, 15, Junior, Purnell Swett High School, Pembroke, North Carolina, T: Fannie Lowry
- ME065 The *Passiflora edulis* as Muscular Relaxant**  
Ivalany Hernandez-Lopez, 15, Sophomore, C.R.O.E.M. High School, Mayaguez, Puerto Rico, T: Brenda M. Cabrera
- ME066 Pharmacological Evaluation of the Leaves Extract of *Ludwigia octovalvis* and Its Bactericidal Effect on *E. coli*, *S. aureus*, *P. aeruginosa* and *K. pneumoniae***  
Xavier Alexis Cruz, 15, Sophomore, Elvira M. Colon Negron, Santa Isabel, Puerto Rico, T: Maria E. Thiele
- ME067 Obesity at the Pediatric Age: Third Millennium Epidemic**  
Sheyra Elin Rivera Santos, 16, Junior, Carlos Escobar Lopez, Loiza PR, Puerto Rico, T: Carmen Luisa Ortiz
- ME068 Electrical Stimulation of the Gastrocnemius Leg Muscle in Sprague-Dawley Rats with Application to Facial Paralysis**  
Abhiram R. Bhashyam, 16, Junior, Bethel Park High School, Bethel Park, Pennsylvania, T: Michael R. Lovell
- ME069 Examining the Effectiveness of Treating Down Syndrome with a 5-HT1a Receptor Antagonist**  
Elizabeth Carey Banks, 16, Junior, Baltimore Polytechnic Institute, Baltimore, Maryland, T: Charlotte V. Saylor

- ME070 The Pro-Apoptotic Role of the Stress-Activated MAP Kinase ERK in AMPA-induced Dark Cell Degeneration in Purkinje Neurons**  
Anna Maria Symm, 18, Senior, Muleshoe High School, Muleshoe, Texas, T: Jean Carol Strahlendorf
- ME071 Modulation of the Ubiquitin-Proteasome Complex Via Morphine Coupled Nitric Oxide Release: A Possible Mechanism for the Prevention of Neurodegenerative Diseases**  
# Suraj Hitendra Rambhia, 17, Senior, Jericho High School, Jericho, New York, T: Allen L. Sachs
- ME072 Delayed Apoptotic Cell Clearance Induces Autoantibody to hnRNP P2**  
Kinjal S. Shah, 18, Senior, Ridgeway Jr-Sr High School, Memphis, Tennessee, T: Meera Krishnan
- ME073 Naracin**  
Justin Carlton White, 16, Junior, Biggersville High School, Corinth, Mississippi, T: Cindy Meeks Moon
- ME074 An Investigation into Multiple Sclerosis: Antibodies to CD44 and Integrin  $\alpha\beta_1$  Differentially Affect Myelin-specific T-Cell Responses**  
June-Ho Kim, 17, Senior, Monta Vista High School, Cupertino, California, T: Pamela Tsai
- ME075 Modified Tobacco Products Reveal the Critical Role of Nicotine in Promoting Atherogenesis**  
Sarah Emily Catanzaro, 17, Senior, Paul D. Schreiber High School, Port Washington, New York, T: Phyllis E. Serfaty
- ME076 Low Dose Morphine Priming Prevents High Dose Morphine Induced Macrophage Injury**  
Ekta Patel, 17, Senior, Syosset High School, Syosset, New York, T: Angela Lukaswewski
- ME077 Effects of Guanosine on  $\alpha$ -Synuclein in a Parkinson's Disease Model**  
Patrick John Martin, 16, Junior, Bishop Ryan Catholic Secondary School, Hamilton, Ontario, Canada, T: Rosa Assalone
- ME078 The Effect of Zinc on Cholesterol Levels in Cockroaches**  
Lauren Mino Chuday, 17, Senior, Oakton High School, Vienna, Virginia, T: Jacqueline Bertholey Curley
- ME079 Comprehensive Evolutionary Study of Disease-Causing Amino Acid Substitutions Using Computational Analysis**  
# Jeffrey M. Bhasin, 18, Senior, Rocky River High School, Rocky River, Ohio, T: Ann Brokaw
- ME080 Got Dielectrics? Simulating Electrical Properties of Muscle**  
Stephanie Baker, 16, Junior, Hillcrest High School, Midvale, Utah, T: Cynthia Furse
- ME081 Preservative Efficacy of Garlic (*Allium sativum*) on Meat and Eggs to Prevent Food Borne Illnesses Caused by *Salmonella* and *E. coli***  
Nandini Sarma, 15, Freshman, Shawnee Mission East High School, Prairie Village, Kansas, T: Cole Ogdon
- ME082 An Epidemiological Study of the Incidence Rate of *Borrelia burgdorferi* in *Ixodes scapularis* from Clearwater County**  
Rachel Ann Drewlow, 17, Junior, Bagley High School, Bagley, Minnesota, T: Olin Miles Anderson
- ME083 *In vitro* Innate Immunity: Efficient Testing of the Genetic Response of Parenchymal Hepatocytes to LPS Treatments and the Reduction of Inflammation by Antioxidants**  
# Melanie Elizabeth Huffman, 18, Senior, Heritage Christian School, Indianapolis, Indiana, T: Stephen S. Terry
- ME084 Changes in Brain Function Following High/Low Novelty-Seeking**  
Saate Saiyara Shakil, 16, Junior, Benson Polytechnic High School, Portland, Oregon, T: Jean Sang Eames
- ME085 An Analysis of Brain Tissue Sections for Proteins Targeted by the Genotoxicant Methylazoxymethanol (MAM)**  
Allison Shelton Rhines, 16, Junior, Oregon Episcopal School, Portland, Oregon, T: Bill Lamb
- ME086 Saliva: The Stress Code**  
Ketaki Rawal, 15, Freshman, Centennial Regional High School, Greenfield Park, Quebec, Cape Verde, T: Janet Bray
- ME087 Bittersweet II**  
Rachael Jean Sparrow, 18, Senior, Patrician Academy, Butler, Alabama, T: Brett M. Evans
- ME088 Effect of Vitamin E on Ultraviolet Induced Mutagenesis**  
# Kawakahi Kaeo Amina, 18, Senior, Kamehameha Secondary School, Honolulu, Hawaii, T: Lawrence J. Mordan
- ME089 The Effect of the Frequency Response of the Skull on Intelligibility of Speech from Piezoelectric Transducers**  
Erin Marie Fischell, 17, Junior, High Technology High School, Lincroft, New Jersey, T: Michael T. Roche
- ME090 Expanding the Repertoire of the Yir Genes Detectable in a *Plasmodium yoelii* Infection: A Model for Studying Antigenic Variation in Malaria**  
Kunal Jose Bhayani, 17, Senior, The Haberdashers, Borehamwood, Hertfordshire, United Kingdom, T: Wai-Shun Lau
- ME091 The Matrix Probe - Evolution: Co-registration of Digital Mammography with 3Dimensional Breast Ultrasound Using a Full-Field Matrix of Piezoelectric Crystal Transducers**  
Chetley L. C. Gervais, 17, Junior, Sandwich Secondary School, LaSalle, Ontario, Canada, T: Rodney Levesque
- ME092 The Effects of Acid Reducers on the Bacterial Inhibitory Ability of Stomach Acid**  
Adam Lee Hubrig, 16, Sophomore, Hankinson High School, Hankinson, North Dakota, T: Marcus John Friskop
- ME093 The Effects of Ipriflavone on Human Osteoclastic Bone Resorption and Cell Morphology *in vitro***  
Lindsay Rachel MacLeod, 18, Senior, Suffern High School, Suffern, New York, T: Winifred Gleason
- ME094 Evaluation of MMP and TIMP Expression in Human Pediatric Brain Tumors**  
Jeff Silpe, 16, Junior, Long Beach High School, Lido Beach, New York, T: Linda Trusz
- ME095 Medication or Deception?**  
# Ginger Lee Gullickson, 18, Senior, Alexander Public High School, Alexander, North Dakota, T: Cassandra Marlene Gentry
- ME096 Novel Genetic Analysis of Disease Susceptibility and Hereditary Patterns Using a Multi-Population Data Set**  
### Nicholas Paul Semenkovich, 18, Senior, Ladue Horton Watkins High School, Ladue, Missouri, T: Jeff Vetter
- ME097 *In vitro* Induction of Myoblasts: Stimulation of Myogenic Phenomena in Marrow Stem Cells**  
Gulraiz Zahid Khan, 18, Senior, North Attleborough High School, North Attleborough, Massachusetts, T: David Vito
- ME098 Ayurvedic Medicine Against Human Breast and Prostate Cancer Cell Lines**  
Rhea Chattopadhyay, 15, Sophomore, La Cueva High School, Albuquerque, New Mexico, T: Stephanie Smith
- ME099 Modeling the Spread of Infectious Diseases, Phase II: Flu Vaccination Strategies in a Structured Village**  
Laura McBride Glass, 14, Freshman, Albuquerque High School, Albuquerque, New Mexico, T: Kathleen Diane Rutter
- ME100 Protein Markers as Indicators of Patient Response to Lung Cancer Therapy**  
Janice Lynn Gee, 18, Senior, Mira Loma High School, Sacramento, California, T: Dean Karagianes
- ME101 Artificial Muscles: A Simulation of Natural Finger Movement Using Silver Palladium Electroactive Polymers**  
# Sushma Chennubhotla, 17, Senior, duPont Manual High School, Louisville, Kentucky, T: Glenn Zwanzig
- ME102 Silencing of *Staphylococcus* Virulence Genes Using siRNAs**  
### Shaleen Tarun Cholera, 18, Senior, White Station High School, Memphis, Tennessee, T: Sivadasan Kanangat
- ME301T Xylitol Xtreme: The Effectiveness of Chewing Xylitol Gum in Reducing Dental Caries in High School Students by Decreasing the Oral Colonization of *Streptococcus mutans***  
# Justin Andrew Johns, 16, Junior  
Christine Elizabeth Johns, 14, Freshman  
Evangelical Christian School, Ft. Myers, Florida  
T: Stephen Edward Morriss
- ME302T The Effects of Crime Scene "Clean-Up" Attempts on DNA Evidence**  
Daniel Sherman McGowan, 17, Junior  
Jeffrey Carl Detzel, 17, Junior  
Mitchell Thomas Fehlberg, 16, Junior  
Lake Brantley High School, Altamonte Springs, Florida  
T: Susan N. Behel

- ME303T Shining Through Cancer**  
Melissa Maite Ruiz, 16, Junior  
Gloria Sofia Suarez, 16, Junior  
Southwestern Educational Society, Mayaguez, Puerto Rico  
T: Evelyn Montalvo
- ME304T Using Electrospun Nanofibers to Stabilize DNA**  
# Brooke Marie Gillund, 17, Senior  
Amy Ann Gottfried, 17, Senior  
North Toole County High School, Sunburst, Montana  
T: Lawrence Dexter Fauque
- ME305T HCOH Is Everywhere & Dangerous. . .**  
Jestin Joseph Fabian, 15, Sophomore  
Sadie Ruth Alexandra Hack, 15, Sophomore  
Wisconsin Career Academy, Milwaukee, Wisconsin  
T: Ahmet Akyol
- ME306T Testing Fruit Juices Containing Proanthocyanidin for Inhibition of Biofilm Formation Activity**  
Michael Torres Perez, 17, Sophomore  
Roana Bianca Co Reyes, 17, Sophomore  
Arlou Kristina Jiongco Angeles, 17, Sophomore  
Philippine Science High School, Quezon City, Metro Manila, Philippines  
T: Juanita Mercado Cruz
- ME307T The Effects of Suppressing Genes on Lysosomal Production in Wild Type and cup-5 Mutant *C. elegans* as Model for the Human Disease Mucopolipidosis Type IV**  
# Elise Marie Adcock, 16, Junior  
# Marilynn Tedja, 16, Junior  
# Elizabeth Nicole Monier, 16, Sophomore  
Keystone School, San Antonio, Texas  
T: Charles Scott Maderer
- ME308T Use of Ascorbic Acid on Dental Plaque to Favor the Growth of Beneficial Bacteria Over Pathogenic Bacteria**  
Jean-Louis Rochet, 16, Sophomore  
Angel Omar Saez, 15, Sophomore  
Colegio San Ignacio de Loyola, San Juan, Puerto Rico  
T: Wilma Giol
- ME309T Does an Oxidant Stress, H<sub>2</sub>O<sub>2</sub>, Produced by Glucose Oxidase (*in vitro*), Directly Cause Insulin Resistance?**  
Krystle Violet Potter, 18, Senior  
Ariel Leigh Potter, 14, Freshman  
Rio Rico High School, Rio Rico, Arizona  
T: Teresa Brown Potter
- ME310T The Possible Role of Bone Morphogenetic Proteins in the Effect of the Choroid Plexus on Cortical Neurons**  
Lauren Nicole Toub, 17, Senior  
Anjuli Patricia Kannan, 17, Senior  
Yorktown High School, Yorktown Heights, New York  
T: Michael Blueglass
- ME311T Antioxidants in Combination with Chemotherapy in the Treatment of Cancer**  
Lauren Christine Hughes, 17, Junior  
Sara Elizabeth Posey, 18, Senior  
Hilton Head Preparatory School, Hilton Head, South Carolina  
T: Tina Webb-Browning
- ME312T Should You Microwave Plastics?**  
Trisha Lea Schleich, 17, Junior  
Tera Jo Toribio, 16, Junior  
Mitchell High School, Mitchell, South Dakota  
T: Julie Ann Olson
- ME313T Circadian Stage-Dependent Effects of Exercising on the Time Structure of Blood Pressure**  
# Ryan Kimlong Huynh, 16, Sophomore  
# Richie Kimlong Huynh, 16, Sophomore  
Champlin Park High School, Champlin, Minnesota  
T: Dawn Erlandson
- ME314T Lobitoinin in Cancer Treatment, Phase II**  
Andrew Lacson Guardamano, 18, Senior  
Julia Caroline Grochowski, 16, Junior  
Archbishop MacDonald High School, Edmonton, Alberta, Canada  
Old Scona Academic High School, Edmonton, Alberta, Canada  
T: W.M. Myskiw; T: Cheryle Kachman
- ME315T Gastroprotective Activity of Ethanolic Extract from *Momordica charantia* L. Leaves**  
Ana Debora Nunes Pinheiro, 16, Junior  
Samuel Verter Marinho Uchoa Lopes, 16, Junior  
Colegio Christus, Fortaleza, Ceara, Brasil  
T: Diana Celia Sousa Nunes Pinheiro
- ME316T Proteomics Analysis of Osteosarcoma Cells**  
Lalith Kumar Polepeddi, 16, Junior  
Michael McCord Polmear, 17, Junior  
Cherry Creek High School, Greenwood Village, Colorado  
T: Timothy Donahue
- ME317T Effects of *Columba livia* (Pigeon) Excrement on Human Respiratory Tract**  
Legna M. Figueroa, 14, Freshman  
Darlenne M. Torres, 15, Freshman  
Jose de Choudens School, Arroyo, Puerto Rico  
T: Teresa Cordero
- ME318T The Effects of Cinnamon on Factors Affecting Cardiovascular Disease**  
Morgan Rae Rummel, 17, Junior  
Holly Ann Wonders, 17, Senior  
Delavan High School, Delavan, Illinois  
T: Mary Kay Wonders
- ME319T The Effects of Trichostatin A on Longevity, Metabolism, and Reproduction in *Drosophila melanogaster***  
Michael Jay Levy, 16, Sophomore  
Alexander Abraham Egan, 16, Sophomore  
Manhasset High School, Manhasset, New York  
T: Peter Guastella
- ME320T The Use of Essential Oils of Camu Camu and Eucalyptus and the Coloring of Achiote in Elaboration of Natural Products and Their Contribution to Asthmatic Problems**  
Maria Jimena Marquez Palacios, 15, Sophomore  
Karla Alexandra Monier Bautista, 14, Sophomore  
San Antonio de Padua, Lima, Peru  
T: Gloria Herrera Chuan
- ME321T The Effects of Various Anti-Oxidants on Parkinson's Model *Drosophila***  
# Shuo Qiu, 16, Sophomore  
# Scott Philip Yakaitis, 17, Junior  
Manhasset High School, Manhasset, New York  
T: Peter Guastella
- ME322T New Cancer Gene? Analyzing Mutations in Protein Kinase that Induce Cancer**  
# Arif Ali Awan, 17, Senior  
# Hamza Mohaimeen Bari, 18, Senior  
Marianopolis College, Montreal, Quebec, Canada  
T: Andrew Lefcoe
- ME323T Cyclooxygenase Inhibition in Ovarian Cancer Progression**  
Jasmine Debbie Vlahos, 15, Sophomore  
Julia B. Zvenigorodsky, 16, Sophomore  
Central High School, Philadelphia, Pennsylvania  
T: Dennis Erlick
- ME324T Fructose: The New Glucose? The Effects of High Levels of Fructose on Fibronectin Production in Rat Mesangial Cells**  
Emily Cleveland Ager, 16, Sophomore  
Dana Murphy Ullrich, 15, Sophomore  
The Altamont School, Birmingham, Alabama  
T: Tessa Magnuson
- ME325T The Effects of EGFR Inhibitors Alone and in Combination on the Growth of Cancer Cell Lines**  
Shane Alexa Renee Kleinstein, 15, Sophomore  
Elizabeth Freya Boscoe, 16, Sophomore  
Rocky Mountain Hebrew Academy, Denver, Colorado  
T: Melanie Ann Knowles

# MICROBIOLOGY

## GRAND AWARDS PRESENTED BY: INTEL FOUNDATION

- MI001 Keeping Antibiotics Working, II: Effects of pH and Bacterial Growth Modulation by Daily Consumables on the Susceptibility of *Staphylococcus aureus* to Antibiotics**  
Maryam Khadijah Mohammed, 14, Freshman, Niceville Senior High School, Niceville, Florida, T: Jodi Maker
- MI002 Mechanism of Action of Retrocyclins: Circular Minidefensins with Anti-HIV-1 Ability**  
Andrew David Warren, 15, Sophomore, Lake Highland Preparatory School, Orlando, Florida, T: Judith Faith Legault
- MI003 Enhancing the Electrochemical Output of Benthic Microbial Fuel Cells, Year Two**  
# Shannon Noel Nangle, 16, Junior, Martin County High School, Stuart, Florida, T: James Slattery
- MI004 My Enemy Is My Friend: The Effects of Phage Therapy on the Induction of *Agrobacterium tumefaciens***  
Tiffany Lynne Boyd, 15, Sophomore, Miami High School, Miami, Oklahoma, T: Sally Ann Fenska
- MI005 The Effect of Static Magnetic Fields on the Growth of *E. coli***  
Carmen Bria'na Johnson, 18, Senior, Amos P. Godby High School, Tallahassee, Florida, T: Brian McClain
- MI007 Optimizing the Growth Impeding Properties of Pure Garlic Oil in Serial Dilutions of *Agrobacterium tumefaciens***  
Benjamin Wayne Brewer, 18, Senior, Eastern High School, Pekin, Indiana, T: Sharon Anne McElroy
- MI008 The Effects of Different Broths on Prodigiosin Production**  
Celina Padilla, 16, Junior, John L. Chapin High School, El Paso, Texas, T: Matthew Turner
- MI009 Old Traditions: New Applications Characterization of Plants as Protease Inhibitors**  
Eris Paige Moore, 18, Senior, Woodlin School, Woodrow, Colorado, T: Nancy Pauline Gettman
- MI010 Antibiotic Resistance: A Study of the Affect of Genetic Markers Used in Bioengineered Foods**  
# Andrew Scott Fritzler, 18, Senior, Merino High School, Merino, Colorado, T: Penny Propst
- MI011 Biologically Potent Broad Spectrum Antibiotics Obtained from Tetrodotoxin-Rich Organs of Puffer Fishes (*Arathron hispidus*, *Arathron manillensis*, *Chelenodon patoca*)**  
Joey Dacula Mangadlao, 16, Freshman, Agusan del Sur National High School, San Francisco, Agusan del Sur, Philippines, T: Norma Crizaldo Dagondon
- MI012 Effects of Goldenseal on Plasmid-Induced, Ampicillin-Resistant, *Escherichia coli* HB101**  
# Sarah Jayne Harshman, 16, Sophomore, Mount de Chantal Visitation Academy, Wheeling, West Virginia, T: Anna Margrethe Lindemann
- MI013 Effect of Oregano, Patchouli, Cedarwood and Tea Tree Natural Oils on the Growth Inhibition of *Staphylococcus aureus* and *Escherichia coli***  
Bryan Rivera-Garcia, 15, Sophomore, De La Salle School, Bayamon, Puerto Rico, T: Wanda I. Aviles
- MI014 The Effect of Antibiotic Exposure on the Emergence of Resistance in *Streptococcus pneumoniae***  
Anne Helene Karam, 16, Sophomore, Saint Joseph's Academy, Baton Rouge, Louisiana, T: Linda Kerr Messina
- MI015 Effect of Organic Farming on Bacteria Colonizing Beans, Carrots, and Lettuce**  
### Carrie Calkins Rethlefsen, 18, Senior, Winona Senior High School, Winona, Minnesota, T: Kenneth Mann
- MI016 Antimicrobial Properties of Hide Tanning Solutions**  
Brian Keith Holmes, 17, Junior, Dupree High School, Dupree, South Dakota, T: James Andrew Broyles
- MI017 The Pathological Effect of Bacteria on Muscle Tissue**  
Jessica L. Miles, 16, Sophomore, duPont Manual Magnet High School, Louisville, Kentucky, T: Glenn Zwanzig
- MI018 Metastable Conformations in the Secondary Structure of the Poly(A) Signal in Human Immunodeficiency Virus Type-1**  
# Alan Ho-Yin Gee, 17, Senior, Frederick High School, Frederick, Maryland, T: Shelley Smith
- MI019 Kinetic Analysis of Viral Fusion Using Peptide Inhibitors**  
Amanda Kay Leatherman, 17, Senior, Urbana High School, Ijamsville, Maryland, T: Ronald Albaugh
- MI020 Analysis of Mutations in the AMP Pathway in *Saccharomyces cerevisiae***  
Alexander Michael Hincker, 17, Senior, Roanoke Valley Governor's School for Science and Technology, Roanoke, Virginia, T: Cynthia Ely Bohland
- MI021 The Effects of Nutrient Runoff on the Dinoflagellate *Proocentrum micans***  
Erica Marie Rutherford, 17, Junior, Central Virginia Governors School, Lynchburg, Virginia, T: Cheryl Ann Lindeman
- MI022 Attenuation: A Novel Approach to the Control of Bacterial Wilt**  
Xinmiao Xie, 18, Senior, Fuzhou No.1 Middle School, Fuzhou, China, T: Qunlin Zhang
- MI023 No Thanks, I'll Use My Own Pen**  
Chris Michael Jenkins, 17, Junior, South River High School, Edgewater, Maryland, T: Karen Hull
- MI024 Too Much of a Good Thing?**  
Benjamin Matthew Tatum, 16, Junior, Glenwood High School, Chatham, Illinois, T: Rita D. Singer
- MI025 Do Lichens Have Antimicrobial Properties?**  
Rebecca Renee Alexander, 14, Freshman, Grants High School, Grants, New Mexico, T: Matt John Munson
- MI026 Conventional vs. Organic Ground Beef: An Analysis of Two Unique Processing Methods**  
Liana Soussan Ksaibati, 17, Senior, Laramie Senior High School, Laramie, Wyoming, T: Eric Weitzel
- MI027 A Study of the Presence of Antibiotic Resistant Bacteria in Fitness Centers and Their Susceptibility to a Variety of Antibiotics**  
Jillian Rae Schroeder, 17, Senior, Latta High School, Ada, Oklahoma, T: Susie Stevens
- MI028 Effect of HGF-MET Modulation on Infection of Mouse Hepa1-6 Cells by *Plasmodium yoelii***  
Minghao Liu, 17, Senior, The Bronx High School of Science, Bronx, New York, T: Susan Brauerman
- MI029 Development and Standardization of a Novel Approach to Detect the Infectious Transmissible Spongiform Encephalopathic Prion Content in Paraffin-Embedded Tissues**  
# Megan Lakshmi Srinivas, 17, Senior, Fort Dodge Senior High School, Fort Dodge, Iowa, T: Robert A. Kunkle
- MI030 Microbial Treatment by Cinnamon Consumption**  
Aaron Michael Osentoski, 15, Freshman, Northwestern High School, Kokomo, Indiana, T: Patricia Zeck
- MI031 Biofilms: Dangerous Yeast Formations**  
Allison Helena Humble, 14, Freshman, Gig Harbor High School, Gig Harbor, Washington, T: Kristen Marie Bergh
- MI032 Use of Probiotic Bacteria to Inhibit the Growth of Pathogenic Bacteria**  
Cory John Millmier, 14, Freshman, Central Lee High School, Donnellson, Iowa, T: Alicia Danyel Schiller
- MI033 The Role of Arp8, a Chromatin Remodeling Protein, in DNA Repair and Its Implications to Cancer**  
## Aditya Krishna Denduluri, 18, Senior, Saint Pius X School, Albuquerque, New Mexico, T: Jim Carrie
- MI034 Relationship Between Ticks and a Common Imperfect Fungus, *Scopulariopsis brevicaulis*, Featuring Its Life Cycle in a Tick Host**  
Seth Asa Murray, 18, Senior, Northeastern High School, Springfield, Ohio, T: Joshua Benjamin Benoit
- MI035 Selection of Essential Oil Components to Inhibit *Candida* Without Affecting Normal Microbiota**  
### Karli Oberg, 17, Senior, Weber High School, Pleasant View, Utah, T: Jennifer Burbank
- MI036 The Antimicrobial Effects of Plant Extracts**  
# Melissa Marie Roark, 17, Junior, Rosholt High School, Rosholt, South Dakota, T: Kristin Marie Schultz

- MI037** **The Effects of *Allium sativum*, *Allium cepa*, and *Allium schoenoprasum* on *E. coli*, *Staphylococcus aureus*, and *Pseudomonas***  
Katherine May Coury, 17, Junior, Port Huron Northern High School, Port Huron, Michigan, T: Gail Rosales
- MI038** **The Antibacterial Effects of Plants Found in Southern Arizona on *Staphylococcus epidermidis* and *Saccharomyces cerevisiae***  
Kalie Rae Heideman, 18, Senior, Buena High School, Sierra Vista, Arizona, T: Virginia Caretto Bealer
- MI039** **Colloidal Silver: The Dangerous Cure Effectiveness of Colloidal Silver as Compared to Prescription Antibiotics**  
Jana Mae Marie Hill, 15, Freshman, Grove High School, Grove, Oklahoma, T: Keli D. Steen
- MI040** **A Bacteria Cauldron**  
Jennifer L Rhinesmith, 15, Freshman, Del Rio Freshman School, Del Rio, Texas, T: Melva Cortez
- MI041** **Modulating Murine Leukemia Virus Infection with MCAT-1 Receptor-Masked Liposomes Encapsulating Viral Inhibitors**  
Salvatore Mottillo, 18, Senior, Marianopolis College, Montreal, Quebec, Canada, T: Andrew Lefcoe
- MI042** **Genomic Signatures of Prokaryote Accessed by Chaos Game Representation**  
Jason Zicheng Hu, 19, Senior, Boston Latin Academy, Boston, Massachusetts, T: Michael Sullivan
- MI043** **RNAi Mediated Genetic Analysis of Epstein-Barr Virus Lymphoblastoid Cell Lines**  
## Shahriar Akbar Khan, 17, Senior, North Attleborough High School, North Attleborough, Massachusetts, T: David Robert Vito
- MI044** **Synthesis and Evaluation of New Analogs of Triclosan and Triclocarbon, Phase II**  
Chelsey Ryan Hall, 18, Senior, Seneca High School, Seneca, Missouri, T: Shannon Diahann Sample
- MI045** **What's in Your Wallet? An Analysis of Bacteria on Denominations of U.S. Currency**  
Shawn Marie Hughey, 18, Senior, Navasota High School, Navasota, Texas, T: Kaci Eschete
- MI046** **Inhibition of HIV Production in Genetically Generated HIV Model Through HIV TAT TAR RNA Binding Domain**  
Michael Mi, 17, Junior, Mount Lebanon High School, Pittsburgh, Pennsylvania, T: Susan Gillette Meer
- MI047** ***Pseudomonas syringae* pv. Tomato DC3000 Effectors' Effects on Plant Cells: Hypersensitive Response or Disease**  
Daniel Abraham Blumenthal, 17, Junior, Jones College Preparatory High School, Chicago, Illinois, T: Nichole Lowery
- MI048** **The Effects of Extensive Antibiotic Influence on Gram Negative Bacteria and the Effects of  $\beta$  Lactamases on Gram-Negative Antibiotic Resistant Bacteria**  
Karan Shaileshkumar Patel, 15, Freshman, Macomb High School, Macomb, Illinois, T: Thomas T. Johnson
- MI049** **Putting a Silver Lining on Solar Disinfection: The Additive Effect of Silver Nitrate on a Solar Disinfection Model**  
Cameron Thomas Gross, 15, Sophomore, Solon High School, Solon, Iowa, T: Dawn Posekany
- MI050** **Do SuperBugs Go to School?**  
Matt Aaron Doty, 16, Sophomore, Glen Rose Public School, Malvern, Arkansas, T: Connie Marlene Tuggle
- MI051** **A Quantitative Study of Viral Genomes with a Focus on Rapid Identification of Unknown Strains**  
# Benjamin Albert Schwank, 17, Junior, James Madison High School, Vienna, Virginia, T: Jason Switzer
- MI052** **Engineering 3-Dimensional Skeletal Muscle Tissue**  
# Nikhil Gupta, 17, Senior, Manhasset High School, Manhasset, New York, T: Peter Guastella
- MI053** **A Study of Olfaction and Lifespan in *Drosophila***  
Maham Ahmad, 17, Senior, Alhambra High School, Alhambra, California, T: Duane Nichols
- MI054** **The Antibacterial Effects of Honey on DH5 *E. coli* and *Pediococcus***  
Cody Andrew Hartman, 16, Sophomore, Laurel-Concord High School, Laurel, Nebraska, T: Ed Marlin Brogie
- MI055** **Studies on the Productions of RANTES by U937 Cells**  
Lecia Ashanna Moya Brown, 16, Freshman, Suncoast High School, Riviera Beach, Florida, T: Elizabeth Cozzi
- MI056** **Human Cytomegalovirus (HCMV) Up-regulates Adhesion Molecule Expression on Monocytes: A Potential Mechanism for Viral Spread**  
Jessica Elizabeth Minard, 18, Senior, Caddo Parish Magnet High School, Shreveport, Louisiana, T: Kris Clements
- MI057** **Evaluation of Changes in Skin Flora**  
Yelena Waldmann Dewald, 14, Freshman, Allegany High School, Cumberland, Maryland, T: Edwin Dunn
- MI058** **An Investigation into the Biological/Physiological Role of Prion Conformation**  
Emily Elizabeth McGettigan, 16, Sophomore, McGettigan Homeschool, Delanco, New Jersey, T: Carol Armstrong McGettigan
- MI059** **Developing a Method of Plant Extract Usage in Feed to Reduce the Levels of *Clostridium perfringens* in the Digestive System of Chickens to Promote Healthy Growth**  
Joseph Robert Stunzi, 15, Freshman, Clarke Central High School, Athens, Georgia, T: Kelly Lynn Klempner
- MI060** ***Sinorhizobium meliloti* Inositol Catabolism Genes and Their Role in Symbiotic Nitrogen Fixation**  
Yiqian Zheng, 18, Senior, Kalamazoo Area Mathematics and Science Center, Kalamazoo, Michigan, T: John Goudie
- MI061** **Investigation into the Population Dynamics of *Akahiwa sanguinea***  
Barbara Ann Luttrell, 17, Junior, Astronaut High School, Titusville, Florida, T: Scott McCord
- MI062** ***In vitro* Assay of Calcium Sulfate and Polymethylmethacrylate Beads Impregnated with Vancomycin**  
# Claire Elise Clothiaux, 17, Senior, Greenwood Laboratory School, Springfield, Missouri, T: Hugh Denver Brewer
- MI063** **Differential Bacterial Growth in Carbonated Beverages**  
Curt Henry Follman, 17, Junior, Wolford School, Wolford, North Dakota, T: Miranda Susan Norby
- MI301T** **Snaring the Snare: Molecular Studies of Membrane Fusion, Protein GS-15**  
# Nisha Garimalla, 14, Sophomore  
Galimat Khaidakova, 16, Junior  
Laura Jean Soderberg, 17, Junior  
Little Rock Central High School, Little Rock, Arkansas  
T: Annice Steadman
- MI302T** **Quantitative Analysis of *Allium sativum*, *Melaleuca alternifolia*, and *Echinacea purpurea* as Compared to Conventional Antibiotics**  
### Sarah Ann Wilfahrt, 18, Senior  
# Michelle Lyn Wilfahrt, 16, Sophomore  
Park City High School, Park City, Utah  
T: Edward Mulick
- MI303T** **Effect of Herbal Extracts on Virus Infectivity**  
# Sadie Katherine Reinbold, 18, Senior  
Christina Rose Mulloy, 17, Senior  
Timber Lake High School, Timber Lake, South Dakota  
T: Louise Ann Lindskov
- MI304T** **The Isolation of Antibiotic-like Proteins from Insect Larvae of *Musca domestica*, Housefly Maggots, and Three Other Species of Insects**  
# Shana Marie Wolff, 15, Sophomore  
Elizabeth Jean Cochran, 15, Freshman  
Cheyenne Central High School, Cheyenne, Wyoming  
T: Michael Wallace; T: Scott Sewell
- MI305T** **H<sub>2</sub>O and Bacteria**  
Alexandra Elizabeth Reid, 16, Sophomore  
Sarah Nicole Harden, 15, Sophomore  
Spring Creek High School, Spring Creek, Nevada  
T: Jeff Van Orman
- MI306T** **Lichens: Inhibition of *Staphylococcus epidermidis***  
Anne Marie Mallow, 17, Junior  
Sarah Elizabeth Mallow, 15, Freshman  
Pendleton County High School, Franklin, West Virginia  
T: Donald Joseph Wagner
- MI307T** **AIDS Virus and Immune Organism System Modeling**  
# Alexey Yu. Shunin, 17, Junior  
Daniil V. Khritoshin, 16, Junior  
Mathematical Education Centre, St. Petersburg, Russia  
T: Ilya A. Chistyakov

- MI308T Expensive Bacteria, Part Three**  
Jennifer Nicole Dumdie, 15, Freshman  
Danielle Catherine Sieck, 15, Freshman  
Selby Area High School, Selby, South Dakota  
T: Gary Lee Fahrni
- MI309T Spatial Distribution and Chlorophyll Content on the Dinoflagellate *Pyrodinium bahamense* as a Response of Depth and Nutrient Concentration**  
# Esteban Hernandez, 16, Junior  
Brendymar Enid Cruz, 16, Junior  
Zacha M. Ortiz-Correa, 16, Junior  
Casiano Cepeda High School, Caguas, Puerto Rico  
German Riechehoff Secondary, Vieques, Puerto Rico  
T: Angel L. Diaz-Rosario
- MI310T Pre-Packaged Items: Safe or Not?**  
Laramie Wayne Adams, 18, Senior  
Brianna Deshawn Clements, 17, Senior  
Gustine Independent School District, Gustine, Texas  
T: Raeann May Kouterick
- MI311T Effects of Ultraviolet-A Rays on the Growth of *Escherichia coli* Bacteria**  
# Jonah Randolph Parker, 18, Senior  
# Jesse Christopher Dodds, 18, Senior  
Central Lee High School, Donnellson, Iowa  
T: Ernest Lee Schiller
- MI312T The Effects of Herbal Remedies vs. Antibiotics Against Bacterial Growth**  
Nikola Lukenda, 16, Junior  
Christopher Mathew Balaban, 17, Junior  
Cardinal Newman Secondary School, Hamilton, Canada  
T: Donna Stack-Durward
- MI313T Fish Mucus: Factors Affecting Bacterial Growth on the Hawaiian *Eleotris sandwicensis***  
Taryn Mahealani Takahashi, 17, Junior  
Alayna Rachelle Betsill, 16, Junior  
Genevieve C. Pang, 16, Junior  
Henry Perrine Baldwin High School, Wailuku, Hawaii  
T: Barbara H. Huntley
- MI314T A Study on the Bio-control of Pear-Scab by Using the Soil-Fungi**  
Cheong Ha Park, 18, Senior  
Su Bin Min, 18, Senior  
Chonnam Science High School, Naju, Chonnam, South Korea  
T: Fun Hee Bae

## PHYSICS

GRAND AWARDS PRESENTED BY:  
INTEL FOUNDATION

- PH001 Characterization of Nanoscale Structures on Semiconductor: A Novel Technique in Fabrication of Nanowires Using Scanning Tunneling Microscopy**  
Zihao Richard Zhang, 17, Junior, West Shore High School, Melbourne, Florida, T: Tonya Galaida
- PH002 Super Cool Super Strong, Year Two**  
# Catherine Nicole Bewerse, 18, Senior, Satellite High School, Satellite Beach, Florida, T: Lisa Hall Scott
- PH003 Analysis of Attractive Forces on Multi-Walled Carbon Nanotubes by Atomic Force Microscopy**  
Shannen Alexei Adcock, 17, Junior, Little Rock Central High School, Little Rock, Arkansas, T: Melissa Donham
- PH004 Diamagnetic Levitation**  
Jacob Andrew McGregor, 17, Junior, James A. Bowie High School, Austin, Texas, T: Jill Harding
- PH005 A Vibroacoustical Study Comparing the Out-of-Plane Motion of Violin Bridges Under Different Boundary Conditions Using Holographic Interferometry**  
# Emily Rae Drabek, 18, Senior, Eastern High School, Pekin, Indiana, T: Sharon Anne McElroy
- PH006 Raising the Rayleigh Number: Plumes and Circulation in Turbulent Thermal Convection**  
# Meredith Ann MacGregor, 16, Sophomore, Fairview High School, Boulder, Colorado, T: Teri Cady
- PH007 Investigation into the Relationship Between Impinging Water Droplets and the Leidenfrost Phenomenon**  
# Adreanne Laree Brungardt, 15, Sophomore, Brush High School, Brush, Colorado, T: David L. Miner
- PH008 Ultrasonic Detector for Gas Chromatography**  
Mario Chemnitz, 18, Senior, Paul-Gerhardt-Gymnasium Graefenhainichen, Graefenhainichen, Sachsen-Anhalt, Germany, T: Freddy Stiehler
- PH009 Optimization Research on Dye-sensitized Solar Cells**  
YiRan Wang, 19, Senior, High School Affiliated to Renmin University of China, Beijing, Beijing, China, T: QingBo Meng
- PH010 Commissioning a DPD-3 Diode System for *in vivo* Dose Verification of Radiotherapy Treatment**  
Gurjit Singh Sidhu, 17, Senior, Saint John's Roman Catholic High School, Dundee, Scotland, T: John M. Parry
- PH011 Bubble, Bubble, Toil and Trouble**  
Michelle Elise Johnson, 14, Freshman, Nettleton Junior High School, Jonesboro, Arkansas, T: Annette Holder
- PH012 How Attractive Are Your Magnets? A Third-Year Study**  
William James Shupe, 18, Senior, Seguin High School, Seguin, Texas, T: Donna Boelter
- PH013 The Electrical Conductivity of Cobalt and Iron-Nickel Based Amorphous Metal Ribbons at Cryogenic Temperatures**  
# Jonathan Joseph Naber, 15, Sophomore, Waterloo High School, Waterloo, Illinois, T: Diane Holmen
- PH014 The Effect of Eolic Energy and Solar Energy in the Operation of a House in Puerto Rico**  
Roberto Jose Manzano, 16, Junior, Colegio De La Salle High School, Bayamon, Puerto Rico, T: Maritza Rodriguez
- PH015 The Effects of Synthetic Oil in a Small Engine**  
Justin Everett Eide, 15, Freshman, Winona Senior High School, Winona, Minnesota, T: Kenneth James Mann
- PH016 Wings, Phase II**  
Christopher Bradley Schultz, 15, Sophomore, Union Grove High School, McDonough, Georgia, T: Leon Louis Olivier, Jr.
- PH017 The Effect of Data Being Manipulated to Fit into the Theories of Heliocentrism and Geocentrism**  
Dominique Marianna Cox, 15, Sophomore, Morenci High School, Morenci, Michigan, T: Kim Mohr
- PH018 Room Temperature Ferromagnetism in Germanium Manganese Thin Film Semiconductors**  
## Lynwood James Walker Jr., 17, Senior, Hahnville High School, Boutte, Louisiana, T: Michel Marine
- PH019 Resonance Patterns of Vibrated Soap Water Droplets**  
Po-Chun Kuo, 17, Junior, National HsinChu Senior High School, Taiwan, Taiwan, Chinese Taipei, T: Wan-Ju Yeh
- PH020 Polarization Dynamics of Ytterbium Doped Silica Fiber Laser**  
Alexander Chernyak, 17, Junior, International Academy, Bloomfield Hills, Michigan, T: David Lyons
- PH021 Sound Blockage**  
Sarah Lane Menezes, 14, Freshman, Escola Americana de Campinas, Campinas, Sao Paulo, Brasil, T: Daniel Jussieu Figueiredo Rezende
- PH022 Wireless Power Transfer by Electromagnetic Induction**  
Samuel James Bobb, 17, Junior, Rutherford B Hayes High School, Delaware, Ohio, T: David W. Carpenter
- PH023 Getting Started on the Right Foot: An Evaluation of Equine Arena Footing Materials**  
Megan Jean Webb, 15, Freshman, Keyser High School, Keyser, West Virginia, T: Tabatha Woy
- PH024 The Sounds of Silence, A Two Year Study: Computational Fluid Dynamics Analysis of a Muffler**  
# Jessica Ann Goldstayn, 18, Senior, Tullahoma High School, Tullahoma, Tennessee, T: Harold M. Liner
- PH025 A Novel Simulation of Gravitational Lensing**  
# Aliza Ilana Malz, 17, Junior, Hunter College High School, New York, New York, T: Asumana Randolph
- PH026 Does Copper Wire + Aluminum Foil = Antigravity?**  
Joshua J. McCoy, 16, Junior, Faith Academy, Wilson, North Carolina, T: Cheryl Lynn Powell-McCoy

- PH027 Propellantless Propulsion: The Effect of Electrode Geometry on the Thrust Output of an Asymmetrical Capacitor**  
Stephen Jerome Trettel, 15, Freshman, New Prague Senior High School, New Prague, Minnesota, T: Jeff Decker
- PH028 Consumable Oil Encapsulated Spheroids (COES): Discovery and Applications**  
## Michael J. Pizer, 16, Junior, University School of Milwaukee, Milwaukee, Wisconsin, T: Ronald C. LeMay
- PH029 Is the Levitation of a NdFeB Magnet Affected by Temperature, Bias Magnet Strength, Diamagnetic Material, or Plate Separation?**  
Allyson Patricia Werner, 15, Freshman, Nicolet High School, Glendale, Wisconsin, T: Gary A. Stresman
- PH030 The Effect of Variation of the Angle of Incidence on Cosmic Ray Flux**  
Jordan Tyler Bishop, 18, Senior, Manhattan High School, Manhattan, Kansas, T: Fred Nelson
- PH031 Suppressing Chaotic Behavior with Vibrations**  
# Brandon John Campbell, 16, Sophomore, Fremont High School, Plain City, Utah, T: Kim Wilde
- PH032 Can Carbon Nanotubes Improve Material Strength? Improving Bulletproof Vest Strength: Year Two**  
Graham Edward Gintz, 14, Freshman, Hilton Head Preparatory School, Hilton Head Island, South Carolina, T: Tina Webb-Browning
- PH033 The Influence of Thickness, Low Temperature, and Superconductivity on the Attenuation of Magnetic Field Strength**  
Amber C. Kirk, 16, Sophomore, Coon Rapids High School, Coon Rapids, Minnesota, T: Gary E. Alexander
- PH034 The Effect of Relaxation on the Rate of Solid Phase Epitaxial Regrowth (SPER)**  
Yuchen Huo, 17, Senior, J. W. Mitchell High School, New Port Richey, Florida, T: Ed A. Braddy
- PH035 A Non-Intrusive Investigation of a Simulated Ball Lightning Phenomenon in My Microwave Oven**  
## Joshua David Kalin, 18, Senior, Catholic High School, Huntsville, Alabama, T: Brian Joseph Finzel
- PH036 Strength and Ductility of Silk Thread from *Nephila clavipes***  
Rodolfo Sebastian Norniella Parache, 16, Junior, Colegio Sagrado Corazon, San Miguel de Tucuman, Tucuman, Argentina, T: Marta Liliana Parache
- PH037 The Turning Pointe: The Physics of a Pirouette**  
Arielle Kathryn Rollins, 17, Junior, Westfield High School, Westfield, Massachusetts, T: Renee Coombs
- PH038 Warm Enough?**  
Amber Whitney Wray, 16, Junior, Gaffney High School, Gaffney, South Carolina, T: Summer Yeargin
- PH039 Analysis of Network Motifs in the *C. elegans* Nervous System**  
Eric Louis Paniagua, 17, Senior, Massapequa High School, Massapequa, New York, T: Mark Ballerini
- PH040 Particle Deflection from a Radioactive Co-60 Source: A Matter of Homeland Security**  
# Jacob Lee Stricherz, 17, Senior, South Shore High School, South Shore, South Dakota, T: Ryon Reed Gross
- PH041 G-line Power Transfer**  
Michael James Bella, 17, Junior, Leigh High School, San Jose, California, T: Lew Smith
- PH042 Searching for Balanced Conditions Between a Computer Screen and Light Ambiance**  
Shelly Amieva, 17, Junior, John B. Alexander High School, Laredo, Texas, T: Luis Villarreal
- PH043 Silver Nanoparticle Coatings Prepared by Thermal Decomposition of PVP/Ag Composite**  
Mingwei Gu, 17, Junior, Hoover High School, Hoover, Alabama, T: Andrei Stanishevsky
- PH044 Saving Natural Resources by Using a Constant Flowing Water Current to Produce Power from an Underwater Windmill**  
Randall Clark Shults, 17, Junior, Suncoast Community High School, Riviera Beach, Florida, T: Beth S. Cozzi
- PH045 Decibels Output of Representative Styles of Music Under Confined and Non-Confined Environments**  
David Aponte, 15, Freshman, Colegio Radians, Cayey, Puerto Rico, T: Eddie Laboy
- PH046 Trebuchet: Ancient Device for Teaching Modern Physics, Phase III**  
Heather Natasha Rogers, 16, Sophomore, Brunswick High School, Brunswick, Georgia, T: Polly B. Cox
- PH047 The Effect of Magnetic Field Strength on Flow Rate in a Magnetohydrodynamic Pump**  
Robert S. Arthur, 17, Junior, John Handley High School, Winchester, Virginia, T: David L. Stark
- PH048 Calculating a Mathematical Correlation Between Several Aerodynamic Values and Leading Edge Boundary Layer Separation in an Eppler- 205 Airfoil**  
David Amor, 18, Senior, MAST Academy, Key Biscayne, Florida, T: Wafa Khalil
- PH049 Electric Collision Effect Between Polystyrene Particles and Electrolyte in Micro Constructing Using Optical Tweezer: What Hinders the Micro Constructing?**  
Dong Ho Kim, 17, Senior, Busan Science Academy, Busan, South Korea, T: Sook Ja Seong
- PH050 Brownian Motors**  
Kimberly Paige Farris, 17, Junior, Jefferson County International Baccalaureate School, Birmingham, Alabama, T: Debbie R. Anderson
- PH301T An Analysis of Electrostatic Discharge (ESD) on Microelectronic Devices**  
Hena Waseem, 17, Senior  
Jason David Linehan, 17, Senior  
Lake Brantley High School, Altamonte Springs, Florida  
T: Susan N. Behel
- PH302T Isolating and Enhancing Design Parameters of an Ambient Temperature Magnetohydrodynamic Generator to Determine Scalability for Commercial Power Production**  
## Ryan Paul Jones, 17, Junior  
## Eric Anthony Smith, 17, Junior  
Astronaut High School, Titusville, Florida  
T: Scott McCord
- PH303T Non-linearity of Solitary Waves: What Can You Get Instead of Pleasant Holiday on the Coast of the Indian Ocean?**  
Alena A. Abramava, 17, Junior  
Ann V. Mukhortava, 17, Junior  
Lyceum of Belarus State University, Minsk, Belarus  
T: Anatolij Ivanovich Slobodjanjuk
- PH304T Refraction Action: How Is Light Refraction Influenced by Its Incidence Angle and Its Medium?**  
Lam Dinh Son Pham, 16, Sophomore  
Whitney Elyse Scott, 16, Junior  
Northside High School, Fort Smith, Arkansas  
T: Linda Ann Newsome
- PH305T Bilingual Simultaneous Public Announcement System**  
Suet Ting Chau, 17, Senior  
Kin Kan Law, 17, Senior  
Ka Ho Wong, 17, Senior  
The Mission Covenant Church Holm Glad College, Hong Kong, Region of China  
T: Lap Chung Lee
- PH306T Acousto-Optic Laser Diffraction in an Air Medium**  
Isaac Ring Zaworski, 17, Senior  
Nicholas Leo Horres, 18, Senior  
Alex James Willard, 18, Senior  
School of Science and Technology, Beaverton, Oregon  
T: James Richard Gardner
- PH307T Nemo, It's a Sine!**  
Ma. Anna Angelica Salmorin Cruzado, 16, Sophomore  
Ellaine Jandoc Cabasan, 16, Sophomore  
Mara Joan Antonio Roquero, 16, Sophomore  
Manila Science High School, Manila, Philippines  
T: Jonathan Poblete Derez
- PH308T Counterweight Trebuchets and the Relationship Between Object, Sling Length, Counterweight Mass, with Its Range**  
Kyle M. McCracken, 17, Senior  
Austin Douglas Cole, 18, Senior  
Whiteford High School, Ottawa Lake, Michigan  
T: Janet M. Weygand

- PH309T Medieval Physics: An Exploration of the Trebuchet**  
Trevor James Register, 17, Senior  
Colin James Dean, 17, Senior  
Fayette County High School, Fayetteville, Georgia  
T: Bruce D. Murdock
- PH310T Alternative Energy: Optimizing Wind and Solar Energy Production**  
Laura Kelly McKemmish, 16, Junior  
Nilrundi Videesha Saparamadu, 15, Junior  
Baulkham Hills High School, Baulkham Hills,  
New South Wales, Australia  
T: Colin McAuliffe; T: Sharron Frame
- PH311T A Simple Answer Just Isn't Probable: The Effects of Uncertainty on the Development of Complexity in Cellular Automata**  
Stephanie Anne Stoughton, 15, Freshman  
Michael Yenting Wu, 15, Freshman  
Shepton High School, Plano, Texas  
T: Nadine Harris
- PH312T Attenuation of Microwave Powder Filters**  
Tara Anne McCarron, 18, Senior  
Tristan Guha-Gilford, 17, Senior  
Eleanor Roosevelt High School, Greenbelt, Maryland  
T: Douglas Pruettl; T: William Martin
- PH313T The Effect of Gas Bubbles in a Fluid on Buoyant Force**  
Christopher Ryan Hernandez, 18, Junior  
Jenny Marie Hastings, 16, Junior  
Thunderbird High School, Phoenix, Arizona  
T: Renee M. Kaye
- PH314T Architectural Acoustics: How Does Geometric Room Design Affect the Sound Field?**  
# Mitchell Keith McCowan, 16, Sophomore  
Jonathan Andrew Mills, 16, Junior  
East Central High School, Hurley, Mississippi  
T: Linda Havard; T: Caryl S. Ulrich
- PH315T Computer Analysis of Exercises: Just Do It. . .the Same Every Time**  
Jacqueline Elise Mooney, 17, Junior  
Alicia Renee Andrade, 17, Junior  
Wachusett Regional High School, Holden, Massachusetts  
T: Carol W. Sullivan
- PH316T How Much Sound Do You Absorb?**  
Lane Ward Leishman, 14, Freshman  
Bronzson Laffayette Woods, 14, Freshman  
Springville Junior High School, Springville, Utah  
T: Lori Annette Caras
- PH317T Development of a Helium Neon Laser-Based Optical Spanner**  
Anirudh Venkat Ramesh, 17, Senior  
Yaagnik Doraiswamy Kosuri, 18, Junior  
Sachem High School East, Farmingville, New York  
Herricks Senior High School, New Hyde Park, New York  
T: Michael Angelo Vaccariello; T: Mary Dillon
- PH318T Wavelength = Velocity / Frequency**  
# Eric Christopher Sanchez, 18, Senior  
James Ontiveros, 17, Senior  
Gladys Porter High School of Technology, Brownsville, Texas  
T: Rachel Renee Ayala
- PH319T The Efficiency of Photomultiplier Tube Cosmic Ray Detectors**  
Rudy William Resch, 18, Senior  
Kent Robert Shirer, 17, Senior  
Lincoln High School, Lincoln, Nebraska  
T: James Rynearson
- PH320T The Influence of Zinc Additive on Compressive Yield Strength of Lead**  
Robert Simpson McManimon, 18, Senior  
Meghan Kyl Sarkozi, 17, Senior  
Salpointe Catholic High School, Tucson, Arizona  
T: Tim J. Barry
- PH321T Designing a Multipurpose Fundus Camera in Order to Use in Medicine and Security Systems**  
Emir Konuk, 19, Senior  
Emre Yilmaz, 19, Senior  
Izmir Fen Lisesi, Izmir, Turkey  
T: Engin Dincer
- PH322T Numerical Solutions of Hamilton's Equations**  
Francis Wasser, 17, Senior  
Michael Mulhall, 17, Senior  
Syngue Street CBS Secondary School, Dublin, Ireland  
T: Jim Cooke

## SPACE SCIENCE

### GRAND AWARDS PRESENTED BY: INTEL FOUNDATION

- SP001 Fractal Dimension Analysis of Putative Martian Coastlines**  
Gabrielle Alyce Gianelli, 17, Junior, Lake Highland Preparatory School, Orlando, Florida, T: Judith Faith Legault
- SP002 An Analysis of Long-Term Reliability in Experimental Candidates for a Martian Construction Material**  
Matthew Charles Draper, 18, Senior, Eustis High School, Eustis, Florida, T: Frank Liotien
- SP003 Gravitation Model of Relativistic Jet Curving of Active Galactic Nuclei**  
Aliaksei J. Kazlouski, 17, Junior, Lyceum of BSU, Minsk, Belarus, T: Alexander Leonidovich Poplavsky
- SP004 First Measurements of Size and Surface Temperature for Eclipsing Binary Star 1ES 1959+650 #5**  
Kristen Nicole Donahue, 16, Junior, Waterloo High School, Waterloo, Illinois, T: David N. Barnaby
- SP005 Phaseolus lunatus Growth Patterns in a Simulated Mars Environment**  
Sasha Annalicia Rohret, 15, Freshman, Keystone School, San Antonio, Texas, T: Donald L. Howk
- SP006 Creating a Novel Program for Determining the Three-Dimensional Movement Rates of Sunspots and Active Solar Magnetic Regions, Year Two**  
# Elyse Autumn Hope, 17, Junior, Oregon Episcopal School, Portland, Oregon, T: Rosa Maria Hernandez Hemphill
- SP007 Effects of Atmospheric Turbulence on Simulated Starlight in a Low-Pressure Telescope Environment**  
Renee Hei-kyung Park, 18, Senior, Montgomery Blair High School, Silver Spring, Maryland, T: Glenda M. Torrence
- SP008 The Sun's Big Bang in January 2005**  
Mina Renee Bionta, 17, Junior, Livermore High School, Livermore, California, T: Nelson Fong
- SP009 Luminosity and Morphological Characteristics of Galaxies at  $z=4.5-5$**   
Eli Aghassi, 17, Senior, The Bronx High School of Science, Bronx, New York, T: Fanny Ennever
- SP010 Near-Infrared Albedo and Flux Variation of Saturn's Rings at 2.00 Microns: 1995-2003**  
Johann Kasper Komander, 18, Senior, Arkansas School for Mathematics, Sciences, and Arts, Hot Springs, Arkansas, T: Walt Levisse
- SP011 Contamination of Planets and Moons by Extremophiles**  
Renaldo Micheal Webb, 16, Junior, Louisiana School for Math, Science, and the Arts, Natchitoches, Louisiana, T: Shelly Finley Hynes
- SP012 A New Algorithm for Multiple Hypothesis-based Tracking and Discovery of Potentially Hazardous Near Earth Objects**  
Anand M. Palaniappan, 17, Senior, David H. Hickman High School, Columbia, Missouri, T: Pamela Close
- SP013 Mars or Bust, II: Further Investigation of Selected Exploration Sites Based on Radiation Exposure Prevention**  
Tiffany Amelia Legg, 17, Senior, Duncan Senior High School, Duncan, Oklahoma, T: Elizabeth Amelia Legg
- ###

- SP014 The Venus Transit of 2004**  
Marc Nikolai Baggenstos, 18, Senior, Deutsche Internationale Schule Kapstadt, Cape Town, Western Cape, South Africa, T: Christian Wendt
- SP015 Exoplanets Around 47 Ursa Majoris and 51 Pegasus**  
Lars Fogt Paulsen, 19, Senior, Amtsgymnasiet i Soenderborg, Soenderborg, Denmark, T: Mogens Winther
- SP016 Cosmology**  
Johan Georg Mulvad Samsing, 20, Senior, Odense Katedralskole, Odense, Odense, Denmark
- SP017 Mars Global Surveyor Image Analysis**  
Ashley Sherie Hall, 17, Senior, Deer Valley High School, Antioch, California, T: Jeff Adkins
- SP018 Determining the Factors of the Aurora Systems Using the System of Elimination: Phase Three**  
# Humberto Gerardo Mendoza, 15, Sophomore, Homer Hanna High School, Brownsville, Texas, T: Liz Valdez
- SP019 Measuring Solar Signal in a Radio Telescope**  
David Christopher Balding, 17, Senior, Pickens High School, Pickens, South Carolina, T: Carol Henderson Wade
- SP020 The Design and Testing of a Shuttle Inspection Vehicle's Guidance and Imaging Systems**  
### Cameron Alexander Martin, 17, Senior, Imlay City High School, Imlay City, Michigan, T: Tom DeClark
- SP021 A Galactic Census of Stellar Populations**  
Jonathan James Fransen, 17, Junior, Calhoun High School, Port Lavaca, Texas, T: Kenneth William Zeigler
- SP022 The Martian Balloon**  
John Thomas Hagen, 17, Junior, Ayersville High School, Defiance, Ohio, T: Kathy Lamming
- SP023 The Influence of Non-Synchronous Rotation on Patterns in the Orientation of Ice Fractures on the Surface of Europa II**  
# Emily Louise Ricq, 17, Senior, Chandler High School, Chandler, Arizona, T: Denise M. Lewis
- SP024 The Sky Is Falling! A Four-Year Study of Meteor Showers**  
Channing Jordan Arnold, 15, Freshman, Booneville High School, Booneville, Mississippi, T: Brenda Pike Scott
- SP025 And the Forecast Is. . . Analyzing Martian Temperatures**  
Elizabeth Anne Bendycki, 16, Junior, Laurel School, Shaker Heights, Ohio, T: Reza D. Beigi
- SP026 The Onset of Enhanced Ejection in Hypervelocity Impacts by Jetting**  
Yuan Zhu, 17, Junior, Liverpool High School, Liverpool, New York, T: Robert Fred Jaquin
- SP027 A Study of V380 Ori**  
Jennifer Lee Wolochow, 17, Junior, Oregon Episcopal School, Portland, Oregon, T: Rosa Hemphill
- SP301T Integration Photometric Timing: A New Method for Asteroid Occultation Timing**  
Feng Yan, 17, Senior  
Yiwei Ma, 17, Senior  
High School Affiliated to Renmin University of China, Beijing, Beijing, China  
T: Jin Zhu
- SP302T Analyzing Astronomical Spectra Using the SBIG SGS**  
# Mary Masterman, 15, Sophomore  
# Sarah Louise Howell, 15, Sophomore  
Westmoore High School, Oklahoma City, Oklahoma  
Classen School of Advanced Studies, Oklahoma City, Oklahoma  
T: Jeffrey Lee Baughman II
- SP303T Analyzing the Surface Texture, Optic & Tensile Properties of HST SA-II SADA MLI Retrieved from Hubble Space Telescope After Long Term Exposure in Low Earth Orbit**  
# Allison Louise Rapoport, 17, Senior  
Sharon Kaminski, 17, Senior  
Catherine Elizabeth McCarthy, 16, Sophomore  
Hathaway Brown School, Shaker Heights, Ohio  
T: Patricia Hunt
- SP304T Harvesting Electrons from *E. coli***  
Quinn Alexander Morris, 16, Junior  
May Liu, 16, Junior  
Courtney Henrietta Fox, 17, Junior  
North Carolina School of Science and Mathematics, Durham, North Carolina  
T: Myra Halpin
- SP305T A Study of the Craters of Valles Marineris**  
Paul Damian Garza, 17, Senior  
Dustin Roy Lambden, 17, Junior  
Calhoun High School, Port Lavaca, Texas  
T: Kenneth William Zeigler
- SP306T The Effect of Size and Charge on the Electrodynamic Screen**  
Kuo-Jui Ray Huang, 16, Freshman  
Matthew Clinton Baldwin, 17, Junior  
Xuan Yi, 16, Junior  
Little Rock Central High School, Little Rock, Arkansas  
T: Annice Steadman
- SP307T Black Holes: The Validity of the Supposition that Super-Massive Black Holes Are in Mutual Orbit Within the Double Nuclei of NGC 6240**  
Steven Paul Chambers, 17, Senior  
Robert Peter Matthew, 16, Senior  
Wyke Sixth Form College, Hull, East Yorkshire, United Kingdom  
T: Dave Longstaff; T: Muriel Neilson
- SP308T Nova Rate in M 31**  
Mary Elizabeth Herndon, 16, Junior  
Sarah Nicole Green, 16, Junior  
Graves County High School, Mayfield, Kentucky  
T: Velvet M. Dowdy
- SP309T Moon Influence in Agricultura Activities**  
Tania Beyseth Meza Sanchez, 16, Freshman  
Mariela Lilibeth Quispe Iquiapaza, 17, Freshman  
Mariano Lino Urquieta, Puquina, Moquegua, Peru  
T: Olger Quispe Aco

## ZOOLOGY

### GRAND AWARDS PRESENTED BY: INTEL FOUNDATION

- ZO001 Spicy Ants: Fighting Fire with Fire, The Effects of Capsaicin on Formicidae**  
Charles Daniel Knowles, 15, Sophomore, Bay High School, Panama City, Florida, T: Jill Marie Hansen
- ZO002 BUGNIP III**  
Cassandra Marie Wagner, 14, Freshman, Lemon Bay High School, Englewood, Florida, T: Jackie Speake
- ZO003 The Effects of Esfenvalerate on the Fertilization and Early Development of *Eucidaris tribuloidesis***  
Kimberly May Sparling, 15, Freshman, Blanche Ely High School, Pompano Beach, Florida, T: Julie Kitchener
- ZO004 Relating Distance Between Lion Prides with Need for Male Protection**  
Heidi Mei-On Chun, 16, Junior, St. Paul Academy and Summit School, St. Paul, Minnesota, T: Anna Mosser
- ZO005 Frequency of Feeder Visits by *Carpodacus mexicanus* vs. Temperature**  
Laura Rose Brueggen, 17, Junior, Brueggen Homeschool, Bethany, Oklahoma, T: Carla Marie Brueggen
- ZO006 McArthur Drive Landfill-Superfund Site: Field Study and Laboratory Simulation of Heavy Metal Accumulation in Freshwater Mussels**  
Rachel Elizabeth Sass, 17, Junior, Mid-Buchanan High School, Faucett, Missouri, T: Marilyn Kay Goodlet
- ZO007 The Effects of Common Anesthetic Agents on the Nervous System of *Drosophila melanogaster***  
Lydia Patrice Wheeler, 15, Sophomore, Greenwood High School, Greenwood, Mississippi, T: Leigha Hughes
- ZO008 Does the Application of Weedmaster Affect the Efficacy of the Mole Cricket Nematode (*Steinernema scapterisci*) to Control Pest Mole Crickets? A Five-Year Study**  
Tyler A. Gary, 18, Senior, DeSoto County High School, Arcadia, Florida, T: Marlou Zolkos
- ###
- ZO009 Comparative Study on Arthropods' Walking Manner**  
Pengyuan Zang, 18, Senior, Beijing Number 22 Middle School, Beijing, Beijing, China, T: Shan Chen

- ZO010 Genetic Analysis of Meiotic Mutants in *Drosophila***  
Neha Anil Deshpande, 15, Sophomore, South Brunswick High School, Monmouth Junction, New Jersey, T: Kim S. McKim
- ZO011 Comparison of Natural and Artificial Sweeteners: Discrimination and Preference of *Drosophila melanogaster***  
Zoe Elizabeth Teague, 15, Sophomore, Nettleton High School, Jonesboro, Arkansas, T: Jana Karen Hudspeth
- ZO012 Biological Control of a Common Corn Criminal: Phase II #**  
DJ Ray Horton, 16, Sophomore, Hotchkiss High School, Hotchkiss, Colorado, T: Douglas Ray Horton
- ZO013 The Buzz on Bees: The Effects of Alcohol and Nicotine on Protein Expression in the Brain of the *Apis mellifera***  
#  
Russell Thomas Burrows, 16, Junior, Northside Health Careers High School, San Antonio, Texas, T: Daniel Bump
- ZO014 Relating Nutritional Imbalances to the Cause of Navicular Disease**  
Alexandra Leigh McLe, 15, Freshman, Brewster High School, Brewster, New York, T: Edward Schmidt
- ZO015 The Effects of pH and Water Quality on the Weight Gain of *Carassius auratus* in Saginaw River Water**  
Lindsay Roselle Cain, 17, Senior, Saginaw Arts & Sciences Academy, Saginaw, Michigan, T: Matthew Howard Miller
- ZO016 The Effect of Nicotine Levels on Growth and Development in Larval Zebrafish**  
Beatrice Smith Parker, 15, Sophomore, Bethesda-Chevy Chase High School, Bethesda, Maryland, T: Deborah Pober Haase
- ZO017 The Effects of Warm Temperatures on Zebra Mussels**  
Nicole Kristine Ward, 17, Junior, Century High School, Rochester, Minnesota, T: Cheryl Moertel
- ZO018 Gone Fishing for the Last Time ##**  
Kathryn Jolene Sanderlin, 17, Senior, Drew Central High School, Monticello, Arkansas, T: Dennis Von Thurman
- ZO019 Zooplankton Population Dynamics in Relation to Time, Dissolved Oxygen, Depth, and Temperature #**  
Elizabeth Ann Bassett, 18, Senior, Bagley High School, Bagley, Minnesota, T: Olin Miles Anderson
- ZO020 Maggots, Meat, and Mayhem #**  
Genevieve Mount, 16, Junior, Santa Cruz High School, Santa Cruz, California, T: John Martin
- ZO021 Color Changes During Fighting in the *Steatocranus casuaricus***  
Yin Yin Wu, 16, Sophomore, J.M. Atherton High School, Louisville, Kentucky, T: Glenn Edwin Zwanzig
- ZO022 Effects of Signal Manipulation in *Caenorhabditis elegans***  
#  
Zachary Carter Strickland, 16, Sophomore, Christian Academy of Louisville, Louisville, Kentucky, T: Tina Gibson
- ZO023 Do Salmon Genes Wear Out on the Farm? A Comparative Study of Genetic Variability and Heterozygosity in Farm and Wild Chinook Salmon and Wild Sockeye Salmon**  
Nicole Marion Jeffery, 18, Senior, Barrow High School, Barrow, Alaska, T: Leslie Pierce
- ZO024 Testing Adaptive Models of Sex Allocation in a Polymorphic Species**  
Tiffany Sain-Yee Ko, 16, Junior, Terre Haute South Vigo High School, Terre Haute, Indiana, T: Elaina Marie Tuttle
- ZO025 Movement Behaviors of Jumping Spider *Hasarius adansoni* Is Elicited by Visual But Not Olfactory Signals**  
Wen Hao Liu, 17, Junior, The Affiliated Senior High School of NKNU, Kaohsiung, Taiwan, Chinese Taipei, T: Kuei-Fang Chen
- ZO026 Phylogenetic Analysis of Crickets by Acoustic Behavior and Mitochondrial DNA Sequencing**  
Jhe-Rong Wu, 18, Senior, Taipei Municipal Chien-Kuo Senior High School, Taipei City, Taiwan, Chinese Taipei, T: Tsui-Hua Liu
- ZO027 Nest Site Microhabitat Influences Nest Temperature and Offspring Sex Ratio of the Diamondback Terrapin (*Malaclemys terrapin*)**  
Maria Malgorzata Wojakowski, 18, Senior, Townsend Harris High School at Queens College, Flushing, New York, T: Katherine Ludvik
- ZO028 Inhibition of Cell Recognition and Reaggregation by Chitin and Chitinase in the Sponge *Microciona prolifera*: A Possible Model for the Cause and Effects of RAD**  
Vinay Tripuraneni, 16, Sophomore, Clovis West High School, Fresno, California, T: Wayne Garabedian
- ZO029 Irritating, Itchy, and Ugly**  
Casey Nicole McDonald, 18, Senior, Hedgesville High School, Hedgesville, West Virginia, T: David Herbert Rickman
- ZO030 Does the Selection of Breeder Replacement Hen Turkeys by Average Body Weight Improve Breeder Flock Rate of Lay?**  
Travis Elliott Schaffer, 16, Junior, North Daviess High School, Elnora, Indiana, T: John Merle Callahan
- ZO031 The Relationship Between Chromium Supplementation and Baculovirus Infections in *Heliothis virescens***  
Drew Francis Sanning, 18, Senior, Miller County R-III High School, Tuscumbia, Missouri, T: Constance Helen Wyrick
- ZO032 A Statistical Comparison of a New Morphological Characteristic Between Male and Female Kokanees**  
Susannah Lee Clary, 13, Freshman, Los Lunas High School, Los Lunas, New Mexico, T: Rick John Cole
- ZO033 Mosquito Vectors: Disease Potential and Control Efficacy**  
Meghan Elizabeth Hermance, 16, Sophomore, Oak Ridge High School, Conroe, Texas, T: Richard Perzan
- ZO034 Mapping Mosquito Biomarkers of Hormonal Manipulation**  
Kelydra Elizabeth Welcker, 16, Sophomore, Parkersburg South High School, Parkersburg, West Virginia, T: Susan Smith
- ZO035 Parthenogenesis: Optimizing Virgin Birth in Sea Urchins**  
Evan Takashi Morikawa, 17, Junior, High Tech High School, San Diego, California, T: Jay Vavra
- ZO036 Investigation of Behavioral Indicators and Recognition of Prey from Chemical Cues by *Phidippus audux***  
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Erin Louise Moulding, 17, Senior, Fremont High School, Plain City, Utah, T: Robert K. Wilde
- ZO037 Study of the Response Behavior to the Vestibular Stimulus in Axolotl, *Ambystoma tigrinum***  
Tania Flores Papaqui, 18, Senior, Escuela Preparatoria Emiliano Zapata Salazar, Puebla, Mexico, T: Enrique Soto Eguibar
- ZO038 These Bugs Are Chillin'!**  
Elizabeth Marie Rezac, 17, Senior, Avon High School, Avon, South Dakota, T: Paul Robert Kuhlman
- ZO039 Successional Species Composition of Birds at Black Mountain, Pre-fire to Post-fire**  
Carey Marie Phelan, 16, Sophomore, Big Sky High School, Missoula, Montana, T: James Lawrence Harkins
- ZO040 Olfactory Learning and Brain Plasticity in Honey Bees (*Apis mellifera*) in the Absence of Visual Cues**  
Lesley Elizabeth Ash, 17, Senior, Tucson Magnet High School, Tucson, Arizona, T: Margaret Wilch
- ZO041 Pacific Meiofauna: Life Between Sand Grains**  
Heather Michelle Jevning, 17, Senior, West Salem High School, Salem, Oregon, T: Graham Dey
- ZO042 Light Requirements for Growth in *Oreochromis aureus* x *O. niloticus* Hybrids, Phase Two**  
Annette Mendivil, 16, Sophomore, Casa Grande Union High School, Casa Grande, Arizona, T: Joyce Baldwin
- ZO043 The Evaluation of Aquatic Stress on Conspecific Behavior and Hemolymph Serum Glucose Levels**  
Alec L. Thurmon, 16, Sophomore, Chillicothe High School, Chillicothe, Missouri, T: Greg L. Thurmon
- ZO044 Where Have All the Bugs Gone?**  
Raynebeaux Donavon Kelly, 16, Junior, Fort Wingate High School, Fort Wingate, New Mexico, T: Patricia Sherrin
- ZO045 Temperature-Induced Bleaching in the Tropical Sea Anemone *Aiptasia pulchella***  
Hillary Ann Futch, 15, Freshman, Paxon School for Advanced Studies, Jacksonville, Florida, T: Lynn Burton
- ZO046 Porifera . . . An Alternative to Reduce Sea Water Contamination**  
Luisa Fernanda Angel Buitrago, 17, Junior, Eloisa Pascual High School, Caguas, Puerto Rico, T: Rafael Angel Felix
- ZO047 A New *Oecanthus* of Puerto Rico: Morphology, Ecology, and Geographical Distribution, Espectrography and Musical Chining Study**  
Johiry Huertas, 17, Senior, Jose Santos Alegria, Dorado, Puerto Rico, T: Blanca Hernandez
- ZO048 The Effect of Nonylphenol, an Endocrine Mimicker, on *Daphnia magna* Reproduction**  
Matthew Brian Hammitt, 17, Junior, Cloquet Senior High School, Cloquet, Minnesota, T: Timothy Anderson

- ZO049** *Shatavari/Asparagus rasemosus* Wild, a Potential Enhancer of Breast Milk Production  
Shaarika Sarasija, 17, Senior, Kendriya Vidyalaya, Pangode, Trivandrum, Kerala, India, T: Umayamma A
- ZO050** The Effects of Heredity on Present Fingerprint Patterns  
Kendra Lee Potasiewicz, 15, Sophomore, Poland Central School, Poland, New York, T: Chester Eddy Rosenburgh
- ZO051** Bridging the Gap: Drawing a Correlation Between *Drosophila* and *Zebra danio* Mutations  
## Braylon DePaul Lorenzo Dedmon, 18, Senior, Muskogee High School, Muskogee, Oklahoma, T: Terri Lee Brossett
- ZO052** The Effects of Selected Chelators on the Ability of Cellular Models to Recover from Lead Exposure  
## Kristen Elaine Fenska, 17, Junior, Miami High School, Miami, Oklahoma, T: Sally Ann Fenska
- ZO053** The Effects of a Serotonergic System Altered by PCPA on Behavior and Development in *Drosophila melanogaster*  
Clay Ashby Turner, 17, Junior, Lafayette High School, Lexington, Kentucky, T: Gene Toth
- ZO054** The Effects of Artificial and Natural Sweeteners on *D. melanogaster*  
Caroline Hope Schaer, 16, Sophomore, Cheltenham High School, Wyncote, Pennsylvania, T: Rebecca Ann Sheridan
- ZO055** The Effect of Added Substrate on Stress Reduction and Viral Susceptibility in *Litopenaeus vannamei*  
Clifford Allen Kapon, 17, Senior, Kamehameha High School, Honolulu, Hawaii, T: Laura Duffy
- ZO056** Baseline Characterization of a Pristine Fringing Coral Reef  
Zaki D. Moustafa, 14, Freshman, Dreyfoos School of the Arts, West Palm Beach, Florida, T: Catherine Miller
- ZO057** Decline in Blue Jay Population in Churchville, PA Due to West Nile Virus  
Molly K. Hritzo, 14, Freshman, Villa Joseph Marie High School, Holland, Pennsylvania, T: Christopher G. Stieber
- ZO058** A Comparative Study of Quick Stick (*Gliricidia sepium*) and Malathion on *Aedes polynesiensis* Larvae  
Angela Faasalia Polu, 16, Junior, Tafuna High School, Pago Pago, American Samoa, T: Joserose Sadasivanthampy Jyothibhavan
- ZO059** The Effect of Polyphenols on Bone Development  
Angie Lynnae Niemann, 16, Junior, Valley High School, Hoople, North Dakota, T: Kathleen Melaas
- ZO060** Developing an Experimental Method to Determine If There Is a Non-random Preference for Edge Habitat by the Timber Rattlesnakes (*Crotalus horridus*) at Tyson Research Center  
Ryan Matthew Turnquist, 18, Senior, Rockwood Summit High School, Fenton, Missouri, T: Cheryl Apperson
- ZO301T** A Study of the Crosses of Ddc-Gal4/UAS-EKO and Ddc-Gal4/UAS-dORK in *D. melanogaster*  
Kayla Ann Delaney, 18, Senior  
Zeb Ralph Zacharias, 18, Senior  
Perham High School, Perham, Minnesota  
T: Shawn Andrew Stafki
- ZO302T** The Method for Calculating the Daily Food Intake of a Wild White-Headed Langur  
Yue Du, 17, Senior  
Boqin Zhang, 18, Senior  
High School Affiliated to Renmin University of China, Beijing  
Beijing, China  
T: Yu Long
- ZO303T** Chick Calls: Engineering a Device to Recognize the Calls of Young Pullets  
Laura Michelle Fisher, 15, Sophomore  
Amber Nichole Shinsel, 16, Sophomore  
Westview High School, Portland, Oregon  
T: Mark Anthony Geren
- ZO304T** A Study on the Effects of Light Wavelength on the Reproductive Rate of *Drosophila melanogaster*  
# Amber Marie Keefer, 17, Junior  
# Lauren Nichole Jones, 16, Junior  
Nettleton High School, Jonesboro, Arkansas  
T: Karen D. Ladd
- ZO305T** Potential for Vertical Transmission of West Nile Virus and Western Equine Encephalitis in *Culex tarsalis* and *Culex quinquefasciatus*  
### Priscilla Yvette Mendoza, 18, Senior  
# Gabriel Joel Mendoza, 17, Sophomore  
Americas High School, El Paso, Texas  
T: Elizabeth Espinosa
- ZO306T** Methods of Deterring Sharks in Both Invasive and Noninvasive Situations  
## Kaitlin Maria Luther, 17, Senior  
## Alana Marie Yurkanin, 17, Senior  
Henry Perrine Baldwin High School, Wailuku, Hawaii  
T: Barbara Huntley
- ZO307T** The Effect of Vinager as an Insecticide on Fire Ants (*Solenopsis richteri*)  
Nabila Maher Valles, 15, Sophomore  
Melizabeth Acevedo, 15, Sophomore  
Rudelis Alvarado, 15, Sophomore  
Escuela Superior Nueva con Departamento Vocacional, Naranjito, Puerto Rico  
T: Jacinto Robles
- ZO308T** Premature Birth Due to EMF  
Nancy Lynn Heuer, 17, Junior  
Liza Sue Berg, 16, Junior  
South Shore Public School, South Shore, South Dakota  
T: Ryon Reed Gross
- ZO309T** Using Wing Characteristics of *Drosophila* to Map Evolutionary Modes and Patterns  
Marissa Fawn Goldblatt, 17, Senior  
Karthik Vellore Sabapathy, 17, Senior  
Plainview-Old Bethpage John F. Kennedy High School, Plainview, New York  
T: Mary Lou O'Donnell
- ZO310T** Amazing Silk Thread from the Giant Moths  
Tasaneeporn Buranupakorn, 16, Sophomore  
Neranuth Intakaew, 16, Sophomore  
Khanitta Nimarpan, 16, Sophomore  
Montfort College, Chiangmai, Thailand  
T: Jakrapong Boontangeen

## TEAM PROJECTS

### GRAND AWARDS PRESENTED BY: RICOH

- BE301T** Males vs. Females: Perception of a Boy/Girl Relationship  
John David Johnson III, 17, Junior  
Kayo Mckinley Johnson, 17, Junior  
Earth LeTrae Robinson, 18, Senior  
Greenville-Weston High School, Greenville, Mississippi  
T: Jessie M.S. Shaw
- BE302T** Skin Deep  
Hanna Bliden, 14, Freshman  
Miraya G Berke, 14, Freshman  
Nikki Dance, 14, Freshman  
Soquel High School, Soquel, California  
T: David Casterson
- BE303T** Gender Determination by Thumbprints  
Shannon Marie Cassidy, 15, Freshman  
Meryl Adelman Hulteng, 15, Freshman  
Wilsonville High School, Wilsonville, Oregon  
T: Holly Rayliene Chidsey-Gardner
- BE304T** Who Has Better Coordination: Musicians or Athletes?  
Jessica Lynn Reile, 17, Junior  
Danielle Marie Strausbaugh, 17, Junior  
Upper Sandusky High School, Upper Sandusky, Ohio  
T: Teresa J. Harris

- BE305T Action-Research Environmental**  
Nelson Beuter Junior, 18, Senior  
Priscila de Camargo Nunes, 18, Senior  
Fundacao Escola Tecnica Liberato Salzano Vieira da, Novo Hamburgo, Rio Grande do Sul, Brasil  
T: Dalva Ines de Souza
- BE306T AI-kuhl: Adolescents' Alcohol Abuse Consequences**  
Marcelo Claudio Lazza, 16, Senior  
Violeta Soledad Broggi, 17, Senior  
Normal Superior Olegario Victor Andrade, Gualeguaychu, Entre Rios, Argentina  
T: Stella Maris Lopez Squeff
- BE307T Education and H.D.I. in Romang**  
Mauro Isaac Sanchez Zalazar, 18, Senior  
Emir Gabriel Espinoza, 17, Senior  
Adriel Yamil Machin, 17, Senior  
High School NO. 9314, Romang, Argentina  
T: Alfredo Pedro Lovato
- BE308T Time to Get Up: Does Sleep Deprivation Affect the Frontal Lobe of the Brain?**  
Jose David Lopez, 16, Junior  
Mayra Balderrama Martinez, 16, Junior  
Andrews High School, Andrews, Texas  
T: Vickie J. Gardner
- BE309T Bullying in Schools: The Emotional and Psychological Killer**  
Erin M. Sanderson, 17, Junior  
William Pinnock, 18, Senior  
Malta High School, Malta, Montana  
T: Marida J. Demarias
- BE310T The Effect of the Rhythm of Background Music on Iconic Memory and Two Physiological Indicators on 15 -17 Year-Old Students**  
# Luis Abner Lopez-Febres, 17, Senior  
Priscilla Martinez-Rosario, 17, Senior  
Dr. Gilberto Concepcion de Gracia High School, Carolina, Puerto Rico  
T: Maritza Garcia-Arroyo
- BE311T The Effect of Age and Gender on Cognition Rates: The Stroop Effect**  
Saima Akheel Zaman, 16, Junior  
Reema Farasat Chaudhry, 17, Junior  
Potomac Senior High School, Dumfries, Virginia  
T: Christopher S. Wakefield
- BE312T The Effects of Birth Order on Personality Traits in Twins**  
Brittany Alison Koffer, 15, Sophomore  
Rachel Elyse Koffer, 15, Sophomore  
Chantilly High School, Chantilly, Virginia  
T: Latha Shankar
- BE313T Pluricreanmathematics Games**  
Caroline Elizabeth Nieto- Polo Abanto, 15, Freshman  
Edinson Ivan Perez Castaneda, 15, Freshman  
Colegio Militar Gran Mariscal Ramon Castilla, Trujillo, Peru  
T: Nolberto Arnedo Leyua Aguilar
- BE314T Personality Learns**  
McKinzie Rhea Craig, 17, Senior  
Jessie Marshall, 17, Senior  
Christian Academy of Louisville, Louisville, Kentucky  
T: Tina Gibson
- BE315T Detecting the Aggregation Pheromone of *Armadillidium vulgare***  
# Clara Grace Watson, 17, Junior  
# Jason Lavar Anderson, 18, Senior  
Grenada High School, Grenada, Mississippi  
T: Thomas Jackson Holliday
- BI301T The Biochemical Denaturing of Aspartylphenylalanine Methyl Ester**  
Julie Ann Liang, 18, Senior  
Meghan Malia Higgins, 17, Senior  
Vero Beach High School, Vero Beach, Florida  
T: Carol Haffield
- BI302T Recycling Coffee Grounds: A Sustainable and Environmental Friendly Bioremediation for *Solenopsis invicta***  
Alejandro Pablo de la Villa, 14, Freshman  
Maria del Mar Vera, 15, Freshman  
Colegio De La Salle, Bayamon, Puerto Rico  
T: Wanda I. Aviles
- BI303T A Study of Teratogenesis in *Oryzias latipes***  
Sohan Venkat Mikkilineni, 16, Sophomore  
Shravani Mikkilineni, 14, Freshman  
Detroit Country Day School, Beverly Hills, Michigan  
T: Gene Menton
- BI304T *In vitro* Simulation of Immunological and Biochemical Attack on Pancreatic Cancer-Specific Antigen, PaCa-Ag1**  
Genna Anne Ableman, 17, Senior  
Maya Barsky, 17, Senior  
Midwood High School at Brooklyn College, Brooklyn, New York  
T: Alan Stack
- BI305T Frankenfoods**  
# Amy Elizabeth LaViers, 18, Senior  
Lisa Helene LaViers, 15, Freshman  
Jefferson County High School, Dandridge, Tennessee  
T: Jan Coley
- BO301T Impact of Lichen (*Xanthoparmelia chlorochroa*) Toxicity on Elk Populations: Possible Role of Climate**  
Amy Kathleen Feller, 16, Sophomore  
Erin Dianne Michelena, 16, Sophomore  
Greybull High School, Greybull, Wyoming  
T: Joel M. Kuper
- BO302T Understanding Roles of Gene Families Through Studies of Gene *At1g68780* in *Arabidopsis thaliana* Development**  
Varun Rajendra Hippalgaonkar, 15, Freshman  
John James Hutchison, 15, Sophomore  
Lake Highland Preparatory School, Orlando, Florida  
T: Judith Faith Legault
- BO303T Biofuel: Fuels of the Future**  
Harold James Klausner, 17, Junior  
Darrick Richard Ohr, 17, Senior  
Woodlin High School, Woodrow, Colorado  
T: Nancy Pauline Gettman
- BO304T The Effect of Supplemental Plant Signaling Compounds on Stress Response in *Oryza sativa***  
## Basil Harbi Shadfan, 18, Senior  
# David Brooks Kaufman, 18, Senior  
## Khannan Kameshvaran Athreya, 18, Senior  
Keystone School, San Antonio, Texas  
T: Charles Scott Maderer
- BO305T The Effect of Age and Succession Type on Forest Overstory and Understory Composition**  
Robert Joseph Bosworth, 16, Sophomore  
Erika Ann O'Sullivan, 15, Sophomore  
Juneau-Douglas High School, Juneau, Alaska  
T: Jonathan Smith
- BO306T Ultrasonic Frequency Applications in the Field of Plant Development and Propagation**  
Jeremiah Wayne Huber, 17, Junior  
Joel Winchel Sorensen, 18, Senior  
Greybull High School, Greybull, Wyoming  
T: Joel M. Kuper
- BO307T Clonal Reproduction of Native and Endemic Plants in High Risk of Extinction in the High Andean Ecosystems of Chile**  
Camilo Jose Farias, 15, Sophomore  
Ivan Gaete, 15, Sophomore  
Franco Colon, 15, Sophomore  
Liceo Domingo Herrera Rivera - B13, Antofagasta, II Region, Chile  
T: Ivan Castillo

- BO308T The *Solanum nigrum* Plant: Natural Antacid**  
Debbiann Centeno, 14, Freshman  
Alondra Mar Abrams, 14, Freshman  
Colegio Evangelico Capitan Correa, Arecibo, Puerto Rico  
T: Irma Velez
- BO309T The Influence of Mycorrhizal and Fertilizer Treatments on Tree Seedlings in Fire-Affected Soils**  
Chad Avery Schlottmann, 18, Senior  
## Michael R. Olson, 18, Senior  
Gold Beach High School, Gold Beach, Oregon  
T: Robyn Darbyshire
- BO310T Carbonic Anhydrase: Expression in *Dioscorea* and Molecular Evolution in *Arabidopsis thaliana*, *Oryza sativa*, and *Dioscorea* Species**  
Heather Ann Casper, 18, Senior  
Benjamin Alan Pollack, 16, Junior  
Plainview-Old Bethpage John F. Kennedy High School, Plainview, New York  
T: Mary Lou O'Donnell
- BO311T Response of Eight Different Mung Bean Lines Under Rain Fed Conditions**  
Danish Ramzan, 16, Sophomore  
Nasir Mehmood, 17, Sophomore  
Muhammad Tasleem, 15, Sophomore  
Government High School, Qutbal, Attock, Rawalpindi, Punjab, Pakistan  
T: Muhammad Nawaz
- BO312T The Effects of Allelochemicals Produced by *Lepidium latifolium* on Selected Crops Grown in North Toole County, Montana**  
Chris Lee McFadden, 18, Senior  
Ben Harmon Dubbe, 18, Senior  
North Toole County High School, Sunburst, Montana  
T: Lawrence Dexter Fauque
- CH301T How Safe Is Your Drinking Water?**  
Leigh Taylor Wamble, 17, Junior  
Ashley Kembur Helms, 16, Junior  
West Lauderdale High School, Collinsville, Mississippi  
T: Faye D. Kinard
- CH302T Stimulate Me: The Methylxanthine Content of Commonly Consumed Beverages and Chocolate Bars**  
Moriah Lee Patterson, 14, Freshman  
Amy Marie Harrington, 15, Freshman  
Sheridan Freshman Academy, Sheridan, Arkansas  
T: Vickie Lea Nelson
- CH303T Hydrogen Fuel Cell with Use of Stainless Steel Cathode that Bears Palladium "Thorn"**  
Shigenori Imafuku, 17, Junior  
Yutaro Nagai, 17, Junior  
Atsushi Miyazaki, 17, Junior  
Awa High School, Tateyama, Chiba Prefecture, Japan  
T: Tomoyuki Nosohara
- CH304T Sulfuric Acid Greater Increases the Efficiency of Electrolysis of Water**  
Tucker Mason Armstrong, 17, Junior  
John Ritter, 16, Junior  
Sherando High School, Stephens City, Virginia  
T: Paul Murphy; T: Susan Ellen Ritter
- CH305T Patagonic Fragrance: New Essence from a Native Plant**  
Silvina Araceli Racigh, 18, Senior  
Alejandro Troncoso, 19, Senior  
Colegio Provincial de Educacion Polinodal No. 1, Comandante L., Santa Cruz, Argentina  
T: Julio Nicolas Arganaraz
- CH306T Atmospheric Chemical Instabilities**  
# Sharat Ganapati, 18, Senior  
# Shiliang Chen, 18, Senior  
Sunset High School, Beaverton, Oregon  
Skyview High School, Vancouver, Washington  
T: Kirk Soule; T: Robert Obrien
- CH307T Termite Terminator Te-Te**  
Ehimwenma Nosakhare, 15, Freshman  
Onyine Etoniru, 16, Freshman  
Osemwingie Omonuwa, 16, Freshman  
Igbinedion Educational Centre, Benin City, Edo State, Nigeria  
T: Philomine Mary Joseph
- CH308T Vitamin C and a Juicy Dilemma**  
Ravi Arvind Viradia, 16, Junior  
Mark Osborne Flannery, 17, Junior  
Capital High School, Charleston, West Virginia  
T: Patricia Darnell
- CH309T Characterization of Cyclometalated Ir(III) and Pt(II) Complexes as Efficient Singlet Oxygen Sensitizers**  
## Henry Fong, 18, Senior  
## Allen Hing Tran, 17, Senior  
Alhambra High School, Alhambra, California  
T: Duane Nichols
- CH310T Design and Synthesis of Second and Third Generation Taxoids**  
Nora Iordanova Micheva, 16, Junior  
Tina Ho, 17, Senior  
Ward Melville High School, East Setauket, New York  
Smithtown High School, Smithtown, New York  
T: George J. Baldo; T: Joanne Figueiredo
- CH311T You Are Now in the Zone: Investigating the Factors that Influence Liesegang Rings**  
Aaron Mark Weaver, 15, Sophomore  
Skylar Davis Williams, 17, Junior  
Miami High School, Miami, Oklahoma  
T: Sally Ann Fenska
- CH312T Microscale Analytical Systematic Method in Non-Sulfhidric Acid Conditions**  
Claudia Marily Gonzalez, 18, Senior  
Isaura Velasquez Bautista, 18, Senior  
Colegio de Estudios Cientificos y Tecnologicos, San Pablo Apet, Tlaxcala, Mexico  
T: Maria de los Angeles Perez
- CH313T Inhibiting the Growth of Microbes Through the Application of a Colloidal Silver-Based Paint**  
Miki Duruz, 16, Junior  
Kara Morgenstern, 16, Senior  
Long Beach High School, Lido Beach, New York  
T: Linda Trusz
- CS301T Generating 3D Anatomical Virtual Models for Medical Training Systems, Phase III**  
# Alexa Danielle Sider, 16, Junior  
# Neha Rajendra Hippalgaonkar, 16, Junior  
Lake Highland Preparatory School, Orlando, Florida  
T: Judith Faith Legault
- CS302T The Effect of Network Interruption on Effectiveness of Bundling vs. TCP/IP Data Transmission Protocols**  
Daniel Flynn Caughran, 17, Senior  
Anna S Chan, 17, Senior  
Christopher Colin Applegate, 18, Senior  
Yorktown High School, Arlington, Virginia  
T: Jeffrey Elkner; T: Michael Zito
- CS303T Search for Tomorrow: A Study of Associative Linguistics to Optimize Search Technology**  
Jason Hamid Rezvanian, 18, Senior  
Harish Mayur Srinivasan, 17, Senior  
duPont Manual Magnet High School, Louisville, Kentucky  
T: Glenn Edwin Zwanzig

- CS304T A Content-Based Grayscale Image Retrieval System Based on Vector Quantization**  
Guan-Long Wu, 16, Junior  
Hsiao-Ting Yu, 16, Junior  
National Taichung First Senior High School, Taichung, Taiwan, Chinese Taipei  
T: Min-Chen Liang
- CS305T HiBridge: Bridging Multiple Hierarchies Through Structured XML Messages**  
Michael Borohovski, 17, Senior  
Petko Nikolov, 18, Senior  
Sean Evan Cleary, 17, Senior  
Stuyvesant High School, New York, New York  
T: Michael Zamansky
- CS306T Multi-Frequency Optical Data Storage System**  
# Rodrigo Luger, 17, Junior  
# Giuliano Sider, 17, Junior  
Escola Americana de Campinas, Campinas, Sao Paulo, Brasil  
T: Douglas Takeuti
- CS307T Analysis the Defect of Current Computer Keyboard and New-type Keyboard Design**  
Zhenfeng Han, 18, Senior  
Wangyang Su, 18, Senior  
Yimo Gao, 19, Senior  
Attached Senior School of Shandong Normal Univ., Jinan, Shandong, China  
T: Maochang Xue
- CS308T INFOLIBRAS**  
Vinicius D Agostin, 19, Senior  
Augusto Simon, 18, Senior  
Juliano Firpo, 19, Senior  
Fundacao Escola Tecnica Liberato Salzano Vieira da, Novo Hamburgo, Rio Grande do Sul, Brasil  
T: Deise Margo Muller
- CS309T DespertARTE**  
Jose Alberto Medina Hernandez, 17, Senior  
Jobad Adbeel Sayas Hernandez, 19, Senior  
CBTis No. 168, Aguascalientes, Mexico  
T: Antonio Diaz de Leon Gonzalez
- CS310T RCE: A System for Crypted Communications**  
Enrico Cesare Maggioni, 20, Freshman  
Claudia Maria Colciago, 19, Freshman  
Riccardo Mottadelli, 20, Freshman  
Liceo Scientifico E. Majorana, Desio, Milano, Italy  
T: Domenico Ciceri
- CS311T Collaborating Robots in Virtual Environment: Multi-Agent Approach**  
Vladimir A. Bazhin, 17, Junior  
Ivan S. Zakharov, 17, Junior  
Lyceum of Information Technologies #1533, Moscow, Russia  
T: Alexander V. Giglavy
- CS312T What Characteristics in a Digital Images Allow for Higher Compression Ratios Using the JPEG Lossy Algorithm?**  
Alex Mao Zhang, 14, Sophomore  
Luis Miguel Suarez, 15, Sophomore  
Dreher High School, Columbia, South Carolina  
T: Catherine Williams
- CS313T Minimizing Total Weighted Tardiness on a Single Machine with Job Release Dates and Equal Processing Times**  
Vinayak Muralidhar, 15, Junior  
Andrew David Gamalski, 16, Sophomore  
Corona del Sol High School, Tempe, Arizona  
Hamilton High School, Chandler, Arizona  
T: Steve Morgan; T: Teresa Clark
- CS314T Combining Handwriting Recognition Methods for Increased Accuracy**  
Nathaniel John Broussard, 16, Sophomore  
Alan Garrett Pierce, 15, Sophomore  
School of Science and Technology, Beaverton, Oregon  
T: James Richard Gardner
- CS315T Dypterix Panamensis: Technological Innovation for the Monitoring and Control**  
Emmanuelle Vargas-Valenciano, 17, Junior  
Virgilio Enrique Solis- Rojas, 18, Junior  
Fabian Norberto Vasquez-Sancho, 17, Junior  
Colegio Cientifico Costarricense, Sede San Carlos, San Carlos, Alajuela, Costa Rica  
T: Leonardo Viquez
- EA301T The Changes in Geography from the View of Antique Maps**  
Marketa Hornakova, 19, Junior  
Michaela Konradova, 18, Junior  
Grammar School Nymburk, Nymburk, Czech Republic  
T: Zdenek Kucera
- EA302T The Likelihood of Exotic Earthworm Invasions on Forest Ecosystems Due to Leaf Pact Type, Phase III**  
## Jillian Rita Beaufaux, 18, Senior  
## Kirsti Anna Hakala, 18, Freshman  
Cloquet Senior High School, Cloquet, Minnesota  
T: Cynthia Ann Welsh
- EA303T The Effect on Greenhouse Gas Levels by the Modification of Photosynthetic Marine Organisms**  
Elizabeth Gilpin Roberts, 17, Junior  
Rachel Leigh Preston, 16, Junior  
Thomas Collins Meyer, 15, Junior  
Keystone School, San Antonio, Texas  
T: Charles Scott Maderer
- EA304T Vortex Shedding: A Possible Driving Force for El Nino?**  
Yu-Chun Yeh, 17, Junior  
Yen Chun Lin, 17, Junior  
Kaohsiung Municipal Girl Senior High School, Kaohsiung, Taiwan, Chinese Taipei  
T: Ching-Yi Tsai
- EN301T Increasing Efficiency of Rotorcraft by Using Y-Shaped Winglets**  
Nikoloz Gia Maghaldadze, 16, Junior  
Davit Avtandil Khatiashvili, 17, Junior  
42nd Physical-Mathematical School, Tbilisi, Georgia Republic  
T: Tornique Ioseb Mchedlishvili
- EN302T Solar Power System Load Controller Development**  
Jonathan David Troup, 17, Senior  
James Dean Morton, 18, Senior  
Faith Baptist High School, Longmont, Colorado  
T: Jeffrey R. Hashberger
- EN303T The Bat Hat: An Economic Aid for the Visually Impaired**  
Taylor Michael Ducote, 15, Freshman  
Dylan James Ducote, 16, Junior  
Catholic High School, New Iberia, Louisiana  
T: Donald J. Voorhies
- EN304T Programming the Past: The Development of a Programmable Catapult**  
Max Krakauer, 14, Freshman  
Daniel Evan Beard, 15, Freshman  
Palmer High School, Colorado Springs, Colorado  
T: Martha J. Alvarez
- EN305T A Study on Improving Efficiencies of Pulsed Electro-Magnetic Linear Accelerators**  
Guangyan Gao, 15, Sophomore  
Woo Han Ong, 15, Sophomore  
Raffles Institution, Singapore, Singapore  
T: Li-Kheang Neo
- EN306T Do the Car's Spoiler and the Car's Front Wing Affect the Amount of Down Force Produced by the Car?**  
Ryan Coleman Abernethy, 15, Sophomore  
Mark Andrew Peterson, 16, Sophomore  
Lincoln Park Academy, Fort Pierce, Florida  
T: Mark Hueter
- EN307T A Rotary Implementation of the Stirling Concept**  
# Stephen Joseph Leotis, 17, Senior  
# Lauren Ashley Byrd, 18, Senior  
Houston County High School, Warner Robins, Georgia  
T: Laura Byrd

- EN308T Enhanced Cooling of Microelectronic Devices by Using the Thermoacoustic Effect**  
Pen-Yuan Hsing, 18, Senior  
Wei-Kang Huang, 18, Senior  
Taipei Municipal Lishan Senior High School, Taipei, Taiwan, Chinese Taipei  
T: Liang-Chao Chang
- EN309T The Portable Emergent Piping Dealer**  
Zhang Xu, 18, Senior  
Guo Yuanyuan, 19, Senior  
Xiao Xiao, 18, Senior  
No. 1 Middle School of Yuanjiang City, Yuanjiang, Hunan, China  
T: Guo Jianda
- EN310T Is the Sun the Answer?**  
Kelsey Rae Chambers, 14, Freshman  
Quincy Li Murphy, 15, Freshman  
La Veta High School, La Veta, Colorado  
T: Dan A. Smith
- EN311T Electricity Load Forecasting Using the Support Vector Machine**  
Adam Shabti Charles, 17, Senior  
Yuriy Novodvorskiy, 17, Senior  
David Dengyu Wang, 17, Senior  
Stuyvesant High School, New York, New York  
T: Bruce Winokur
- EN312T Designing a Single Networked Webcam Capable of Rotating and Tilting to View Multiple Robots**  
Amanda Sarah Hersh, 15, Sophomore  
Rogaite Shafi, 17, Senior  
Dilruba Akther, 17, Senior  
Yeshivah of Flatbush Joel Braverman High School, Brooklyn, New York  
Brooklyn Technical High School, Brooklyn, New York  
Fort Hamilton High School, Brooklyn, New York  
T: Vikram Kapila
- EN313T Development of a Continuously Variable Transmission**  
Hendrik Petrus Becker, 17, Senior  
Kieran George Mace, 18, Freshman  
Saint John's School, Johannesburg, Gauteng, South Africa  
T: Warwick Taylor
- EN314T The Incorporation of Nanofiber Materials in Air Filtration Applications**  
James Z. Wang, 17, Junior  
# Albert Roberts Christian, 18, Senior  
North Canton Hoover High School, North Canton, Ohio  
T: Connie Hubbard
- EN315T Maglevs: What's Up with That?**  
Mark Gregory Mathews, 16, Sophomore  
Joshua Elliot Braband, 16, Sophomore  
Glencoe-Silver Lake High School, Glencoe, Minnesota  
T: Roxanne Marie Stensvad
- EN316T Red Dirt Bricks as an Alternative to Clay: Cleaning the Environment While Building Affordable Homes**  
Christian Joel Bracy, 15, Sophomore  
Robert Harry Thompson, 16, Sophomore  
The Good Hope School, Frederiksted, Virgin Islands  
T: Leslie Greene
- EN317T Milk Pasteurizer**  
Hugo Gualterio Chiardola, 19, Senior  
Ignacio Gabriel Rodriguez, 19, Senior  
Technical School NO. 139 De Produccion Agro-Ind., Viale, Entre Rios, Argentina  
T: Humberto Javier Jose
- EN318T Biomedical Application of Shape Memory Polymer**  
Tracey Anne Fischer, 16, Junior  
Leslie Roselyn Dias, 17, Junior  
Centaurus High School, Lafayette, Colorado  
T: Diana Wiant; T: Abby Scott
- EN319T Need a Lift? Comparison of Original Wingtip Designs**  
Erik Bruce Kurtz, 16, Sophomore  
Christopher James Todd, 16, Sophomore  
Hilton Head High School, Hilton Head, South Carolina  
T: Matthew Thomas Lindner
- EN320T Increasing the Efficiency of a Robotic System Using a Visual Aid Program**  
Richard William Odlum, 17, Senior  
Christopher Denis McCann, 18, Senior  
Yorktown High School, Yorktown Heights, New York  
T: Michael Jay Blueglass
- EN321T Convertible Wheel Chair**  
Martin Nicolas Bricchi, 18, Senior  
Leandro Gabriel Martinez, 20, Senior  
Technician School NO. 9 "Ing. Luis A. Huergo", Buenos Aires, Argentina  
T: Edgardo Eduardo Jose Vazquez
- EN322T Automated Drilling Workstation**  
Manuel Huerta Ruiz, 18, Senior  
Alejandro Machorro Rojas, 18, Senior  
Erick Gerson Hernandez Romero, 17, Senior  
Colegio de Estudios Cientificos y Technologicos, La Magdalena, Puebla, Mexico  
T: Ruben Tellez
- EN323T Does Wing/Body Type Have an Affect on the Performance of an Airplane?**  
Glenn Allen Traner, 17, Senior  
Jared Michael Loebbs, 17, Senior  
Francis Howell North High School, St. Charles, Missouri  
T: Donna Jo Malkmus
- EN324T MT - Milk Tester**  
Carlos Augusto Bugs, 20, Senior  
Clodoaldo de Borba Lambiase, 19, Senior  
Pedro Turibeo Castagna, 19, Senior  
Fundacao Escola Tecnica Liberato Salzano Vieira da, Novo Hamburgo, Rio Grande do Sul, Brasil  
T: Leo Weber
- EN325T Digital Multi-Movement Transmitter**  
Davi Miguel Teixeira Roberto, 17, Junior  
Manir Miguel Curi Junior, 17, Junior  
Valmir Meneses Guimaraes Neto, 17, Junior  
Centro Educacional de Pedreira, Sao Paulo, Brasil  
T: Moises Oliveira dos Santos
- EN326T The Development of an Aquatic Prosthesis for SCUBA and Skin Diving**  
# Rhett Lee Rumery, 19, Senior  
# Lucas James Cavin, 18, Senior  
# John Thomas Thurmon, 18, Senior  
Chillicothe High School, Chillicothe, Missouri  
T: Greg Lynn Thurmon
- EN327T A Pressure Suit for the Handicapped**  
Daniel Mazor, 18, Senior  
Harel Victor Cohen, 18, Senior  
Maayan-Shahar, Emeq Hefer, Israel  
T: Reuven Dinovich
- EN328T Effects on Cooling Ability and Energy Efficiency of Refrigerators by Using Aluminum to Increase the Surface Area of the Condenser Coils**  
Lindsey Reed Koril, 16, Sophomore  
Erin F. Eppard, 16, Freshman  
Thunderbird High School, Phoenix, Arizona  
T: Renee M. Kaye
- EN329T Improvised Artificial Limb**  
Mihir Tandon, 15, Sophomore  
Riddhiman Yadava, 15, Sophomore  
Modern School, Vasant Vihar, New Delhi, India  
T: Anuradha Mathur
- EN330T Reinventing Edison: Optimization of Light Bulb Filament Material**  
Teresa Elizabeth Sartor, 17, Junior  
Elizabeth Anne Mrizek, 17, Junior  
Presentation High School, San Jose, California  
T: John C. Howe
- EN331T Hovercraft Symmetry and Lift/Load Capacity**  
Amy Minh-Tran Duong, 18, Senior  
Samantha Lindsey Saenger, 17, Senior  
W. T. Woodson High School, Fairfax, Virginia  
T: James Anderson McLeod

- EN332T The Peltier Effect: Eliminating the Use of Freon in Automobile Air-conditioning Systems**  
 # Tyler Glen Lyon, 18, Senior  
 # Daniel Rees Winegar, 18, Senior  
 Riverton High School, Riverton, Utah  
 Copper Hills High School, West Jordan, Utah  
 T: Kari Maruji Lewis
- EN333T Smart Irrigation System**  
 Akrum Idrees Al-Homoud, 18, Senior  
 Hasan Yousef Ikhleif, 18, Senior  
 AlWaleed Bin Abd AlMalek Secondary School, Zarka, Jordan  
 T: Eyad Ismael AlTirawi
- EN334T Computer Analysis of Bacterial Colony Growth Over Time**  
 Devin Lane, 17, Senior  
 Ben Wilson Buford, 18, Senior  
 Benson Polytechnic High School, Portland, Oregon  
 T: Jean Sang Eames
- EN335T Study of Safe and Comfortable Electric Wheelchair that Overcomes Road Conditions:-Development of a Wheel that Can Easily Climb Curbs**  
 Kentaro Yoshifuji, 17, Junior  
 Yuki Miura, 16, Sophomore  
 Tsuyoshi Hino, 16, Sophomore  
 Nara Prefecture Oji Technical High School, Nara, Japan  
 T: Kenji Kubota
- EN336T Create a Collapsible Wheelchair**  
 Joshua Robert Turner, 17, Junior  
 William Caleb Rodgers, 17, Junior  
 Shawn Ryan Matthews, 17, Senior  
 Paulding County High School, Dallas, Georgia  
 Hiram High School, Hiram, Georgia  
 T: Leon R. Grant
- EN337T Silicon Metal-Insulator-Semiconductor Field-Effect Transistor Prototypes for SrTiO<sub>3</sub> MISFET Fabrication**  
 Daniel Page McKeon, 18, Senior  
 Colin Patrick Drummond, 18, Senior  
 Breck School, Golden Valley, Minnesota  
 T: Lois Fruen
- EN338T The Wireless Power Source**  
 Nathan Lundell Chadburn, 17, Senior  
 Daniel Thomas Garner, 18, Senior  
 Brennen Reese Chadburn, 15, Sophomore  
 Riverton High School, Riverton, Utah  
 T: Nate Justis
- EN339T Using Supercritical Carbon Dioxide to Enhance Polymer Compatibilization and Metallization in Ultra-Thin Films**  
 # Chelsea Gloria Gordon, 17, Senior  
 # Feini Qu, 17, Senior  
 Half Hollow Hills High School East, Dix Hills, New York  
 T: Chrysi Notskas
- EN340T Two Cycle Engine Emissions**  
 Scott Anthony Horton, 17, Senior  
 Thomas William Bereza, 17, Senior  
 Aaron Lee Ridenour, 16, Junior  
 Harper Creek High School, Battle Creek, Michigan  
 Pennfield High School, Battle Creek, Michigan  
 T: David MacQuarrie
- EV301T A Pesticidal Survey of the West St. James Waterways**  
 Ciara M. Sutherland, 17, Junior  
 Jahara I. Pierre, 17, Junior  
 Saint James High School, St. James, Louisiana  
 T: Kermit J. Gauthreaux
- EV302T Assessment and Analysis of Water Quality in the Chain of Lakes in Minneapolis, Minnesota**  
 Kalia Her, 16, Sophomore  
 Erik Michael Halvorson, 15, Sophomore  
 John A. Johnson High School, St. Paul, Minnesota  
 Como Park Senior High School, St. Paul, Minnesota  
 T: Sonja Dunlap
- EV303T Are There Dissolved Oxygen Deficits in Lake Panasoffkee?**  
 David Wesley Swartzfager, 14, Freshman  
 Russell Wayne Swartzfager, 15, Senior  
 Wildwood High School, Wildwood, Florida  
 T: Susan McDonald Swartzfager
- EV304T Studies on Water Quality Profile of Estuarines Systems in Puerto Rico**  
 Angela Rosa Figueroa, 15, Sophomore  
 Loipa Ramos, 15, Sophomore  
 Academia Nuestra Senora de la Providencia, San Juan, Puerto Rico  
 T: Miguel R. Deliz
- EV305T A Nutritional Comparison of Historic Lesser Scaup Foods to the Zebra Mussel**  
 Matt Moraco Weegman, 16, Sophomore  
 Mitch Dale Weegman, 16, Sophomore  
 Winona Senior High School, Winona, Minnesota  
 T: Ken Mann
- EV306T An Inferential Study of the Efficiency of the Natural Filtration Process of the OES Wetlands as Determined by the Bioluminescent Capabilities of the Dinoflagellate *P. noctiluc***  
 Matthew Aaron McKinney, 17, Junior  
 Cole Thomas Streiff, 16, Senior  
 Oregon Episcopal School, Portland, Oregon  
 T: Rosa Hemphill
- EV307T Evaluation of Innovative Nitrification Inhibitors**  
 John Daniels Ruzic, 17, Junior  
 # David Day Song, 17, Junior  
 Ballard High School, Louisville, Kentucky  
 T: Ronda K. Fields
- EV308T The Effects of Sources of Innoculems on Methane Production**  
 # Nathan Abay Kebede, 17, Junior  
 Berhanemeskel Alemu Nida, 17, Junior  
 Piney Woods School, Piney Woods, Mississippi  
 T: Zere J. Ezaz
- EV309T Effects of Phosphate on Crawfish**  
 Alisha Marie Bailey, 15, Sophomore  
 Shanee Tranise Turner, 16, Sophomore  
 Saint James High School, St. James, Louisiana  
 T: Kermit J. Gauthreaux
- EV310T Air Quality in Port Huron and Its Effects on the Population**  
 Elizabeth Wells Busdicker, 14, Freshman  
 Rachna Beeravolu Reddy, 14, Freshman  
 Port Huron Northern High School, Port Huron, Michigan  
 T: Brian Jamison
- EV311T The Relationship of the Behavior of Tadpole of *Rana omeimontis* with the Concentrations of the Water in Rice Paddy**  
 Xiang Shi, 17, Junior  
 Fei Duan, 17, Junior  
 Yi Wang, 17, Junior  
 Chendu Number 7 High School, Chendu, Sichuan, China  
 T: Zong Wen
- EV312T Barren Land**  
 Casey Eugene Hunewill, 14, Freshman  
 Tyler Hunewill Elliott, 14, Freshman  
 Smith Valley High School, Smith, Nevada  
 T: Randi Hunewill
- EV313T Lead . . . Inadvertent Polluting Agent**  
 Jose Eduardo Bogado Mercado, 16, Sophomore  
 Eisis Maria del Carmen Cabrera Chacez, 16, Sophomore  
 Fatima Aidee Chavez Lescano, 16, Junior  
 Colegio Tecnico Nacional, Encarnacion, Paraguay  
 T: Beatriz Antonia Paniagua de Zaracho
- EV314T Wat'r You Filtering?**  
 Brian Thomas Stelly, 15, Sophomore  
 Perry Emerson Mullins, 16, Sophomore  
 Eric James Kauffman, 16, Sophomore  
 Williams High School, Plano, Texas  
 T: Vashka Desai
- EV315T The Solution to Phosphorus Pollution**  
 Johrdashe Journey Walsh, 18, Senior  
 Bernard Phuoc Tinh Nguyen, 18, Senior  
 Sumner High School, Sumner, Washington  
 T: Gregory Pile

- EV316T Zoom-Zoom-Doom: What Effect Will Asphalt Runoff Water Have on Pond Ecosystems?**  
Cassandra Beumler Pardee, 17, Senior  
Jessica Alice Mason, 17, Senior  
Buena High School, Sierra Vista, Arizona  
T: Virginia Caretto Bealer
- EV317T Environmental Impact of the Ecosystem of the Coastal Edge of the City Antofagasta Region Chile by Emissions Organic**  
Gonzalo Raul Aravena Rojas, 15, Sophomore  
Diego Alex Latrille Martinez, 15, Sophomore  
Jonathan Andres Fortt Ahumada, 15, Sophomore  
Colegio Part. Antofagasta, Antofagasta, Region de Antofagasta, Chile  
T: Vilma Tapia Pizarro
- EV318T Presence of Coliform Bacteria in Shoreline Soils and Public Beach Resorts in Puerto Rico**  
Roxanne Alvarado, 17, Senior  
Angel Manuel Suarez, 18, Senior  
Miguel Melendez Munoz High School, Cayey, Puerto Rico  
T: Vilma Luz Fonseca
- EV319T Anchor Pit: A Correlation Between Density and Total Dissolved Solids**  
Katherine Rose Aturand, 15, Sophomore  
Jessica Janet DeVries, 16, Sophomore  
Stevens High School, Rapid City, South Dakota  
T: Roberta Gaines
- EV320T On Golden Pond: The Study of Micronutrient Deficiency in Golden Alga, *Prymnesium parvum***  
Summer Dawn Sink, 17, Senior  
# Crystal Daisy Wong, 18, Senior  
Burkburnett High School, Burkburnett, Texas  
T: Pamela Francis
- EV321T Conversion of Hazardous Petrochemical Sludge Waste as a New High Dielectric Constant Material**  
Khairul Ihsan Bin Talib, 18, Junior  
Ahmad Syafiq bin Ahmad Hazmi, 18, Junior  
NurulFarhana bte Zulkifli, 18, Junior  
Mara Junior Science College Taiping, Taiping, Perak, Malaysia  
T: Siti Khadijah Binti Raja Baharom
- EV322T Traditional Spices as Biopesticides**  
Mallika Dhillon Desai, 16, Junior  
Suvrata Desai, 16, Junior  
Jawahar Navodaya Vidyalaya, Goa, India  
T: Sudarshan Vishwanathan Iyer
- EV323T The Effectiveness of Artemia and Vibrio Bioassays for Low Levels of Lead Pollution**  
Christopher Demos Kostoulas, 16, Sophomore  
Marisol Ryu, 17, Junior  
Manhasset High School, Manhasset, New York  
T: Peter Guastella
- EV324T Moringa oleifera: Nature's Coagulant**  
# Shane Suazo, 18, Senior  
Yo Miyamoto, 17, Senior  
Hillsdale High School, San Mateo, California  
T: Steve Maskel
- EV325T Engineering Environmentally Safe Self Extinguishing Polymers**  
Daniel Hefter, 16, Junior  
Aryeh Sokolov, 16, Senior  
Davis Renov Stahler Yeshiva High School for Boys, Woodmere, New York  
Hebrew Academy of the Five Towns & Rockaway, Cedarhurst, New York  
T: Rosalie Peck; T: Ronald Occhiogrosso
- EV326T Comparative Effects of UHF EMR on Plants of the Order Dicotyledonae**  
Johnny Ng, 16, Junior  
Ery Anguiano, 17, Junior  
Itineris Early College High School, West Jordan, Utah  
West High School, Salt Lake City, Utah  
T: Tamara Goetz
- EV327T Development of a Qualitative TNT Sensor by Using Natural Cow Gelatine and TNT Determination**  
Enis Eray Ercag, 17, Sophomore  
Ismail Sizer, 16, Sophomore  
Private Fatih Science High School, Istanbul, Turkey  
T: Okan Gercek
- EV328T Get the Lead Out!**  
Tyce Landon Foster, 15, Sophomore  
Diana Michelle Caldera, 15, Sophomore  
Sarah Janay Brashear, 15, Sophomore  
San Jon High School, San Jon, New Mexico  
T: Steve Goodgame
- EV329T Bioremediation of Polluted Water with Hydrocarbons**  
Marisol Perez Rangel, 19, Senior  
Maria del Rocio Duarte Castillo, 19, Senior  
Cecyteg, Irapuato, Gto., Mexico  
T: Alejandro Leopoldo Gonzales Perez
- EV330T The Bioremediation Principles and Its Application to a Microbial Bioreactor**  
# Vaseem Basilio Anwar, 18, Senior  
# Kevin Y.W. Luu, 17, Senior  
Maryknoll High School, Honolulu, Hawaii  
T: William McFeeley
- EV331T Identification and Assessment of Urban Development on an Aquatic Ecosystem**  
Susan Margaretf Barfield, 17, Junior  
Cailyn Annalece Estey, 16, Sophomore  
Grenada High School, Grenada, Mississippi  
T: Sherry H. Cook; T: Melanie Ales Harlow
- EV332T Tortave, Less Pollution in the Avicole Industry**  
Darwin Trejos Castro, 17, Senior  
Jonathan Mendez-Garcia, 17, Senior  
Colegio Tecnico Profesional Guaycara, Rio Claro, Puntarenas, Costa Rica  
T: Bolivar Ulate Mejia
- EV333T D-Tape, D-Bore and D-Ensity**  
Whitney Jane Stevens, 14, Freshman  
Allison Marie Jones, 15, Freshman  
Stenensville High School, Stevensville, Montana  
T: Maria Lynn Schmidt
- EV334T Calculus for Optimum Can Designs: A Solution for Various Needs**  
Daniel Camilo Rojas-Quiros, 17, Junior  
Yuen Wa Wong-Lei, 18, Junior  
Fany Simha Siss-Zomer, 17, Junior  
Colegio Cientifico Costarricense -San Pedro, San Jose, Costa Rica  
T: Pedro Rodriguez-Arce
- EV335T From Household Waste to Garden Gold, Phase Two**  
Sean Chang Sung Wong, 16, Freshman  
Kelvin Tak Lek Chiong, 15, Freshman  
Sekolah Menengah Kebangsaan Batu Lintang, Kuching, Sarawak, Malaysia  
T: Mi Ing Wong
- MA301T Determining End Behavior of Cellular Automata Using Grid Computing**  
Andrew Joseph Duchi, 16, Sophomore  
Erich John Kreutzer, 17, Junior  
Upper Arlington High School, Upper Arlington, Ohio  
T: Laura Brennan
- MA302T Classification of Rational Associative Operations**  
Vladimir N. Trubnikov, 17, Junior  
Oleg V. Mikhaylovsky, 16, Junior  
Mikhail A. Ptchkin, 17, Junior  
Centre of Mathematical Education, Saint-Petersburg, Russia  
T: Ilya Aleksandrovich Chistyakov

- MA303T The Power Domination Problem on Trees and Other Bipartite Graphs**  
Edward Fu Schmerling, 16, Junior  
Jennifer Fu Schmerling, 17, Junior  
Sarah Daphna Spikes, 17, Senior  
Lyndon B. Johnson High School, Austin, Texas  
Seymour High School, Seymour, Texas  
T: Gregory D. Foley
- MA304T Sub-Series Sums of Absolutely Convergent Series**  
#  
Stepan Ismakaev, 16, Junior  
Fedor Mikhaylovskiy, 15, Sophomore  
Center of Mathematical Education, Saint Petersburg, Russia  
T: Sergey Ivanov
- MA305T On Structures Determined by Configurations on  $R_n$**   
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#  
Carlos Manuel Fonseca, 18, Senior  
Manuel Luis Rivera, 16, Junior  
Colegio San Ignacio de Loyola, San Juan, Puerto Rico  
T: Wilma M. Giol
- MA306T Reflexive Four (4)**  
Daniel Diaz, 16, Senior  
Andres Millan, 16, Senior  
Centro Residencial de Oportunidades Educativas,  
Mayaguez, Puerto Rico  
T: Edwin Benvenuti
- MA307T Application of Modular Crypto-function in Secret Code Theory**  
Kevin Joel Rodriguez-Torres, 16, Junior  
Artemio Jose Lopez-Gonzalez, 16, Junior  
Carmen Belen Veiga High School, Juana Diaz, Puerto Rico  
T: Miguel Angel Rosario-Garcia
- MA308T Serial Numerical Recombinations, Phase Two**  
Daniel B. Beksha II, 18, Senior  
Matthew J. Hall, 18, Senior  
Bishop Feehan High School, Attleboro, Massachusetts  
T: Michael Gerard Giammarco
- MA309T Dynamic Geometry for the New Millenium**  
Viviana Padilla, 17, Senior  
Veronica Acosta, 17, Senior  
Aurea E. Quiles Claudio, Guanica, Puerto Rico  
T: Henry Hicks
- MA310T Patterns with Prime Numbers**  
Eileen J. Colon, 17, Senior  
Yanira B. Colon, 17, Senior  
Francisco Zayas Santana High School, Villalba, Puerto Rico  
T: Pedro J. Berrios
- MA311T Fishy Reflections**  
Thoa Thi Nguyen, 17, Junior  
Duc Thi Nguyen, 16, Junior  
Kristin Kimiko Osaki, 16, Junior  
Oak Grove High School, San Jose, California  
T: John C. Allen
- MA312T Bee the Builder**  
Rachael Joann Emory, 17, Senior  
John Oscar Hilton, 18, Senior  
Wagoner High School, Wagoner, Oklahoma  
T: Karla D. Ford
- MA313T The Maltese Cross and Problems on Comparison of Areas**  
Aslan Kalabayev, 17, Junior  
Ulan Kozybakov, 17, Junior  
Aktobe Kazakh-Turkish Lyceum, Aktobe, Kazakhstan  
T: Muammer Gul
- ME301T Xylitol Xtreme: The Effectiveness of Chewing Xylitol Gum in Reducing Dental Caries in High School Students by Decreasing the Oral Colonization of *Streptococcus mutans***  
#  
Justin Andrew Johns, 16, Junior  
Christine Elizabeth Johns, 14, Freshman  
Evangelical Christian School, Ft. Myers, Florida  
T: Stephen Edward Morriss
- ME302T The Effects of Crime Scene "Clean-Up" Attempts on DNA Evidence**  
Daniel Sherman McGowan, 17, Junior  
Jeffrey Carl Detzel, 17, Junior  
Mitchell Thomas Fehlberg, 16, Junior  
Lake Brantley High School, Altamonte Springs, Florida  
T: Susan N. Behel
- ME303T Shining Through Cancer**  
Melissa Maite Ruiz, 16, Junior  
Gloria Sofia Suarez, 16, Junior  
Southwestern Educational Society, Mayaguez, Puerto Rico  
T: Evelyn Montalvo
- ME304T Using Electrospun Nanofibers to Stabilize DNA**  
#  
Brooke Marie Gillund, 17, Senior  
Amy Ann Gottfried, 17, Senior  
North Toole County High School, Sunburst, Montana  
T: Lawrence Dexter Fauque
- ME305T HCOH Is Everywhere & Dangerous. . .**  
Jestin Joseph Fabian, 15, Sophomore  
Sadie Ruth Alexandra Hack, 15, Sophomore  
Wisconsin Career Academy, Milwaukee, Wisconsin  
T: Ahmet Akyol
- ME306T Testing Fruit Juices Containing Proanthocyanidin for Inhibition of Biofilm Formation Activity**  
Michael Torres Perez, 17, Sophomore  
Roana Bianca Co Reyes, 17, Sophomore  
Arlou Kristina Jiongco Angeles, 17, Sophomore  
Philippine Science High School, Quezon City, Metro Manila, Philippines  
T: Juanita Mercado Cruz
- ME307T The Effects of Suppressing Genes on Lysosomal Production in Wild Type and cup-5 Mutant *C. elegans* as Model for the Human Disease Mucopolidosis Type IV**  
#  
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#  
Elise Marie Adcock, 16, Junior  
Marilynn Tedja, 16, Junior  
Elizabeth Nicole Monier, 16, Sophomore  
Keystone School, San Antonio, Texas  
T: Charles Scott Maderer
- ME308T Use of Ascorbic Acid on Dental Plaque to Favor the Growth of Beneficial Bacteria Over Pathogenic Bacteria**  
Jean-Louis Rochet, 16, Sophomore  
Angel Omar Saez, 15, Sophomore  
Colegio San Ignacio de Loyola, San Juan, Puerto Rico  
T: Wilma Giol
- ME309T Does an Oxidant Stress,  $H_2O_2$ , Produced by Glucose Oxidase (*in vitro*), Directly Cause Insulin Resistance?**  
Krystle Violet Potter, 18, Senior  
Ariel Leigh Potter, 14, Freshman  
Rio Rico High School, Rio Rico, Arizona  
T: Teresa Brown Potter
- ME310T The Possible Role of Bone Morphogenetic Proteins in the Effect of the Choroid Plexus on Cortical Neurons**  
Lauren Nicole Toub, 17, Senior  
Anjuli Patricia Kannan, 17, Senior  
Yorktown High School, Yorktown Heights, New York  
T: Michael Blueglass
- ME311T Antioxidants in Combination with Chemotherapy in the Treatment of Cancer**  
Lauren Christine Hughes, 17, Junior  
Sara Elizabeth Posey, 18, Senior  
Hilton Head Preparatory School, Hilton Head, South Carolina  
T: Tina Webb-Browning
- ME312T Should You Microwave Plastics?**  
Trisha Lea Schleich, 17, Junior  
Tera Jo Toribio, 16, Junior  
Mitchell High School, Mitchell, South Dakota  
T: Julie Ann Olson
- ME313T Circadian Stage-Dependent Effects of Exercising on the Time Structure of Blood Pressure**  
#  
#  
Ryan Kimlong Huynh, 16, Sophomore  
Richie Kimlong Huynh, 16, Sophomore  
Champlin Park High School, Champlin, Minnesota  
T: Dawn Erlandson

- ME314T Lobitonin in Cancer Treatment, Phase II**  
Andrew Lacson Guardamano, 18, Senior  
Julia Caroline Grochowski, 16, Junior  
Archbishop MacDonald High School, Edmonton, Alberta, Canada  
Old Scona Academic High School, Edmonton, Alberta, Canada  
T: W.M. Myskiw; T: Cheryle Kachman
- ME315T Gastroprotective Activity of Ethanolic Extract from *Momordica charantia* L. Leaves**  
Ana Debora Nunes Pinheiro, 16, Junior  
Samuel Verter Marinho Uchoa Lopes, 16, Junior  
Colegio Christus, Fortaleza, Ceara, Brasil  
T: Diana Celia Sousa Nunes Pinheiro
- ME316T Proteomics Analysis of Osteosarcoma Cells**  
Lalith Kumar Polepeddi, 16, Junior  
Michael McCord Polmear, 17, Junior  
Cherry Creek High School, Greenwood Village, Colorado  
T: Timothy Donahue
- ME317T Effects of *Columba livia* (Pigeon) Excrement on Human Respiratory Tract**  
Legna M. Figueroa, 14, Freshman  
Darlenne M. Torres, 15, Freshman  
Jose de Choudens School, Arroyo, Puerto Rico  
T: Teresa Cordero
- ME318T The Effects of Cinnamon on Factors Affecting Cardiovascular Disease**  
Morgan Rae Rummel, 17, Junior  
Holly Ann Wonders, 17, Senior  
Delavan High School, Delavan, Illinois  
T: Mary Kay Wonders
- ME319T The Effects of Trichostatin A on Longevity, Metabolism, and Reproduction in *Drosophila melanogaster***  
Michael Jay Levy, 16, Sophomore  
Alexander Abraham Egan, 16, Sophomore  
Manhasset High School, Manhasset, New York  
T: Peter Guastella
- ME320T The Use of Essential Oils of Camu Camu and Eucalyptus and the Coloring of Achiote in Elaboration of Natural Products and Their Contribution to Asthmatic Problems**  
Maria Jimena Marquez Palacios, 15, Sophomore  
Karla Alexandra Monier Bautista, 14, Sophomore  
San Antonio de Padua, Lima, Peru  
T: Gloria Herrera Chuan
- ME321T The Effects of Various Anti-Oxidants on Parkinson's Model *Drosophila***  
Shuo Qiu, 16, Sophomore  
# Scott Philip Yakaitis, 17, Junior  
Manhasset High School, Manhasset, New York  
T: Peter Guastella
- ME322T New Cancer Gene? Analyzing Mutations in Protein Kinase that Induce Cancer**  
# Arif Ali Awan, 17, Senior  
# Hamza Mohaimen Bari, 18, Senior  
Marianopolis College, Montreal, Quebec, Canada  
T: Andrew Lefcoe
- ME323T Cyclooxygenase Inhibition in Ovarian Cancer Progression**  
Jasmine Debbie Vlahos, 15, Sophomore  
Julia B. Zvenigorodsky, 16, Sophomore  
Central High School, Philadelphia, Pennsylvania  
T: Dennis Erlick
- ME324T Fructose: The New Glucose? The Effects of High Levels of Fructose on Fibrinectin Production in Rat Mesangial Cells**  
Emily Cleveland Ager, 16, Sophomore  
Dana Murphy Ullrich, 15, Sophomore  
The Altamont School, Birmingham, Alabama  
T: Tessa Magnuson
- ME325T The Effects of EGFR Inhibitors Alone and in Combination on the Growth of Cancer Cell Lines**  
Shane Alexa Renee Kleinstein, 15, Sophomore  
Elizabeth Freya Boscoe, 16, Sophomore  
Rocky Mountain Hebrew Academy, Denver, Colorado  
T: Melanie Ann Knowles
- MI301T Snaring the Snare: Molecular Studies of Membrane Fusion, Protein GS-15**  
Nisha Garimalla, 14, Sophomore  
# Galimat Khaidakova, 16, Junior  
Laura Jean Soderberg, 17, Junior  
Little Rock Central High School, Little Rock, Arkansas  
T: Annice Steadman
- MI302T Quantitative Analysis of *Allium sativum*, *Melaleuca alternifolia*, and *Echinacea purpurea* as Compared to Conventional Antibiotics**  
### Sarah Ann Wilfahrt, 18, Senior  
# Michelle Lyn Wilfahrt, 16, Sophomore  
Park City High School, Park City, Utah  
T: Edward Mulick
- MI303T Effect of Herbal Extracts on Virus Infectivity**  
# Sadie Katherine Reinbold, 18, Senior  
Christina Rose Mulloy, 17, Senior  
Timber Lake High School, Timber Lake, South Dakota  
T: Louise Ann Lindskov
- MI304T The Isolation of Antibiotic-like Proteins from Insect Larvae of *Musca domestica*, Housefly Maggots, and Three Other Species of Insects**  
# Shana Marie Wolff, 15, Sophomore  
Elizabeth Jean Cochran, 15, Freshman  
Cheyenne Central High School, Cheyenne, Wyoming  
T: Michael Wallace; T: Scott Sewell
- MI305T H<sub>2</sub>O and Bacteria**  
Alexandra Elizabeth Reid, 16, Sophomore  
Sarah Nicole Harden, 15, Sophomore  
Spring Creek High School, Spring Creek, Nevada  
T: Jeff Van Orman
- MI306T Lichens: Inhibition of *Staphylococcus epidermidis***  
Anne Marie Mallow, 17, Junior  
Sarah Elizabeth Mallow, 15, Freshman  
Pendleton County High School, Franklin, West Virginia  
T: Donald Joseph Wagner
- MI307T AIDS Virus and Immune Organism System Modeling**  
# Alexey Yu. Shunin, 17, Junior  
Daniil V. Khritoshin, 16, Junior  
Mathematical Education Centre, St. Petersburg, Russia  
T: Ilya A. Chistyakov
- MI308T Expensive Bacteria, Part Three**  
Jennifer Nicole Dumdie, 15, Freshman  
Danielle Catherine Sieck, 15, Freshman  
Selby Area High School, Selby, South Dakota  
T: Gary Lee Fahrni
- MI309T Spatial Distribution and Chlorophyll Content on the Dinoflagellate *Pyrodinium bahamense* as a Response of Depth and Nutrient Concentration**  
# Esteban Hernandez, 16, Junior  
Brendymar Enid Cruz, 16, Junior  
Zacha M. Ortiz-Correa, 16, Junior  
Casiano Cepeda High School, Caguas, Puerto Rico  
German Riechehoff Secondary, Vieques, Puerto Rico  
T: Angel L. Diaz-Rosario
- MI310T Pre-Packaged Items: Safe or Not?**  
Laramie Wayne Adams, 18, Senior  
Brianna Deshawn Clements, 17, Senior  
Gustine Independent School District, Gustine, Texas  
T: Raeann May Kouterick
- MI311T Effects of Ultraviolet-A Rays on the Growth of *Escherichia coli* Bacteria**  
# Jonah Randolph Parker, 18, Senior  
# Jesse Christopher Dodds, 18, Senior  
Central Lee High School, Donnellson, Iowa  
T: Ernest Lee Schiller
- MI312T The Effects of Herbal Remedies vs. Antibiotics Against Bacterial Growth**  
Nikola Lukenda, 16, Junior  
Christopher Mathew Balaban, 17, Junior  
Cardinal Newman Secondary School, Hamilton, Canada  
T: Donna Stack-Durward

- MI313T Fish Mucus: Factors Affecting Bacterial Growth on the Hawaiian *Eleotris sandwicensis***  
Taryn Mahealani Takahashi, 17, Junior  
Alayna Rachelle Betsill, 16, Junior  
Genevieve C. Pang, 16, Junior  
Henry Perrine Baldwin High School, Wailuku, Hawaii  
T: Barbara H. Huntley
- MI314T A Study on the Bio-control of Pear-Scab by Using the Soil-Fungi**  
Cheong Ha Park, 18, Senior  
Su Bin Min, 18, Senior  
Chonnam Science High School, Naju, Chonnam, South Korea  
T: Fun Hee Bae
- PH301T An Analysis of Electrostatic Discharge (ESD) on Microelectronic Devices**  
Hena Waseem, 17, Senior  
Jason David Linehan, 17, Senior  
Lake Brantley High School, Altamonte Springs, Florida  
T: Susan N. Behel
- PH302T Isolating and Enhancing Design Parameters of an Ambient Temperature Magneto-hydrodynamic Generator to Determine Scalability for Commercial Power Production**  
## Ryan Paul Jones, 17, Junior  
## Eric Anthony Smith, 17, Junior  
Astronaut High School, Titusville, Florida  
T: Scott McCord
- PH303T Non-linearity of Solitary Waves: What Can You Get Instead of Pleasant Holiday on the Coast of the Indian Ocean?**  
Alena A. Abramava, 17, Junior  
Ann V. Mukhortava, 17, Junior  
Lyceum of Belarus State University, Minsk, Belarus  
T: Anatolij Ivanovich Slobodjanjuk
- PH304T Refraction Action: How Is Light Refraction Influenced by Its Incidence Angle and Its Medium?**  
Lam Dinh Son Pham, 16, Sophomore  
Whitney Elyse Scott, 16, Junior  
Northside High School, Fort Smith, Arkansas  
T: Linda Ann Newsome
- PH305T Bilingual Simultaneous Public Announcement System**  
Suet Ting Chau, 17, Senior  
Kin Kan Law, 17, Senior  
Ka Ho Wong, 17, Senior  
The Mission Covenant Church Holm Glad College,  
Hong Kong, Region of China  
T: Lap Chung Lee
- PH306T Acousto-Optic Laser Diffraction in an Air Medium**  
Isaac Ring Zaworski, 17, Senior  
Nicholas Leo Horres, 18, Senior  
Alex James Willard, 18, Senior  
School of Science and Technology, Beaverton, Oregon  
T: James Richard Gardner
- PH307T Nemo, It's a Sine!**  
Ma. Anna Angelica Salmorin Cruzado, 16, Sophomore  
Ellaine Jandoc Cabasan, 16, Sophomore  
Mara Joan Antonio Roquero, 16, Sophomore  
Manila Science High School, Manila, Philippines  
T: Jonathan Poblete Derez
- PH308T Counterweight Trebuchets and the Relationship Between Object, Sling Length, Counterweight Mass, with Its Range**  
Kyle M. McCracken, 17, Senior  
Austin Douglas Cole, 18, Senior  
Whiteford High School, Ottawa Lake, Michigan  
T: Janet M. Weygand
- PH309T Medieval Physics: An Exploration of the Trebuchet**  
Trevor James Register, 17, Senior  
Colin James Dean, 17, Senior  
Fayette County High School, Fayetteville, Georgia  
T: Bruce D. Murdock
- PH310T Alternative Energy: Optimizing Wind and Solar Energy Production**  
Laura Kelly McKemmish, 16, Junior  
Nilrundi Videesha Saparamadu, 15, Junior  
Baulkham Hills High School, Baulkham Hills, New South Wales, Australia  
T: Colin McAuliffe; T: Sharron Frame
- PH311T A Simple Answer Just Isn't Probable: The Effects of Uncertainty on the Development of Complexity in Cellular Automata**  
Stephanie Anne Stoughton, 15, Freshman  
Michael Yenting Wu, 15, Freshman  
Shepton High School, Plano, Texas  
T: Nadine Harris
- PH312T Attenuation of Microwave Powder Filters**  
Tara Anne McCarron, 18, Senior  
Tristan Guha-Gilford, 17, Senior  
Eleanor Roosevelt High School, Greenbelt, Maryland  
T: Douglas Pruett; T: William Martin
- PH313T The Effect of Gas Bubbles in a Fluid on Buoyant Force**  
Christopher Ryan Hernandez, 18, Junior  
Jenny Marie Hastings, 16, Junior  
Thunderbird High School, Phoenix, Arizona  
T: Renee M. Kaye
- PH314T Architectural Acoustics: How Does Geometric Room Design Affect the Sound Field?**  
# Mitchell Keith McCowan, 16, Sophomore  
Jonathan Andrew Mills, 16, Junior  
East Central High School, Hurler, Mississippi  
T: Linda Havard; T: Caryl S. Ulrich
- PH315T Computer Analysis of Exercises: Just Do It . . . the Same Every Time**  
Jacqueline Elise Mooney, 17, Junior  
Alicia Renee Andrade, 17, Junior  
Wachusett Regional High School, Holden, Massachusetts  
T: Carol W. Sullivan
- PH316T How Much Sound Do You Absorb?**  
Lane Ward Leishman, 14, Freshman  
Bronzson Laffayette Woods, 14, Freshman  
Springville Junior High School, Springville, Utah  
T: Lori Annette Caras
- PH317T Development of a Helium Neon Laser-Based Optical Spanner**  
Anirudh Venkat Ramesh, 17, Senior  
Yaagnik Doraiswamy Kosuri, 18, Junior  
Sachem High School East, Farmingville, New York  
Herricks Senior High School, New Hyde Park, New York  
T: Michael Angelo Vaccariello; T: Mary Dillon
- PH318T Wavelength = Velocity / Frequency**  
# Eric Christopher Sanchez, 18, Senior  
James Ontiveros, 17, Senior  
Gladys Porter High School of Technology, Brownsville, Texas  
T: Rachel Renee Ayala
- PH319T The Efficiency of Photomultiplier Tube Cosmic Ray Detectors**  
Rudy William Resch, 18, Senior  
Kent Robert Shirer, 17, Senior  
Lincoln High School, Lincoln, Nebraska  
T: James Rynearson
- PH320T The Influence of Zinc Additive on Compressive Yield Strength of Lead**  
Robert Simpson McManimon, 18, Senior  
Meghan Kyl Sarkozi, 17, Senior  
Salpointe Catholic High School, Tucson, Arizona  
T: Tim J. Barry
- PH321T Designing a Multipurpose Fundus Camera in Order to Use in Medicine and Security Systems**  
Emir Konuk, 19, Senior  
Emre Yilmaz, 19, Senior  
Izmir Fen Lisesi, Izmir, Turkey  
T: Engin Dincer

- PH322T Numerical Solutions of Hamilton's Equations**  
Francis Wasser, 17, Senior  
Michael Mulhall, 17, Senior  
Synge Street CBS Secondary School, Dublin, Ireland  
T: Jim Cooke
- SP301T Integration Photometric Timing: A New Method for Asteroid Occultation Timing**  
Feng Yan, 17, Senior  
Yiwei Ma, 17, Senior  
High School Affiliated to Renmin University of China, Beijing, Beijing, China  
T: Jin Zhu
- SP302T Analyzing Astronomical Spectra Using the SBIG SGS**  
# Mary Masterman, 15, Sophomore  
# Sarah Louise Howell, 15, Sophomore  
Westmoore High School, Oklahoma City, Oklahoma  
Classen School of Advanced Studies, Oklahoma City, Oklahoma  
T: Jeffrey Lee Baughman II
- SP303T Analyzing the Surface Texture, Optic & Tensile Properties of HST SA-II SADA MLI Retrieved from Hubble Space Telescope After Long Term Exposure in Low Earth Orbit**  
# Allison Louise Rapoport, 17, Senior  
Sharon Kaminski, 17, Senior  
Catherine Elizabeth McCarthy, 16, Sophomore  
Hathaway Brown School, Shaker Heights, Ohio  
T: Patricia Hunt
- SP304T Harvesting Electrons from *E. coli***  
Quinn Alexander Morris, 16, Junior  
May Liu, 16, Junior  
Courtney Henrietta Fox, 17, Junior  
North Carolina School of Science and Mathematics, Durham, North Carolina  
T: Myra Halpin
- SP305T A Study of the Craters of Valles Marineris**  
Paul Damian Garza, 17, Senior  
Dustin Roy Lambden, 17, Junior  
Calhoun High School, Port Lavaca, Texas  
T: Kenneth William Ziegler
- SP306T The Effect of Size and Charge on the Electrodynamic Screen**  
Kuo-Jui Ray Huang, 16, Freshman  
Matthew Clinton Baldwin, 17, Junior  
Xuan Yi, 16, Junior  
Little Rock Central High School, Little Rock, Arkansas  
T: Annice Steadman
- SP307T Black Holes: The Validity of the Supposition that Super-Massive Black Holes Are in Mutual Orbit Within the Double Nuclei of NGC 6240**  
Steven Paul Chambers, 17, Senior  
Robert Peter Matthew, 16, Senior  
Wyke Sixth Form College, Hull, East Yorkshire, United Kingdom  
T: Dave Longstaff; T: Muriel Neilson
- SP308T Nova Rate in M 31**  
Mary Elizabeth Herndon, 16, Junior  
Sarah Nicole Green, 16, Junior  
Graves County High School, Mayfield, Kentucky  
T: Velvet M. Dowdy
- SP309T Moon Influence in Agricultura Activities**  
Tania Beyseth Meza Sanchez, 16, Freshman  
Mariela Lilibeth Quispe Iquiapaza, 17, Freshman  
Mariano Lino Urquieta, Puquina, Moquegua, Peru  
T: Olger Quispe Aco
- ZO301T A Study of the Crosses of Ddc-Gal4/UAS-EKO and Ddc-Gal4/UAS-dORK in *D. melanogaster***  
Kayla Ann Delaney, 18, Senior  
Zeb Ralph Zacharias, 18, Senior  
Perham High School, Perham, Minnesota  
T: Shawn Andrew Stafki
- ZO302T The Method for Calculating the Daily Food Intake of a Wild White-Headed Langur**  
Yue Du, 17, Senior  
Boqin Zhang, 18, Senior  
High School Affiliated to Renmin University of China, Beijing, Beijing, China  
T: Yu Long
- ZO303T Chick Calls: Engineering a Device to Recognize the Calls of Young Pullets**  
Laura Michelle Fisher, 15, Sophomore  
Amber Nichole Shinsel, 16, Sophomore  
Westview High School, Portland, Oregon  
T: Mark Anthony Geren
- ZO304T A Study on the Effects of Light Wavelength on the Reproductive Rate of *Drosophila melanogaster***  
# Amber Marie Keefer, 17, Junior  
# Lauren Nichole Jones, 16, Junior  
Nettleton High School, Jonesboro, Arkansas  
T: Karen D. Ladd
- ZO305T Potential for Vertical Transmission of West Nile Virus and Western Equine Encephalitis in *Culex tarsalis* and *Culex quinquefasciatus***  
### Priscilla Yvette Mendoza, 18, Senior  
# Gabriel Joel Mendoza, 17, Sophomore  
Americas High School, El Paso, Texas  
T: Elizabeth Espinosa
- ZO306T Methods of Deterring Sharks in Both Invasive and Noninvasive Situations**  
## Kaitlin Maria Luther, 17, Senior  
## Alana Marie Yurkanin, 17, Senior  
Henry Perrine Baldwin High School, Wailuku, Hawaii  
T: Barbara Huntley
- ZO307T The Effect of Vinager as an Insecticide on Fire Ants (*Solenopsis richteri*)**  
Nabila Maher Valles, 15, Sophomore  
Melizabeth Acevedo, 15, Sophomore  
Rudelis Alvarado, 15, Sophomore  
Escuela Superior Nueva con Departamento Vocacional, Naranjito, Puerto Rico  
T: Jacinto Robles
- ZO308T Premature Birth Due to EMF**  
Nancy Lynn Heuer, 17, Junior  
Liza Sue Berg, 16, Junior  
South Shore Public School, South Shore, South Dakota  
T: Ryon Reed Gross
- ZO309T Using Wing Characteristics of *Drosophila* to Map Evolutionary Modes and Patterns**  
Marissa Fawn Goldblatt, 17, Senior  
Karthik Vellore Sabapathy, 17, Senior  
Plainview-Old Bethpage John F. Kennedy High School, Plainview, New York  
T: Mary Lou O'Donnell
- ZO310T Amazing Silk Thread from the Giant Moths**  
Tasaneeporn Buranupakorn, 16, Sophomore  
Neranuth Intakaew, 16, Sophomore  
Khanitta Nimarpan, 16, Sophomore  
Montfort College, Chiangmai, Thailand  
T: Jakrapong Boontangeen

# ISEF AFFILIATED FAIRS

## Alabama

### Birmingham

Central Alabama Regional Science and Engineering Fair - Physical Sciences  
PH050

### Birmingham

Central Alabama Regional Science and Engineering Fair - Life Sciences  
BE053 ME324

### Decatur

North Alabama Regional Science and Engineering Fair - Life Sciences  
EV072 PH035

### Decatur

North Alabama Regional Science and Engineering Fair - Physical Sciences  
EV074 ME057

### Huntsville

Alabama State Science and Engineering Fair - Life Sciences  
BI079 ME087

### Huntsville

Alabama Science and Engineering Fair - Physical Sciences  
EN110 PH043

### Livingston

West Alabama Regional Science Fair  
EN037

### Phenix City

Greater East Alabama Regional Science and Engineering Fair  
BE030 EV111

### Talladega

Northeast Alabama Regional Junior Academy Science Fair  
CS011 ME016

## Arizona

### Mesa

Arizona American Indian Science & Engineering Fair  
BI051 EV080

### Mesa

Arizona American Indian Science & Engineering Fair  
ZO042

### Mesa

Arizona American Indian Science & Engineering Fair  
BO031 EV108

### Pima

Southern Arizona Regional Science and Engineering Fair  
BE022 BE025 ME309

### Pima

Southern Arizona Regional Science and Engineering Fair  
EV068 PH320 ZO040

### Sierra Vista

SSVEC's Youth Engineering and Science Fair  
EV316 MI038

### Tempe

Central Arizona Regional Science and Engineering Fair  
CS313 EN091 SP023

### Tempe

Central Arizona Regional Science and Engineering Fair  
BI061 EN328 EV094

### Tempe

Central Arizona Regional Science and Engineering Fair  
EV076 ME058 PH313

## Alaska

### Anchorage

Alaska Science and Engineering Fair  
EN030 ZO023

### Juneau

Southeast Alaska Regional Science Fair  
BO305 EA005 EN020

## Arkansas

### Arkadelphia

South Central Arkansas Regional IV Science Fair  
CH302 ME047 MI050

### Batesville

North Central Arkansas Regional Science Fair  
EN071

### Conway

Arkansas State Science Fair  
BE051 BO048 SP306

### Fayetteville

Northwest Arkansas Regional Science and Engineering Fair  
BI010 MA005 PH304

**Hot Springs**  
West Central Regional Science fair  
CS024 SP010

**Jonesboro**  
Northeast Arkansas Regional Science Fair  
PH011 ZO011 ZO304

**Little Rock**  
Central Arkansas Regional Science Fair  
BI009 MI301 PH003

**Monticello**  
Southeast Arkansas Regional Science Fair  
EV028 ZO018

## California

**Alhambra**  
Alhambra Science and Engineering Fair  
BI068 CH309 MI053

**Fresno**  
Central California Regional Science, Mathematics and Engineering Fair  
EN040 ZO028

**Palos Verdes Peninsula**  
Palos Verdes Peninsula Unified School District Science and Eng. Fair  
BI050 EN078

**Sacramento**  
Sacramento Regional Science and Engineering Fair  
BI082 BO055

**Sacramento**  
Sacramento Regional Science and Engineering Fair  
ME100

**Salinas**  
Monterey County Science and Engineering Fair  
BE011 CH014

**San Diego**  
Greater San Diego Science and Engineering Fair - 1  
BI040 ZO035

**San Diego**  
Greater San Diego Science and Engineering Fair  
CS029 EN055

**San Francisco**  
San Francisco Bay Area Science Fair, Inc.  
EV059 SP017

**San Jose**  
Synopsys Silicon Valley Science and Technology Championship presented  
by the Santa Clara Valley Science and Engineering Fair Association  
EV099 EV324 ME074

**San Jose**  
Synopsys Silicon Valley Science and Technology Championship II  
Presented by the Santa Clara Valley Science and Engineering Fair  
Association  
CS044 EN330 PH041

**San Jose**  
Synopsys Silicon Valley Science and Technology Championship III  
Presented by the Santa Clara Valley Science and Engineering Fair  
Association  
BI062 EA016 MA311

**SanRamon**  
Tri-Valley Science and Engineering Fair  
CH019 SP008

**Santa Cruz**  
Santa Cruz Science Fair  
BE302 CH015 ZO020

## Colorado

**Alamosa**  
San Luis Valley Regional Science Fair, Inc.  
CS013 EN023

**Aurora**  
Denver Metropolitan Regional Science and Engineering Fair  
BO034 CH051 ME325

**Boulder**  
Roche Colorado Regional Science Fair  
EN008 EN318 PH006

**Brush High School**  
Morgan-Washington Bi-County Science Fair  
BO303 MI009 PH007

**Colorado Springs**  
Pikes Peak Regional Science Fair  
EN013 EN304 ME014

**Fort Collins**  
Colorado Science and Engineering Fair  
BE052 ME316 ZO012

**Grand Junction**  
Alpine Bank Western Colorado Science Fair  
BO018 CS058

**Greeley**  
Longs Peak Science and Engineering Fair  
EN302

**La Junta**  
Arkansas Valley Regional Science Fair  
EN310 EV038 EV039

**Sterling**  
Northeast Colorado Regional Science Fair  
EV014 MI010

## Connecticut

**Danbury**  
Science Horizons, Inc. Science Fair and Symposium  
ZO014

**Hamden**  
Connecticut State Science Fair - Life Sciences  
CH027 EA013

**Hamden**  
Connecticut State Science Fair - Physical Sciences  
EN048 MA024

## District of Columbia

### Washington

District of Columbia Mathematics, Science and Technology Fair  
EN077 ME055

## Florida

### Arcadia

Heartland Regional Science and Engineering Fair  
BE002 ZO008

### Bradenton

Manatee Regional Science and Engineering Fair  
BE008 CH007

### Bushnell

Sumter County Regional Science Fair  
BE007 BO009 EV303

### Crystal River

Citrus Regional Science and Engineering Fair  
BI013 BI081

### Daytona Beach

Tomoka Region Science and Engineering Fair  
MA028

### Fort Myers

Thomas Alva Edison East Regional Science Fair  
EA002 ME301 ZO002

### Fort Myers

Thomas Alva Edison Regional Science Fair  
CS002 EV006

### Fort Pierce

Treasure Coast Regional Science and Engineering Fair  
BO004 EN306 EV004

### Fort Walton Beach

Northeast Panhandle Regional Science and Engineering Fair  
BI002 MI001

### Fort Walton Beach

Southeast Panhandle Regional Science and Engineering Fair  
BO003 ME001

### Ft Lauderdale

East Broward County Science Fair  
CH009 ZO003

### Ft Lauderdale

West Broward County Science Fair  
BO007 CH004

### Ft Lauderdale

North Broward County Science Fair  
BI005 EA003

### Gainesville

Alachua Region Science and Engineering Fair  
BI020 EA007

### Jacksonville

Northeast Florida Regional Science and Engineering Fair  
EN083 ZO045

### Jacksonville

Northeast Florida Regional Science and Engineering Fair  
CS039 EN084

### Kissimmee

The Osceola Regional Science Fair  
EN027 ME026

### Lake City

Suwannee Valley Regional Science and Engineering Fair  
BE009 CH008

### Melbourne

South Brevard Science and Engineering Fair  
ME006 PH001

### Merritt Island

Brevard Intracoastal Regional Science and Engineering Fair  
ME009 PH002

### Merritt Island

Brevard Mainland Regional Science and Engineering Fair  
ME005 MI061 PH302

### Miami

South Florida Science and Engineering Fair - I  
EN046 PH048

### Miami

South Florida Science and Engineering Fair - II  
BI032 BI033

### Miami

South Florida Science and Engineering Fair - III  
CS026 ME038

### Miami

South Florida Science and Engineering Fair IV  
BO024 EN045

### Ocala

Big Springs Regional Science Fair  
CS001 EV003

### Orange Park

Clay Kiwanis Regional Science and Engineering Fair  
CH028 ME036

### Orlando

State Science and Engineering Fair of Florida  
CH003 ZO056

### Orlando

Dr. Nelson Ying-Orange County Science Exposition - Physical Science  
CH002 CS301 SP001

### Orlando

Dr. Nelson Ying-Orange County Science Exposition - Life Sciences  
BI004 BO302 MI002

### Panama City

Florida Three Rivers Regional Science and Engineering Fair  
BE005 ZO001

### Pinellas Park

Pinellas Regional Science and Engineering Fair  
BE004 BI003

### Sanford

Seminole County Regional Science, Mathematics & Engineering Fair  
BE003 BO005 ME302

**Sanford**  
Seminole Science Festival  
BI001 MA003 PH301

**Sarasota**  
Sarasota Regional Science, Engineering and Technology Fair  
BI047 EN075

**Spring Hill**  
Hernando County Regional Science and Engineering Fair  
BE001 BO001

**Spring Hill**  
Hernando County Regional Science and Engineering Fair - West  
BO002

**Stuart**  
Martin County Regional Science and Engineering Fair  
EN002 MI003

**Tallahassee**  
Capital Regional Science and Engineering Fair  
EA001 MI005

**Tampa**  
Hillsborough Regional Science Fair  
ME049 ME050

**Tavares**  
Lake Regional Science & Engineering Fair  
SP002

**Vero Beach**  
Indian River Regional Science and Engineering Fair  
BI301 EN003 EV007

**Wesley Chapel**  
Pasco Regional Science and Engineering Fair  
ME002 PH034

**West Palm Beach**  
Palm Beach County Science and Engineering Fair - Region I  
BE050 MI055

**West Palm Beach**  
Palm Beach County Science and Engineering Fair - Region II  
BE049 EN106

**West Palm Beach**  
Palm Beach County Science & Engineering Fair - Region III  
MA045 PH044

**West Palm Beach**  
Palm Beach County Science & Engineering Fair - Region IV  
EN107

## Georgia

**Albany**  
Darton College/Merck Regional Science Fair  
EN019 EV019

**Athens**  
Georgia State Science and Engineering Fair  
BI072 EN336 MI059

**Athens**  
Athens Technical College Regional Science and Engineering Fair  
EN022 EV023

**Atlanta**  
Atlanta Science and Mathematics Congress  
BO010 CS006

**Atlanta**  
DeKalb-Rockdale Science & Engineering Fair  
BI076 CS050

**Augusta**  
Central Savannah River Area Science and Engineering Fair  
EV121 EV122

**Brunswick**  
Coastal Georgia Regional Science and Engineering Fair  
BO051 PH046

**Griffin**  
Griffin RESA Regional Science Fair  
BO020 PH309

**Milledgeville**  
Georgia College & State University Regional Science and Engineering Fair  
BI038

**Savannah**  
Savannah Ogeechee Regional Science and Engineering Fair  
BO049 EV109

**Stockbridge**  
Henry County Science and Engineering Fair  
EN028 PH016

**Warner Robins**  
Houston Regional Science and Engineering Fair  
BO043 EA009 EN307

## Hawaii

**Honolulu**  
Hawaii Association of Independent Schools Science and Engineering Fair  
EV330 ME088 ZO055

**Honolulu**  
Hawaii State Science and Engineering Fair  
BO050 CS049 MI313

**Kahului**  
Maui Schools Science and Engineering Fair  
ZO306

**Kaneohe**  
Windward District Science and Engineering Fair  
BE006

**Pearl City**  
Leeward District High School Science Fair  
BE029 EV069

## Illinois

**Chicago**  
Chicago Public Schools Student Science Fair - Region I  
CS040 MA040

**Chicago**  
Chicago Public Schools Student Science Fair - Region II  
BE037 MI047

**Edwardsville**  
Illinois Junior Academy of Science Region XII Science Fair  
PH013 SP004

**Macomb**  
Heart of Illinois Science and Engineering Fair  
BE038 ME318 MI048

**Springfield**  
Illinois Junior Academy of Science Region X Science Fair  
EV044 MI024

## Indiana

**Angola**  
Northeastern Indiana Tri-State Regional Science Fair  
BI031 CH022

**Evansville**  
Tri-State Regional Science and Engineering Fair  
BO023 ZO030

**Fort Wayne**  
Northeast Indiana Regional Science and Engineering Fair  
BI028 EV043

**Gary**  
Calumet Regional Science Fair  
EV051 ME039

**Greencastle**  
West Central Indiana Regional Science and Engineering Fair  
MA017 ZO024

**Hanover**  
South Central Indiana Regional Science and Engineering Fair  
BI034 EV055

**Hanover**  
Southeastern Indiana Regional Science Fair  
MI007 PH005

**Indianapolis**  
Central Indiana Regional Science and Engineering Fair  
EV073 ME083

**Indianapolis**  
Indiana Science and Engineering Fair  
CH066 EV104

**Muncie**  
East Central Indiana Regional Science Fair  
ME040 MI030

**South Bend**  
Northern Indiana Regional Science and Engineering Fair  
EN044 EV052

**West Lafayette**  
Lafayette Regional Science and Engineering Fair  
MA032 ME051

**Westville**  
Northwestern Indiana Science and Engineering Fair  
EN054 ME043

## Iowa

**Ames**  
State Science and Technology Fair of Iowa  
EN092 MI049 MI311

**Cedar Rapids**  
Eastern Iowa Science and Engineering Fair  
EA011 MI032

**Indianola**  
South Central Iowa Science and Engineering Fair  
CH024 MI029

## Kansas

**Wamego**  
Wamego Regional Science and Engineering Fair  
PH030

## Kentucky

**Bowling Green**  
Southern Kentucky Regional Science Fair  
CS032 SP308

**Highland Heights**  
North Area Counties of Kentucky Exposition of Sciences - Life Sciences  
BO054 EV112

**Highland Heights**  
North Area Counties of Kentucky Exposition of Sciences - Physical Science  
BI077 CH064

**Lexington**  
Central Kentucky Regional Science Fair  
BE048 ZO053

**Louisville**  
Louisville Regional Science Fair - Physical Science  
BE314 EN029 EN032

**Louisville**  
Louisville Regional Science Fair - Life Science  
ZO021 ZO022

**Louisville**  
Dupont Manual High School Regional Biological Sciences Fair  
BI059 MI017

**Louisville**  
Dupont Manual High School Regional Physical Sciences Fair  
CS016 CS303 ME101

**Owensboro**  
Owensboro - Western Kentucky Regional Fair  
EN050

**Richmond**  
Kentucky Science and Engineering Fair  
CH017 CS052 EV307

**Richmond**  
Kentucky Science and Engineering Fair  
BI055 EV031

## Louisiana

**Alexandria**  
Louisiana Region IV Science Fair  
SP011

**Baton Rouge**  
Louisiana Science and Engineering Fair  
BI071 MI056

**Baton Rouge**  
Louisiana Region VII-Science and Engineering Fair  
BI024 MI014

**Bossier City**  
Bossier Parish Community College Louisiana Region I Science and  
Engineering Fair  
EN012 ME013

**Houma**  
Terrebonne Parish Science Fair  
BO006 EN001

**Lafayette**  
Louisiana Region VI Science and Engineering Fair  
BI012 BO011 EN303

**Lake Charles**  
Louisiana Region V Science and Engineering Fair  
BI036 EN060

**New Orleans**  
Greater New Orleans Science and Engineering Fair  
EV060 ME060

**St. James Parish**  
St. James Parish Science Fair  
BI007 EN004 EV301

**Thibodaux**  
Louisiana Region X Science and Engineering Fair  
BI025 EV309 PH018

## Maryland

**Baltimore**  
Morgan State University Science-Mathematics-Engineering Fair  
EN088 ME069

**Edgewater**  
Anne Arundel County Regional Science and Engineering Fair  
ME032 MI023

**Frederick**  
Frederick County Science and Engineering Fair  
MI018 MI019

**Frostburg**  
Western Maryland Science Expo  
MI057

**Gaithersburg**  
Montgomery Area Science Fair - Life Sciences  
BI022 ZO016

**Gaithersburg**  
Montgomery Area Science Fair - Physical Sciences  
MA015 SP007

**La Plata**  
Charles County Science Fair  
EN024 EV024

**Largo**  
Prince George's Area Science Fair  
CH034 CS031 PH312

**Towson**  
Baltimore Science Fair  
EV033 EV035

## Massachusetts

**Amherst**  
Massachusetts Region I Science Fair  
CS038 PH037

**Boston**  
Massachusetts Region VI Science Fair  
BI054

**Bridgewater**  
Massachusetts Region V Science Fair  
BO033 EV083

**Cambridge**  
Massachusetts State Science Fair  
CH048 MI042

**Fall River**  
Massachusetts Region III Science Fair  
MA308 ME097 MI043

**Somerville**  
Massachusetts Region IV Science Fair  
BI052

**Worcester**  
Massachusetts Region II State Science Fair  
EN082 PH315

## Michigan

**Ann Arbor**  
Southeast Michigan Science Fair  
EV115 PH017 PH308

**Big Rapids**  
Mecosta-Osceola Science and Engineering Fair  
EV105 EV117

**Detroit**  
Science and Engineering Fair of Metropolitan Detroit, Inc. - #1  
BI303 ME028 ME029

**Detroit**  
Science and Engineering Fair of Metropolitan Detroit, Inc. - #2  
BI078 CS020

**Detroit**  
Science and Engineering Fair of Metropolitan Detroit, Inc. - #3  
EN036 PH020

**Detroit**  
Science and Engineering Fair of Metropolitan Detroit, Inc. - #4  
EV040 MA020

**Detroit**  
Michigan Science and Engineering Fair  
BI027 CH018

**Flint**  
Flint Area Science Fair  
CS034 SP020

**Kalamazoo**  
Southwest Michigan Science & Engineering Fair  
CH068 EN340 MI060

**Port Huron**  
St. Clair County Science and Engineering Fair  
EV053 EV310 MI037

**Saginaw**  
Saginaw County Science and Engineering Fair  
BI017 ZO015

## Minnesota

**Bemidji**  
Northern Minnesota Regional Science Fair  
EV027 ZO019

**Duluth**  
Northeast Minnesota Regional Science Fair  
EA302 EV011

**Mankato**  
South Central/North Minnesota Regional Science and Engineering Fair  
BO026 EN053

**Mankato**  
South Central/South Minnesota Regional Science and Engineering Fair  
BE016 EN052

**Mankato**  
Southwest/North Minnesota Regional Science and Engineering Fair  
EN315 EV058 PH027

**Mankato**  
Southwest/South Minnesota Regional Science and Engineering Fair  
BE017 CH030

**Minneapolis**  
Minnesota Academy of Science State Fair  
EN108 EN337 ME082

**Minneapolis**  
Twin Cities Regional Science Fair  
EN005 ZO004

**Minneapolis**  
St. Paul Science Fair  
EV302

**Minneapolis**  
Western Suburbs Science Fair  
BI006 ME048

**Moorhead**  
Western Minnesota Regional Science Fair  
EN010 MA008 ZO301

**Rochester**  
Rochester Regional Science Fair  
ME023 ZO017

**Saint Cloud**  
David F. Grether Central Minnesota Regional Science Fair and Research  
Paper Program  
ME313 PH033

**Winona**  
Southeast Minnesota Regional Science Fair  
EV305 MI015 PH015

## Mississippi

**Biloxi**  
Mississippi Region VI Science and Engineering Fair  
EV078 EV079 PH314

**Booneville**  
Mississippi Region IV Science Fair  
ME073 SP024

**Greenville**  
Mississippi Region III Science and Engineering Fair  
BE301 EV013 ZO007

**Hattiesburg**  
University of Southern Mississippi Region I Science and Engineering Fair  
BI011 ME010

**Jackson**  
Mississippi Region II Science and Engineering Fair  
BI026 EN031 EV308

**Jackson**  
Mississippi Science and Engineering State Fair  
BE315 EV113 MA046

**Mississippi State**  
Mississippi Region V Science and Engineering Fair  
CH301 CS012 ME017

**Oxford**  
Mississippi Region VII Science and Engineering Fair  
EN074 EV075 EV331

## Missouri

**Cape Girardeau**  
Southeast Missouri Regional Science Fair  
BI021 ME024

**Chillicothe**  
Three Rivers Regional Science and Engineering Fair  
EN326 EV081 ZO043

**Hillsboro**  
Mastodon Park Science/Art Regional Fair of Jefferson County  
EN041 EV047

**Jefferson City**

Lincoln University Regional Science Fair  
SP012 ZO031

**Joplin**

Missouri Southern Regional Science Fair  
BE036 MI044

**Kansas City**

Greater Kansas City Science and Engineering Fair  
CS042 ME081

**Saint Joseph**

Mid-America Regional Science and Engineering Fair  
CS007 ZO006

**Springfield**

Ozarks Science and Engineering Fair  
BO057 MI062

**St. Louis**

Greater St. Louis Science Fair  
ME096 ZO060

**St. Peters**

St. Charles-Lincoln County Regional Science and Engineering Fair  
BE028 EN323

**Montana**

**Billings**

Deaconess Billings Clinic Research Science Expo  
CH035 EN062

**Butte**

Southwest Montana Regional Science and Engineering Fair  
EV333 ME054 ZO039

**Great Falls**

Montana Region II Science and Engineering Fair  
EN006 EV012 ME304

**Havre**

Hi-Line Regional Science and Engineering Fair - MSU-Northern  
BE309 EA014 EV085

**Missoula**

Montana Science Fair  
BO312 CS054 EV118

**Nebraska**

**Nebraska City**

Greater Nebraska Science and Engineering Fair  
MI054 PH319

**Wilcox**

Central Nebraska Science and Engineering Fair  
BE026 EN072

**Nevada**

**Elko**

Elko County Science Fair  
EV041 EV042 MI305

**Reno**

Western Nevada Regional Science and Engineering Fair  
CH026 EV054 EV312

**New Jersey**

**Jersey City**

Hudson County Science Fair  
BE014 ME034

**Lawrenceville**

Mercer Science and Engineering Fair  
EV034

**New Brunswick**

North Jersey Regional Science Fair - Senior Division  
BI016 ME020

**New Brunswick**

North Jersey Regional Science Fair - Junior Division  
EN021 ZO010

**New Mexico**

**Albuquerque**

Northwest New Mexico Regional Science and Engineering Fair  
MA026 ME098

**Albuquerque**

National American Indian Science and Engineering Fair  
BO032 ZO048

**Albuquerque**

National American Indian Science and Engineering Fair  
EV082 ZO044

**Albuquerque**

National American Indian Science and Engineering Fair  
ME064 MI039

**Albuquerque**

Northwestern New Mexico Regional Science and Engineering Fair  
CS053 EA020

**Albuquerque**

American Indian Science & Engineering Society  
CH047 CH050

**Farmington**

San Juan New Mexico Regional Science and Engineering Fair  
CH060 CS046

**Grants**

Four Corners Regional Science and Engineering Fair  
CH023 MI025

**Las Cruces**

Southwestern New Mexico Regional Science and Engineering Fair  
EN112 EV037

**Las Vegas**

Northeastern New Mexico Regional Science and Engineering Fair  
CH052 EN085

**Portales**

Southeastern New Mexico Regional Science and Engineering Fair  
EV071 EV328 ME056

**Socorro**

New Mexico Science and Engineering Fair - Life Sciences  
ME099 ZO032

**Socorro**

New Mexico Science and Engineering Fair - Physical Sciences  
CS019 EN056

**Socorro**

New Mexico Science & Engineering Fair  
EV116 MI033

## New York

**Brooklyn**

Polytechnic University NYC Department of Education Math, Science and  
Technology Fair - I  
BI029 BI304 BO021

**Brooklyn**

Polytechnic University and NYC Board of Education Math, Science and  
Technology Fair - II  
CS025 CS305 EA010

**Brooklyn**

Polytechnic University New York City Board of Education Math, Science  
and Technology Fair - III  
EN312 MA021 MA022

**Brooklyn**

Polytechnic University and NYC Board of Education Math, Science and  
Technology Fair - IV  
EN311 ME031 ME033

**Brooklyn**

Polytechnic University/New York City Board of Education Math, Science  
and Technology Fair - V  
MI028 PH025

**Brooklyn**

Polytechnic University/NYC Board of Education, Math, Science and  
Technology Fair - VI  
SP009 ZO027

**Long Island**

Long Island Science and Engineering Fair - I  
EA017 EV098 EV323

**Long Island**

Long Island Science and Engineering Fair - II  
ME075 ME076 ME321

**Long Island**

Long Island Science and Engineering Fair - III  
BE041 BE046 ME319

**Long Island**

Long Island Science and Engineering Fair - IV  
BE039 BO310 EN097

**Long Island**

Long Island Science and Engineering Fair - V  
BO046 MI052 ZO309

**Long Island**

Long Island Science and Engineering Fair - VI  
CH061 CH310 MA042

**Long Island**

Long Island Science and Engineering Fair - VII  
ME071 PH039 PH317

**Long Island**

Long Island Science and Engineering Fair-VIII  
BI060 BI063 EV325

**Poughkeepsie**

Dutchess County Regional Science Fair  
CH062

**Suffern**

New York State Science and Engineering Fair  
BO058 EN339 ME093

**Suffern**

New York State Science and Engineering Fair - II  
CH313 EV110 ME094

**Syracuse**

Greater Syracuse Scholastic Science Fair  
EV100 SP026

**Troy**

Greater Capital Region Science and Engineering Fair  
BI030 ME037

**Utica**

Utica College Regional Science Fair  
ZO050

**Westchester**

Progenics Westchester Science and Engineering Fair  
EV066 MA033 ME310

**Westchester**

Progenics Westchester Science and Engineering Fair  
BE023 EN320 ME052

**Westchester**

Westchester Science and Engineering Fair  
BI046 ME053

**Westchester**

Progenics Westchester Science and Engineering Fair  
BI044 BI045

## North Carolina

**Charlotte**

Charlotte-Mecklenburg Regional Science Fair  
ME003 ME004

**Raleigh**

North Carolina State Science Fair  
ME041 PH026 SP304

**Raleigh**

North Carolina State Science Fair - II  
EA012 EN049

## North Dakota

### Dickinson

Southwest North Dakota Regional Science and Engineering Fair  
BE054 BI080

### Fargo

Southeast North Dakota Regional Science and Engineering Fair  
BO053 ME092

### Grand Forks

Northeast North Dakota Regional Science and Engineering Fair  
EN116 EV119

### Jamestown

Southeast Central North Dakota Science and Engineering Fair  
EN113 EN114

### Mandan

Southwest Central North Dakota Regional Science and Engineering Fair  
EN117 EN118

### Minot

Northeast Central North Dakota Science and Engineering Fair  
BO059 MI063

### Minot

North Dakota State Science and Engineering Fair  
EV114 ZO059

### Minot

Northwest Central North Dakota Regional Science Fair  
CH067 EN111

### Williston

Northwest North Dakota Regional Science Fair  
EN115 ME095

## Ohio

### Alliance

Ohio Region XIII Science and Engineering Fair  
BI035 BI056 EN314

### Archbold

Northwest Ohio Science and Engineering Fair  
BO042 SP022

### Athens

Southeastern Ohio Regional Science and Engineering Fair  
BO008 EV008

### Cleveland

Northeastern Ohio Science and Engineering Fair  
EN101 ME079

### Cleveland

Northeastern Ohio Science and Engineering Fair  
SP025

### Dayton

Montgomery County Science and Engineering Fair  
CS018 EN033

### Marion

Marion Area Science and Engineering Fair  
BE304 EV046 PH022

### Shaker Heights

Hathaway Brown Upper School Fair  
EN025 ME022 SP303

### Upper Arlington

Central Ohio Regional Science and Engineering Fair  
BI008 MA301 ME007

### Wilberforce

Miami Valley Science and Engineering Fair  
EV102 MI034

## Oklahoma

### Ada

Oklahoma State Science and Engineering Fair  
CH311 ZO052

### Alva

Northwestern Oklahoma State University Regional Science Fair  
EA008 EV029

### Bartlesville

Bartlesville District Science Fair  
CS008 ME012

### Edmond

Central Oklahoma Regional Science and Engineering Fair  
ME011 SP302 ZO005

### Miami

Northeastern Oklahoma A&M Science and Engineering Fair  
EV005 MI004

### Muskogee

Muskogee Regional Science and Engineering Fair  
MA312 ZO051

### Oklahoma City

Oklahoma City Regional Science and Engineering Fair  
CS009 EN011

### Seminole

East Central Oklahoma Regional Science and Engineering Fair  
BO022 MI027

### Tulsa

Tulsa Regional Science and Engineering Fair  
MA004

### Wilburton

Eastern Oklahoma Regional Science and Engineering Fair  
SP013

## Oregon

### Beaverton

Beaverton-Hillsboro Science Expo  
CH011 MA010 PH306

### Beaverton

Beaverton-Hillsboro Science Expo - II  
EV017 ME018 ZO303

**Coos Bay**  
Southwestern Oregon Regional Science Exposition  
BO038 BO309 CH053

**Klamath Falls**  
Tech Challenge Science Expo  
BO016 CH016

**Monmouth**  
Central Western Oregon Science Expo  
BE020 CH306 ZO041

**Portland**  
Intel Northwest Life Science Expo  
BE044 ME085

**Portland**  
Aardvark Science Exposition  
BI048 EV306 SP006

**Portland**  
Northwest Physical Science Expo  
CS314 EN105 SP027

**Portland**  
Intel Northwest Science Expo At-Large Regional  
EN334 MA043 ME084

**Wilsonville**  
CREST-Jane Goodall Science Symposium  
BE303 BO019 ME030

## Pennsylvania

**Carlisle**  
The Patriot-News Capital Area Science and Engineering Fair  
CS027 EN068

**Lancaster**  
Lancaster Newspapers Science and Engineering Fair  
EV045 ME035

**Philadelphia**  
Ben Franklin Science Fair  
MI058 ZO054

**Philadelphia**  
Benjamin Banneker Science Fair  
EA019 ZO057

**Philadelphia**  
Delaware Valley Science Fair  
BI074 BI075 ME323

**Philadelphia**  
Marie Curie Science Fair  
MA044 ME089

**Pittsburgh**  
Pittsburgh Regional Science and Engineering Fair  
ME068 MI046

**Reading**  
Reading and Berks Science and Engineering Fair  
BO030 EN079

**York**  
York County Science and Engineering Fair  
BE012 ME027

## Rhode Island

**Warwick**  
Rhode Island Science and Engineering Fair  
EA006 EN026

## South Carolina

**Charleston**  
Lowcountry Science Fair  
BI037 CS030

**Clemson**  
Anderson-Oconee-Pickens Regional Science Fair  
CH039 SP019

**Columbia**  
USC Central South Carolina Region II Science and Engineering Fair  
CH043 CH049 CS312

**Florence**  
Sand Hills Regional Science Fair  
BI049

**Greenville**  
Greenville County Science and Engineering Fair  
BO045 CS043

**Hilton Head Island**  
Sea Island Regional Science Fair - Junior Division  
EN319 EV067 PH032

**Hilton Head Island**  
Sea Island Regional Science Fair - Senior Division  
BE027 EN073 ME311

**Spartanburg**  
Piedmont South Carolina Region III Science Fair  
EV091 PH038

## South Dakota

**Aberdeen**  
Northern South Dakota Science and Math Fair  
EV077 MI036 MI308

**Brookings**  
Eastern South Dakota Science and Engineering Fair  
EN096 PH040 ZO308

**Mitchell**  
South Central South Dakota Science and Engineering Fair  
EV065 ME312 ZO038

**Rapid City**  
High Plains Regional Science and Engineering Fair  
EN063 EV319

**Timber Lake**  
Northwest Area Schools Regional Science and Engineering Fair  
BI023 MI016 MI303

## Tennessee

### Chattanooga

Chattanooga Regional Science and Engineering Fair  
EN042 PH024

### Clarksville

Middle Tennessee Science and Engineering Fair  
EN058 ME044

### Cookeville

Cumberland Plateau Regional Science and Engineering Fair  
BO041 EV103

### Jackson

West Tennessee Regional Science Fair  
CH059 EV096

### Knoxville

Southern Appalachian Science and Engineering Fair  
BI066 BI305 EV101

### Memphis

Memphis-Shelby County Science and Engineering Fair - North Region  
ME072 ME102

### Memphis

Memphis-Shelby County Science and Engineering Fair - South Region  
BI058 EV092

## Texas

### Austin

Austin Energy Regional Science Festival  
EN007 MA303 PH004

### Brownsville

Rio Grande Valley Regional Science and Engineering Fair  
BE019 PH318 SP018

### College Station

Brazos Valley Regional Science and Engineering Fair  
BE045 MI045

### Dallas

Dallas Regional Science and Engineering Fair - Life Sciences  
BI041 EV314 ME045

### Dallas

Dallas Regional Science and Engineering Fair - Physical Sciences  
EN057 MA027 PH311

### El Paso

Sun Country Science Fair  
BO029 MI008 ZO305

### Fort Worth

Fort Worth Regional Science Fair  
EN065 MA029

### Houston

Science Engineering Fair of Houston - Life Sciences  
BE018 ZO033

### Houston

Science Engineering Fair of Houston - Physical/Engineering Sciences  
CH031 CH032

### Kilgore

East Texas Regional Science Fair  
CS015 ME025

### Laredo

United Independent School District Regional Science Fair  
PH042

### Lubbock

South Plains Regional Science and Engineering Fair  
EN087 ME070

### Odessa

Permian Basin Regional Science Fair  
BE031 BE308 EV070

### San Angelo

District XI Texas Science Fair  
EN086 MI040 MI310

### San Antonio

Alamo Regional Science and Engineering Fair I  
EA303 PH012 SP005

### San Antonio

Alamo Regional Science and Engineering Fair II  
BI015 ME019 ME307

### San Antonio

Alamo Regional Science and Engineering Fair III  
BO015 BO304 ZO013

### SanAntonio

ExxonMobil Texas Science and Engineering Fair  
CH055 EV095

### Victoria

Texas Mid-Coast Regional Science and Engineering Fair  
CH044 SP021 SP305

### Waco

Central Texas Science and Engineering Fair  
BO040 EV090

### Wichita Falls

Red River Regional Science and Engineering Fair  
EN089 EV093 EV320

## Utah

### Cedar City

Southern Utah Science and Engineering Fair  
EV025 MI302

### Cedar City

Southwest Utah Science and Engineering Fair  
BO013 EV022

### Layton

North Davis Area Science and Engineering Fair  
BI039 BO027

### Ogden

Ogden Area I Science and Engineering Fair  
EN064 EN066

### Ogden

Harold W. & Helen M. Ritchey State Science and Engineering Fair of Utah  
- Life Sciences  
CH038 ME046

**Ogden**

Harold W. & Helen M. Ritchey State Science and Engineering Fair of Utah  
- Physical Sciences  
CH041 EV061

**Ogden**

Weber Area Science and Engineering Fair - #1 Life Sciences  
BO028 MI035

**Ogden**

Weber Area Science and Engineering Fair - #2 Physical Sciences  
CH040 ZO036

**Ogden**

Weber Area Science and Engineering Fair - #3 General  
EV062 PH031

**Provo**

Central Utah Science and Engineering Fair  
BE042 BO047 EN332

**Provo**

Central Utah Science and Engineering Fair - North  
EN099 EV326 ME080

**Provo**

Central Utah Science and Engineering Fair - South  
EN094 EN102 PH316

**Salt Lake City**

Salt Lake Valley Science and Engineering Fair  
CH054 EN338 ME061

**Vermont**

**Northfield**

Vermont State Science and Mathematics Fair  
EN121 EN122

**Virginia**

**Arlington**

Northern Virginia Science and Engineering Fair  
CS302 EV020

**Ashland**

Virginia State Science and Engineering Fair  
BI073 CS051

**Charlottesville**

Piedmont Regional Science Fair  
BE021 CH036

**Dublin**

Blue Ridge Highlands Regional Science Fair  
EN009 EV009

**Fairfax**

Fairfax County Area I Regional Science and Engineering Fair  
BI064 EN100

**Fairfax**

Fairfax County Area II Regional Science and Engineering Fair  
EN098 EN331 EV097

**Fairfax**

Fairfax County Area III Regional Science and Engineering Fair  
EA018 EN095

**Fairfax**

Fairfax County Area IV Regional Science and Engineering Fair  
BE312 ME078 MI051

**Fairfax**

Fairfax County Regional Science and Engineering Fair  
BI069 BI070

**Hampton**

Tidewater Science Fair  
CS017 MA018

**Harrisonburg**

Shenandoah Valley Regional Science Fair  
CH304 EV048 PH047

**Leesburg**

Loudoun County Regional Science and Engineering Fair  
CH033 EN059

**Lynchburg**

Central Virginia Regional Science Fair  
CH020 MI021

**Manassas**

Prince William-Manassas Regional Science Fair  
BE311

**Richmond**

Metro Richmond Science Fair  
MA036

**Roanoke**

Western Virginia Regional Science Fair  
EN035 MI020

**Washington**

**Bremerton**

Washington State Science and Engineering Fair  
BE043 CH058

**Kennewick**

Mid-Columbia Regional Science and Engineering Fair  
EV032 EV036

**Tacoma**

South Sound Regional Science Fair  
EV315 MA023 MI031

**West Virginia**

**Elkins**

Eastern Regional Science Fair  
MI306

**Huntington**

West Virginia State Science and Engineering Fair  
EN104 MA041

**Keyser**

West Virginia Eastern Panhandle Regional High School Science Fair  
PH023 ZO029

**Montgomery**  
Central and Southern West Virginia Regional Science and Engineering Fair  
CH308

**Parkersburg**  
Mid Ohio Valley Regional Science Fair  
EN061 ZO034

**West Liberty**  
West Liberty State College Regional Science and Engineering Fair  
BI019 MI012

## Wisconsin

**Glendale**  
Nicolet Science and Engineering Fair  
EN034 MA016

**Madison**  
Badger State Science and Engineering Fair  
PH028 PH029

**Milwaukee**  
University School of Milwaukee - Science Fair  
BE013 EV030

**Milwaukee**  
Milwaukee Regional Science & Engineering Fair  
EV018 ME305

## Wyoming

**Cheyenne**  
Southeast Wyoming Regional Science Fair  
MI026 MI304

**Greybull**  
Northern Wyoming District Science Fair  
BO301 CH001 EV001

**Laramie**  
Wyoming State Science Fair  
BO306 EV049 ME042

## AMERICA SAMOA

**Pago Pago**  
American Samoa Science Fair  
BO052 ZO058

## ARGENTINA

**Concepcion**  
Science and Technology - Toy Technology Fair  
CH046

**Concepcion**  
Science and Technology - Toy Technology Fair  
PH036

**Tucuman**  
National Science Fair of Argentina  
CH305 EV063

**Tucuman**  
National Science Fair of Argentina - II  
BE306

**Tucuman**  
National Science Fair of Argentina - III  
EN317

**Tucuman**  
National Science Fair of Argentina - IV  
BE307

**Tucuman**  
National Science Fair of Argentina - V  
EN321

## AUSTRALIA

**Sydney**  
Intel Young Scientist Awards  
EV056 EV057 PH310

## BELARUS

**Minsk**  
BelJunior  
EV010 PH303 SP003

## BRASIL

**Campinas**  
Escola Americana De Campinas  
CS306 EN039 PH021

**Novo Hamburgo**  
International Fair of South America - MOSTRATEC  
BE015 EV313

**Novo Hamburgo**  
FECIT Feira Estadual de Ciencia e Tecnologia do RS  
CS308 EV050

**Novo Hamburgo**  
FENACITEC - National Science and Technology Fair  
BE305

**Sao Paulo**  
FEBRACE-SP, Feira Brasileira de Ciencias e Engenharia-Regional Sao Paulo  
BE032 CH045 EN325

**Sao Paulo**  
FEBRACE - Feira Brasileira de Cincias e Engenharia  
EN080 EN324 ME059

**Sao Paulo**  
FEBRACE-N-NE-CO Feira Brasileira de Ciencias e Engharia-Regioes  
CS036 EN081 ME315

## CANADA

### Edmonton

Alberta Science Fair Foundation  
ME314

### London

CWSF/Waterloo-Wellington/Lambton  
EV084 MA037

### London

CWSF/Central and Eastern Newfoundland  
ME063 MI041

### London

CWSF/Quebec Regional Science Fair  
BO035 ME062

### London

CWSF/Toronto/Durham/Timmins  
BI053 CS037

### Montreal, Quebec

Montreal Regional SciTech Fair  
EV106 ME086 ME322

### Oakville, Ontario

Bay Area Science and Engineering Fair  
BE040 ME077 MI312

### Windsor

Windsor Regional Science, Technology and Engineering Fair  
ME091

## CHILE

### Antofagasta

Eagle Science Fair  
CH063

### Santiago

5th EXPLORA National Youth Science Conference  
BO307

### Talca-Septima Region

Club de Ciencias Talca, Chile  
EV317

## CHINA

### Beijing

Children Science Fair of Beijing  
EN017 ZO009 ZO302

### Beijing

CASTIC( China Adolescents and Technology Invention Contest), Beijing  
EN015 PH009 SP301

### Fuzhou City

CASTIC (China Adolescents Science & Technology Invention Contest),  
Huanan  
CS021 EN309 MI022

### Guangzhou

CASTIC (China Adolescent Science & Technology Invention Contest),  
Xinan  
CH025 EN047 EV311

### Shanghai

CASTIC (China Adolescents Science and Technology Invention Contest),  
Shanghai  
BO025 CS028

### Shanghai

The Children Science Fair of Shanghai  
CH029 CS307 MA025

### Sichuan

Chinese American School Fair  
CH056 CH057

### Wuhan

CASTIC: (China Adolescent Science & Technology Invention Contest),  
Huadong  
EN018 EV015

## CHINESE TAIPEI

### Taipei

Middle Taiwan Regional Science Fair  
CH021 CS304 PH019

### Taipei

South Taiwan Regional Science Fair  
EA304 ZO025

### Taipei

National Science and Engineering Fair of Republic of China  
EN308 MA019 ZO026

## COSTA RICA

### San Jose

Feria Nacional de Ciencia y Tecnologia  
EV332

### San Jose

Feria Nacional de Ciencia y Tecnologia-I  
CS315

### San Jose

Feria de Tecnologia e Ingenieria  
EV334

## CZECH REPUBLIC

### Prague

AMAVET Czech Republic Science Fair  
BO056 EN119

### Tabor

Students' Professional Activities (SPA)  
CS004 EA301 MA006

## DENMARK

**Copenhagen**  
Unge Forskere  
SP015 SP016

## EGYPT

**Cairo**  
Egypt Science Fair  
EN120

## GEORGIA REPUBLIC

**Tbilisi**  
Georgia Republic Regional Science Fair  
EN301 MA001 MA002

## GERMANY

**Saarbruecken**  
Jugend Forscht  
CH012 PH008

**Saarbruecken**  
Jugend Forscht  
MA009

## HONG KONG

**Hong Kong, Region of China**  
Hong Kong S&T Invention Contest  
BI014 CH013 PH305

## HUNGARY

**Budapest**  
Innovation Contest for Young Scientists  
CS010

## INDIA

**Chennai**  
Intel Science Talent Discovery Fair - North & North East  
BO044 EN093 EN329

**Chennai**  
Intel Science Talent Discovery Fair - West & South  
BI065 EV322 ZO049

## IRELAND

**Dublin**  
ESAT BT Young Scientist & Technology Exhibition  
PH322

## ISRAEL

**Jerusalem**  
The Israeli Young Scientists Contest  
EN327 MA038

## ITALY

**Milano**  
I Giovani e le Scienze  
CS310

## JAPAN

**Tokyo**  
Japan Students Science Awards  
BO017 CH303

**Tokyo**  
Japan Science & Engineering Challenge  
CS048 EN335 EV107

## JORDAN

**Jordan**  
Science Fair of The Jordanian Ministry of Education  
EN103 EN333

## KAZAKHSTAN

**Astana**  
DARYN National Junior Science Projects Competition  
CS056 CS057 MA313

## MALAYSIA

**Kuala Berang, Terengganu**  
MRSM Young Scientist  
EV321

**Kuala Lumpur**  
National Schools Science Innovation and Engineering Competition  
CH069 EV335

## MEXICO

**Guadalajara, Jalisco**  
Mexico-ITESM National Fair  
CH312 EV064

**Puebla**  
Gran Encuentro Nacional de Ciencia Joven  
CS035 EN322

**Puebla**  
Gran Encuentro de Ciencia Joven  
CS309 ZO037

**Puebla**  
Gran Encuentro de Ciencia Joven  
BI042 EV329

## NIGERIA

**Edo State**  
Nigeria Science Fair  
CH307 EN043

## NORTHERN IRELAND

**Belfast**  
Seagate Young Innovators  
EN069

## NORWAY

**Oslo**  
Norwegian Contest for Young Scientists  
CS047 EN016

## PAKISTAN

**Islamabad**  
Pakistan Science Olympiad  
BI067 BO311 CS045

## PERU

**Lima**  
Feria Nacional de Ciencia y Tecnologia Juvenil en el Peru  
BE047 BE313

**Lima**  
CIENTEC 2004  
BE024 EN070

**Lima**  
Peru Science Fair CEP San Antonio de Padua  
ME320

**Peru**  
Feria Escolar Nacional de Ciencia Y Tecnologia (FENCYT)  
SP309

## PHILIPPINES

**Manila**  
Intel Basic Philippine Science Fair  
EV021 ME306 MI011

**Manila**  
Intel Philippine Applied Science Fair  
BO012 CH042 PH307

## PORTUGAL

**Porto**  
Portuguese Contest for Young Scientists  
EN067

## PUERTO RICO

**Cayey**  
Radians Science & Engineering Fair  
EN109 PH045

**Guaynabo**  
San Juan Archdiocesan Region I Science Fair  
BE010 MA305 ME021

**Guaynabo**  
San Juan Archdiocesan Region II Science Fair  
BO014 EV026 EV304

**Guaynabo**  
San Juan Archdiocesan Region III Science Fair  
BI018 BI302 PH014

**Guaynabo**  
San Juan Archdiocesan Region IV Science Fair  
CS014 ME308 MI013

**Mayaguez**  
SESO Regional Science Fair  
CH006 ME008 ME303

**San Juan**  
Western Regional Mathematics Fair  
MA011 MA014 MA307

**San Juan**  
Arecibo Regional Science Fair  
BO037 BO308

**San Juan**  
Bayamon Regional Science Fair I  
EV089 ZO047 ZO307

**San Juan**  
Caguas Regional Science Fair  
BE034 EV318 ZO046

**San Juan**  
San German Regional Science Fair  
EA015 EV088 MA309

**San Juan**  
Eastern Regional Mathematics Fair  
MA012 MA013 MA306

**San Juan**  
Humacao Regional Science Fair  
BE035 ME317

**San Juan**  
Ponce Regional Science Fair  
MA039 MA310 ME066

**San Juan**  
Fajardo Regional Science Fair  
BE033 ME067 MI309

**San Juan**  
Mayaguez Regional Science Fair  
BO036 ME065

**San Juan**  
San Juan Regional Science Fair  
BE310 BI057 BO039

**San Juan**  
Morovis Regional Science Fair  
EV086 EV087

## RUSSIA

**Moscow**  
Junior - I  
CS033 MA031 MI307

**Moscow**  
Junior-II  
CS311 MA034 MA035

**Moscow**  
Intel-Avanguard 2005  
CH005 CS003 MA302

**St. Petersburg**  
Intel Baltic Science and Engineering Fair  
EA004 MA007 MA304

## SINGAPORE

**Singapore**  
Singapore Science and Engineering Fair 2005  
CH010 EN014 EN305

## SOUTH AFRICA

**Pretoria**  
Expo for Young Scientists - South Africa  
EN051 EN313 SP014

## SOUTH KOREA

**Daejon City**  
KSEF (Korea Science & Engineering Fair)  
EV120 MI314 PH049

**Seoul**  
Korea Olympiad in Informatics  
CS022 CS023

## THAILAND

**Bangkok**  
National Science Projects Competition  
ZO310

**Bangkok**  
National Electronics and Computer Technology Center (NECTEC)  
CS041 EN090

## TURKEY

**Ankara**  
Tubitak fair  
CS055 PH321

**Istanbul**  
13th National Environmental Project Olympiad  
EV327

## UKRAINE

**Kyiv (Kiev)**  
Intel - EcoUkraine  
CS005 EV016

## **UNITED KINGDOM**

**London**  
The BA CREST Science Fair  
PH010

**London**  
Exscitec Fair  
CH065 ME090 SP307

**London**  
Young Engineers for Britain  
EN038 EN076

## **VIRGIN ISLANDS**

**St. Croix**  
The Good Hope School Science Fair  
BI043 EN316 MA030

# ALPHABETICAL LIST OF FINALISTS

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

Abdulrasool, A.	BE037	Arsenio, C.M.	EN067	Bhashyam, A.R.	ME068
Abe, A.M.	EV069	Arthur, R.S.	PH047	Bhasin, J.M.	ME079
Abel, C.A.	EN006	Ash, L.E.	ZO040	Bhayani, K.J.	ME090
Abernethy, R.C.	EN306T	Athreya, K.K.	BO304T	Bionta, M.R.	SP008
Ableman, G.A.	BI304T	Aube', A.H.	EV113	Bishara, P.M.	BE014
Abramava, A.A.	PH303T	Aurand, K.R.	EV319T	Bishop, J.T.	PH030
Abrams, A.M.	BO308T	Awan, A.A.	ME322T	Black, B.D.	EN115
Acevedo, E.J.	ME008	Badke, A.R.	EV052	Blahus, M.	CS004
Acevedo, M.	ZO307T	Bae, G.	CS023	Bliden, H.	BE302T
Acosta, V.	MA309T	Baggenstos, M.N.	SP014	Blocker, A.C.	EV109
Adams, L.W.	MI310T	Bagley, J.H.	ME033	Blumenthal, D.A.	MI047
Adcock, E.M.	ME307T	Bailey, A.M.	EV309T	Bobb, S.J.	PH022
Adcock, S.A.	PH003	Baker, E.A.	BE022	Bogert, S.E.	EA005
Addicott, C.M.	MA045	Baker, S.	ME080	Bootsma, K.J.	EV036
Agarwal, V.	ME013	Bakke, E.	CS047	Bordelon, A.J.	EN004
Ager, E.C.	ME324T	Balaban, C.M.	MI312T	Borohovski, M.	CS305T
Aggangan, B.S.	EV021	Balding, D.C.	SP019	Boscoe, E.F.	ME325T
Aghassi, E.	SP009	Baldwin, M.C.	SP306T	Bosworth, R.J.	BO305T
Ah Young, A.P.	BO052	Ballard, C.M.	EN035	Bouman, K.L.	MA032
Ahmad, M.	MI053	Banks, E.C.	ME069	Bourg, J.P.	EN001
Ahmad Hazmi, A.b.	EV321T	Bardin, B.C.	BI003	Bourgeois, K.K.	BI007
Akther, D.	EN312T	Barfield, S.M.	EV331T	Bowen, D.T.	EN062
Al-Homoud, A.I.	EN333T	Bari, H.M.	ME322T	Boyd, T.L.	MI004
Aleksandrova, A.	BI001	Barsky, M.	BI304T	Braband, J.E.	EN315T
Alexander, R.R.	MI025	Bartlett, M.K.	BO001	Bracy, C.J.	EN316T
Ali, H.K.	BI010	Bassett, E.A.	ZO019	Brak, V.R.	BE045
Allen, M.A.	ME025	Batista, S.	EV019	Brandt, M.D.	CS040
Allen, P.D.	BE012	Baughman, O.W.	EV054	Brashear, S.J.	EV328T
Alvarado, R.	EV318T	Bautista, V.N.	BI042	Bravo, C.	CH063
Alvarado, R.	ZO307T	Baxi, A.C.	BI058	Breakstone, S.A.	BE046
Amerson, M.N.	BO020	Bazhin, V.A.	CS311T	Brewer, A.N.	EN054
Amieva, S.	PH042	Beard, D.E.	EN304T	Brewer, B.W.	MI007
Amina, K.K.	ME088	Beaufeaux, J.R.	EA302T	Briano, A.E.	CH006
Ammar, M.Z.	EN120	Beaver, N.M.	MA008	Bricchi, M.N.	EN321T
Amor, D.	PH048	Becker, H.P.	EN313T	Brinkopf, B.L.	CS002
Amoroso, C.M.	BE039	Beksha II, D.B.	MA308T	Brodsky, L.	BO010
An, J.Y.	BE043	Bella, M.J.	PH041	Broggi, V.S.	BE306T
Anderson, J.L.	BE315T	Benally, N.	BO031	Broussard, N.J.	CS314T
Andrade, A.R.	PH315T	Bendycki, E.A.	SP025	Brown, L.A.	MI055
Angel Buitrago, L.F.	ZO046	Beniacar, K.	MA022	Brueggen, L.R.	ZO005
Angeles, A.J.	ME306T	Bennett, A.M.	EV053	Bruner, L.J.	BO042
Anguiano, E.	EV326T	Bereza, T.W.	EN340T	Brungardt, A.L.	PH007
Anwar, V.B.	EV330T	Berg, L.S.	ZO308T	Bruno, N.C.	CH034
Anyan, M.E.	EV032	Berke, M.G.	BE302T	Buchanan, A.C.	ME003
Aponte, D.	PH045	Bernert, M.J.	BO019	Buford, B.W.	EN334T
Appel, D.C.	EN056	Bertrand, S.E.	BI024	Bugs, C.A.	EN324T
Applegate, C.C.	CS302T	Betsill, A.R.	MI313T	Bullard, A.	EN049
Araujo, N.D.	EN046	Beuter Junior, N.	BE305T	Bunbury, T.K.	BE004
Aravamuthan, S.	CH068	Bewerse, C.N.	PH002	Buranupakorn, T.	ZO310T
Aravena Rojas, G.R.	EV317T	Bezdek, D.	MA037	Burger, M.E.	CH031
Armstrong, T.M.	CH304T	Bhagwat, S.M.	MA020	Burgos-Vazquez, N.M.	MA011
Arnold, C.J.	SP024	Bhalla, S.	EV004	Burns, A.M.	BI077

Burns, J.A.	EV071	Chun, H.M.	ZO004	Derousie, L.P.	ME036
Burrows, R.T.	ZO013	Chutkov, R.I.	CS003	Desai, M.D.	EV322T
Bury, U.	EV010	Cisneros, A.L.	EV098	Desai, S.J.	ME026
Busdicker, E.W.	EV310T	Clark, K.M.	CH044	Desai, S.	EV322T
Buss, S.P.	EN002	Clark, R.J.	EV067	Deshpande, N.A.	ZO010
Byrd, L.A.	EN307T	Clary, S.L.	ZO032	Detzel, J.C.	ME302T
Cabasan, E.J.	PH307T	Cleary, S.E.	CS305T	DeVries, J.J.	EV319T
Cabrera Chacez, E.M.	EV313T	Clement, K.C.	BI064	Dewald, Y.W.	MI057
Caceres, A.d.	EV063	Clements, B.D.	MI310T	Dhand, M.K.	BE049
Cain, L.R.	ZO015	Clemenz, M.R.	CH049	Dias, L.R.	EN318T
Caldera, D.M.	EV328T	Clothiaux, C.E.	MI062	Diaz, D.	MA306T
Campbell, B.A.	EN063	Cochran, E.J.	MI304T	Dobi, K.	MA044
Campbell, B.J.	PH031	Cohen, H.V.	EN327T	Dobrovolskaya, V.N.	MA034
Canfield, C.M.	BE005	Cohen, N.E.	BE001	Dodds, J.C.	MI311T
Carlson, S.J.	EN102	Colciago, C.M.	CS310T	Doll, A.J.	EN117
Carr, J.M.	CH067	Cole, A.D.	PH308T	Dolzenkova, K.	EA004
Carter, J.	CH040	Colon, A.	EV089	Donahue, K.N.	SP004
Casper, H.A.	BO310T	Colon, E.J.	MA310T	Doty, M.A.	MI050
Cassidy, S.M.	BE303T	Colon, F.	BO307T	Drabek, E.R.	PH005
Castagna, P.T.	EN324T	Colon, Y.B.	MA310T	Draper, M.C.	SP002
Casteel, L.B.	ME057	Combs, C.M.	BI073	Drewlow, R.A.	ME082
Castillo, M.D.	EV329T	Combs, M.	EA014	Drummond, C.P.	EN337T
Catanzaro, S.E.	ME075	Compadre, A.J.	BO048	Du, Y.	ZO302T
Caughran, D.F.	CS302T	Conradson, D.R.	CH052	Duan, F.	EV311T
Cavin, L.J.	EN326T	Cordwell, R.T.	MA026	Dubbe, B.H.	BO312T
Centeno, D.	BO308T	Cornale, K.M.	BE040	Duchi, A.J.	MA301T
Chadburn, B.R.	EN338T	Costantini, C.M.	BE013	Ducote, D.J.	EN303T
Chadburn, N.L.	EN338T	Coury, K.M.	MI037	Ducote, T.M.	EN303T
Chambers, K.R.	EN310T	Cox, C.D.	BE021	Dumdie, J.N.	MI308T
Chambers, S.P.	SP307T	Cox, D.M.	PH017	Dunn, H.T.	BO059
Chan, A.S.	CS302T	Crafton, J.D.	BO046	Duong, A.M.	EN331T
Chang, B.M.	EN097	Craig, M.R.	BE314T	Duruz, M.	CH313T
Chantarachit, R.	EN090	Cromer, D.J.	CH051	Dwiggins, C.L.	ME011
Charles, A.S.	EN311T	Cross, J.B.	EN095	Easterday, K.L.	BE026
Chattopadhyay, A.	BI041	Cross, V.E.	BE030	Egan, A.A.	ME319T
Chattopadhyay, R.	ME098	Cruz, B.E.	MI309T	Eghlidi, D.H.	ME018
Chau, S.	PH305T	Cruz, X.A.	ME066	Eheart, D.L.	ME058
Chaudhry, R.F.	BE311T	Cruz-Maldonado, A.	BO037	Eichelberger, M.S.	CS012
Chemnitz, M.	PH008	Cruzado, M.S.	PH307T	Eide, J.E.	PH015
Chen, J.J.	ME007	Curi Junior, M.M.	EN325T	Ekladyous, N.S.	CS034
Chen, S.	CH306T	Czapar, M.G.	EV044	Elliott, T.H.	EV312T
Chen, W.	EN088	Czornyj, B.C.	CH062	Elting, D.M.	BE006
Cheng, R.	BI044	D Agostin, V.	CS308T	Emmons, M.R.	CS013
Chennubhotla, S.	ME101	Dalsania, A.N.	ME005	Emory, R.J.	MA312T
Chernyak, A.	PH020	Daly, T.	EA016	Eng, D.S.	EN084
Chester, J.E.	EV034	Dance, N.	BE302T	England, G.T.	CS032
Cheung, A.T.	BO045	Darvis, M.N.	EV085	Entwisle, R.W.	EN038
Chiardola, H.G.	EN317T	Das, R.J.	EV076	Eppard, E.F.	EN328T
Chilson, J.J.	EN096	Davenport, K.M.	EN042	Ercag, E.E.	EV327T
Chiong, E.C.	CH069	David, E.E.	EV049	Esch, V.E.	BE044
Chiong, K.T.	EV335T	de Borba Lambiase, C.	EN324T	Espinoza, E.G.	BE307T
Chirstensen, K.L.	EV094	de la Villa, A.P.	BI302T	Estela, A.M.	EV088
Chiva Querol, F.	EN080	Dean, C.J.	PH309T	Estey, C.A.	EV331T
Cholera, S.T.	ME102	Dedmon, B.D.	ZO051	Etoniru, O.	CH307T
Chong, I.	EN012	Dela Cruz, J.E.	BE029	Evans, M.G.	ME061
Chow, J.	BI029	Delaney, K.A.	ZO301T	Ezekiel, F.N.	BI049
Christian, A.R.	EN314T	DeNasha, A.E.	EV082	Fabian, J.J.	ME305T
Christian III, T.F.	EA009	Denduluri, A.K.	MI033	Falgoust, C.J.	BI025
Christie, M.L.	ME052	Denham, K.K.	EV042	Fan, J.M.	BI008
Chuday, L.M.	ME078	Denton, D.J.	CS007	Farias, C.J.	BO307T

Farris, K.P.	PH050	Gervais, C.L.	ME091	Harden, S.N.	MI305T
Fassmann, W.N.	CH054	Ghosh-Choudhury, T.	ME019	Harding, K.J.	EV033
Faust, C.L.	EV023	Gianelli, G.A.	SP001	Harrington, A.M.	CH302T
Fehlberg, M.T.	ME302T	Gil de Rubio, P.D.	EV026	Harshman, S.J.	MI012
Fei, J.Z.	BI060	Gilbert, A.A.	ME046	Hartman, C.A.	MI054
Feller, A.K.	BO301T	Gilbertson, L.R.	EV041	Hastings, J.M.	PH313T
Fenska, K.E.	ZO052	Gilchrist-Scott, D.H.	BI056	Hauge, A.	EN016
Fernandez, C.V.	BI005	Gillespie, K.L.	EV118	Hawes, C.D.	EN010
Ficek, A.R.	BE054	Gillund, B.M.	ME304T	Hefter, D.	EV325T
Fichtelman, T.K.	EN003	Gintz, G.E.	PH032	Heideman, K.R.	MI038
Figge, M.A.	BI030	Glass, L.M.	ME099	Helms, A.K.	CH301T
Figueroa, A.R.	EV304T	Glissmann, R.V.	EN008	Hensel, A.	BO004
Figueroa, L.M.	ME317T	Gloyna, T.E.	EV090	Hento, T.M.	EV065
Figus, B.T.	BE028	Goettman, J.M.	EN089	Her, K.	EV302T
Filhiol, T.M.	ME016	Gold, J.A.	EN107	Herbage, K.M.	CH053
Firpo, J.	CS308T	Goldblatt, M.F.	ZO309T	Herder, C.H.	CH032
Fischell, E.M.	ME089	Goldstayn, J.A.	PH024	Herklotz, P.A.	ME014
Fischer, T.A.	EN318T	Gonzalez, C.M.	CH312T	Hermance, M.E.	ZO033
Fisher, L.M.	ZO303T	Gonzalez-Ortiz, T.	BE033	Hernandez, C.R.	PH313T
Fisher, S.K.	EV072	Goodgame, K.A.	ME056	Hernandez, E.	MI309T
Flannery, M.O.	CH308T	Gordon, C.G.	EN339T	Hernandez, K.E.	EN113
Fleckenstein, C.A.	EN118	Gorin, A.	BI040	Hernandez Romero, E.G.	EN322T
Fleming, K.E.	EV020	Gottfried, A.A.	ME304T	Hernandez-Lopez, I.	ME065
Fleming, M.R.	EN052	Grace, A.M.	CH065	Herndon, M.E.	SP308T
Flores Papaqui, T.	ZO037	Graff, K.A.	BE048	Hersh, A.S.	EN312T
Follman, C.H.	MI063	Graham, A.M.	CH039	Hess, A.V.	CH014
Fong, H.	CH309T	Graves, D.D.	MA016	Hessel, C.T.	ME059
Fonseca, C.M.	MA305T	Green, S.N.	SP308T	Heuer, N.L.	ZO308T
Fontanez, A.O.	MA012	Green, W.A.	BE025	Higgins, M.M.	BI301T
Fortier, J.A.	EN026	Griego, E.V.	BO013	Hill, B.B.	CS006
Fortt Ahumada, J.A.	EV317T	Grigery, C.N.	ME024	Hill, J.M.	MI039
Foster, D.L.	CS050	Grill, B.	CS053	Hilton, J.O.	MA312T
Foster, T.L.	EV328T	Grochowski, J.C.	ME314T	Hincker, A.M.	MI020
Fox, C.H.	SP304T	Groff, A.F.	EV045	Hines, A.M.	EV043
Fransen, J.J.	SP021	Gross, C.T.	MI049	Hino, T.	EN335T
Fretz, B.M.	CH026	Grubaug, C.R.	EV092	Hippalgaonkar, N.R.	CS301T
Frisk, N.E.	BO026	Gruenauer, G.	MA009	Hippalgaonkar, V.R.	BO302T
Friskop, A.J.	BO053	Gu, M.	PH043	Hirpa, I.H.	BI055
Frison, B.A.	CS027	Guardamano, A.L.	ME314T	Hix, A.D.	EV101
Fritzler, A.S.	MI010	Guha, R.	BI070	Ho, B.J.	EN106
Futch, H.A.	ZO045	Guha-Gilford, T.	PH312T	Ho, T.	CH310T
Gabrielov, E.	ME051	Guillotte, T.B.	BO011	Hofmeister, L.H.	EN058
Gaete, I.	BO307T	Guimaraes Neto, V.M.	EN325T	Holmes, B.K.	MI016
Gaglani, S.M.	ME006	Guiroy, I.M.	BE011	Honan, S.G.	EV097
Galapia, D.B.	BO012	Gullickson, G.L.	ME095	Hong, W.	EN014
Gamalski, A.D.	CS313T	Gulmahamad, J.	BO007	Hong, W.T.	CH019
Ganapati, S.	CH306T	Gupta, N.	MI052	Hope, E.A.	SP006
Gao, G.	EN305T	Gutman, J.E.	BI019	Hope, K.M.	EN064
Gao, Y.	CS307T	Hack, S.R.	ME305T	Hopkins, R.S.	CH028
Garimalla, N.	MI301T	Hagen, J.T.	SP022	Horn, K.D.	ME009
Garner, D.T.	EN338T	Hailemariam, M.G.	EN031	Hornakova, M.	EA301T
Gary, T.A.	ZO008	Hakala, K.A.	EA302T	Horng, M.	ME030
Garza, P.D.	SP305T	Hall, A.S.	SP017	Horres, N.L.	PH306T
Gaston, J.M.	MA024	Hall, C.R.	MI044	Horton, D.R.	ZO012
Ge, S.	EV015	Hall, M.J.	MA308T	Horton, S.A.	EN340T
Ge, Y.	EN017	Halvorson, E.M.	EV302T	Hottel, L.E.	EV048
Gearhart, K.M.	BO008	Hammitt, M.B.	ZO048	Hotz, G.F.	EN021
Gee, A.H.	MI018	Han, Z.	CS307T	Hour, M.S.	CH020
Gee, J.L.	ME100	Hankins, P.L.	CH043	Howell, S.L.	SP302T
Germino, M.K.	BI016	Hao, S.S.	BI062	Howland, Z.B.	EN005

Hritzo, M.K.	ZO057	Jones, L.N.	ZO304T	Krakauer, M.	EN304T
Hsiang, E.Y.	ME001	Jones, R.P.	PH302T	Krasnov, P.S.	EN066
Hsing, P.	EN308T	Jung, H.	CS022	Kreutzer, E.J.	MA301T
Hu, J.Z.	MI042	Juraidini, C.A.	BE019	Krishnaswamy, N.	CS046
Hu, J.	BI068	Kalabayev, A.	MA313T	Kroo, E.R.	CS044
Huang, J.J.	BI011	Kalidas, P.K.	BI004	Kropf, S.R.	BE036
Huang, K.R.	SP306T	Kalin, J.D.	PH035	Kroubetz, A.S.	BE017
Huang, M.	MA033	Kaminski, S.	SP303T	Ksaibati, L.S.	MI026
Huang, R.	EN018	Kamper, D.E.	EV047	Kuan, A.T.	EV066
Huang, W.	EN308T	Kannan, A.P.	ME310T	Kungozhin, S.	CS057
Huber, J.W.	BO306T	Kapono, C.A.	ZO055	Kuo, P.	PH019
Hublely, L.M.	BI039	Karam, A.H.	MI014	Kuper, M.M.	EV001
Hubrig, A.L.	ME092	Katz, D.E.	BE023	Kurtz, E.B.	EN319T
Huerta Ruiz, M.	EN322T	Kauffman, E.J.	EV314T	Lai, C.	MA019
Huertas, J.	ZO047	Kaufman, D.B.	BO304T	Lake, B.M.	CS029
Huffman, M.E.	ME083	Kaundart, M.A.	MA005	Lambden, D.R.	SP305T
Huffman, N.M.	EN100	Kazda, A.	MA006	Lane, D.	EN334T
Hughes, D.G.	EV084	Kazi, R.R.	BI009	Langberg, S.R.	EA002
Hughes, L.C.	ME311T	Kazlouski, A.J.	SP003	Largo, S.R.	EV108
Hughey, S.M.	MI045	Kebede, N.A.	EV308T	Larsen, C.A.	BO027
Hulteng, M.A.	BE303T	Keefer, A.M.	ZO304T	Larson, E.L.	EV027
Humble, A.H.	MI031	Keeling, E.L.	EV039	Larson, R.W.	EN094
Hunewill, C.E.	EV312T	Kelly, R.D.	ZO044	Latrille Martinez, D.A.	EV317T
Huo, Y.	PH034	Kempes, M.P.	EN085	Latus, P.A.	EN071
Huppert, L.A.	EV059	Kendrick, T.P.	CH016	LaViers, A.E.	BI305T
Hurwich, J.A.	EN044	Kennedy, A.K.	BI069	LaViers, L.H.	BI305T
Hussain, S.B.	CH004	Khaidakova, G.	MI301T	Laviolette, J.L.	BI027
Hutchison, J.J.	BO302T	Khan, G.Z.	ME097	Law, K.	PH305T
Huynh, R.K.	ME313T	Khan, S.A.	MI043	Lawrence, S.K.	CH038
Huynh, R.K.	ME313T	Khan, T.A.	BI072	Lawrence, S.P.	ME055
Ikhleif, H.Y.	EN333T	Khatiazhvili, D.A.	EN301T	Lazza, M.C.	BE306T
Imafuku, S.	CH303T	Kho, M.T.	CH042	Leatherman, A.K.	MI019
Ingram, M.L.	EN032	Khritoshin, D.V.	MI307T	LeClaire, N.C.	CS016
Intakaew, N.	ZO310T	Kim, D.	PH049	Legg, T.A.	SP013
Ishikawa, M.	BO017	Kim, J.	ME074	Lei, Y.	EA010
Ismakaev, S.	MA304T	Kirk, A.C.	PH033	Leishman, L.W.	PH316T
Jachowski, N.R.	EA018	Kirkland, P.J.	EN069	Leotis, S.J.	EN307T
Jacobs, P.F.	MA030	Kirksey, V.L.	EV013	Lescano, F.C.	EV313T
Jaffa, K.N.	EV116	Klausner, H.J.	BO303T	Leung, J.G.	BI028
Jagadeesan, N.	ME039	Klein, S.L.	EN114	Levy, M.J.	ME319T
Jagoe, W.P.	EV122	Kleinstein, S.A.	ME325T	Li, C.W.	EV103
Jamison, P.M.	ME017	Klionsky, G.E.	MA040	Li, E.	EN057
Jang, S.	EN034	Kniss, J.F.	EV017	Li, J.W.	ME048
Jarrett, P.Y.	CS030	Knowles, C.D.	ZO001	Liang, J.A.	BI301T
Jeffery, N.M.	ZO023	Knowles, C.R.	EV028	Liebrecht, L.K.	EV009
Jenkins, C.M.	MI023	Knutson, E.M.	EN116	Liles, L.M.	BO040
Jensen, J.L.	EV114	Ko, T.S.	ZO024	Lin, D.	CH011
Jevning, H.M.	ZO041	Koffer, B.A.	BE312T	Lin, W.	EN015
Johns, C.E.	ME301T	Koffer, R.E.	BE312T	Lin, Y.	EA304T
Johns, J.A.	ME301T	Komander, J.K.	SP010	Linehan, J.D.	PH301T
Johnson, C.B.	MI005	Kominers, S.D.	MA015	Lingus, K.J.	EV038
Johnson, I.S.	EN068	Konda, N.J.	EV077	Linman, H.J.	BO018
Johnson, K.M.	BE301T	Konradova, M.	EA301T	Lintermans, N.E.	EA013
Johnson, K.T.	ME023	Konuk, E.	PH321T	Liu, M.	SP304T
Johnson, M.E.	PH011	Koril, L.R.	EN328T	Liu, M.	MI028
Johnson III, J.D.	BE301T	Kornev, A.B.	CH005	Liu, W.H.	ZO025
Jones, A.M.	EV333T	Korobitsyn, A.	CS056	Liu, Y.	BO006
Jones, B.E.	EA007	Kostoulas, C.D.	EV323T	Livers, S.M.	CH035
Jones, J.P.	EN072	Kosuri, Y.D.	PH317T	Llewellyn, D.C.	EV056
Jones, L.K.	EV030	Kozybakov, U.	MA313T	Lloyd, L.	CH041

Loebs, J.M.	EN323T	Martinez, M.B.	BE308T	Millan, A.	MA306T
Longtree, J.L.	CH047	Martinez-Rosario, P.	BE310T	Miller, W.E.	CH030
Lopes, S.M.	ME315T	Mascharak, S.	CH015	Millmier, C.J.	MI032
Lopez, A.	BI051	Mason, J.A.	EV316T	Mills, J.A.	PH314T
Lopez, E.A.	EV060	Masterman, M.	SP302T	Milman, K.R.	EV024
Lopez, J.D.	BE308T	Math, M.V.	BI065	Min, S.	MI314T
Lopez, N.A.	EA020	Mathews, M.G.	EN315T	Minard, J.E.	MI056
Lopez, T.	EV080	Matthew, R.P.	SP307T	Minehart, III, R.F.	EN059
Lopez-Febres, L.A.	BE310T	Matthews, S.R.	EN336T	Mirchandani, S.D.	EV031
Lopez-Gonzalez, A.J.	MA307T	Mavrogordato, A.W.	EN073	Mitchell, J.D.	CS038
Lou, A.Y.	EV105	Mazor, D.	EN327T	Miura, Y.	EN335T
Lou, Y.S.	EN036	McCann, C.D.	EN320T	Miyamoto, Y.	EV324T
Lourenco, M.d.	CH045	McCarron, T.A.	PH312T	Miyazaki, A.	CH303T
Lowe, J.D.	EN076	McCarthy, B.T.	EN019	Mohammed, M.K.	MI001
Loza, J.K.	ME043	McCarthy, C.E.	SP303T	Mohammed, Y.M.	BI002
Lu, Y.	BO025	McCowan, M.K.	PH314T	Monier, E.N.	ME307T
Lucy, R.H.	MA004	McCoy, J.J.	PH026	Monier Bautista, K.A.	ME320T
Luger, R.	CS306T	McCracken, K.M.	PH308T	Montoya, A.B.	EN112
Lukenda, N.	MI312T	McCray, P.	CH050	Montoya, H.	BE031
Luther, K.M.	ZO306T	McDonald, C.N.	ZO029	Mooney, J.E.	PH315T
Luttrell, B.A.	MI061	McEnaney, J.M.	EV102	Moore, E.P.	MI009
Luu, K.Y.	EV330T	McFadden, C.L.	BO312T	Moore, IV, J.P.	EN033
Lyon, T.G.	EN332T	McGettigan, E.E.	MI058	Moquist, S.J.	EV119
Ma, Y.	SP301T	McGowan, D.S.	ME302T	Morales, E.	BE035
Mace, K.G.	EN313T	McGregor, J.A.	PH004	Morales-Lugo, N.	MA014
MacGregor, M.A.	PH006	McIe, A.L.	ZO014	Morgan, C.R.	BO022
Machin, A.Y.	BE307T	McIntosh, A.M.	EV095	Morgenstern, K.	CH313T
Machorro Rojas, A.	EN322T	McKay, M.E.	BI021	Morikawa, E.T.	ZO035
Mackey, P.D.	BI032	McKemmish, L.K.	PH310T	Morris, Q.A.	SP304T
MacLeod, L.R.	ME093	McKeon, D.P.	EN337T	Morton, J.D.	EN302T
Madiraju, K.	EV106	McKinney, M.A.	EV306T	Mosiashvili, T.I.	MA001
Maggioni, E.C.	CS310T	McManimon, R.S.	PH320T	Mottadelli, R.	CS310T
Maghaldadze, N.G.	EN301T	Meacham, J.E.	CS054	Mottillo, S.	MI041
Magyar, P.M.	EA006	Medina Hernandez, J.A.	CS309T	Moulding, E.L.	ZO036
Mahendra, V.	BO055	Meehan, M.J.	BI079	Moulding, M.	EV062
Makelky, C.R.	BI080	Mehmood, N.	BO311T	Mount, G.	ZO020
Maldonado, A.	EA015	Mei, A.R.	EN039	Mousa, S.S.	ME037
Malhotra, S.	CH017	Melendez, E.A.	ME021	Moustafa, Z.D.	ZO056
Mallow, A.M.	MI306T	Melendez-Otero, J.C.	CS014	Mrizek, E.A.	EN330T
Mallow, S.E.	MI306T	Mendez-Garcia, J.	EV332T	Mukhar, R.S.	CS031
Malmquist, E.R.	BI038	Mendivil, A.	ZO042	Mukherjee, V.	CS017
Malone, J.L.	EN101	Mendoza, G.J.	ZO305T	Mukhortava, A.V.	PH303T
Maloney, L.M.	BO033	Mendoza, H.G.	SP018	Mulhall, M.	PH322T
Malz, A.I.	PH025	Mendoza, P.Y.	ZO305T	Mulligan, S.E.	CH027
Mammone, J.J.	BE042	Menezes, S.L.	PH021	Mullins, C.M.	CS058
Man, K.	BI014	Mercado, J.E.	EV313T	Mullins, P.E.	EV314T
Mangadlao, J.D.	MI011	Messer, W.H.	ME010	Mulloy, C.R.	MI303T
Mangat, J.S.	BI015	Messick, C.D.	EN023	Munoz, P.A.	EN105
Manshad, A.S.	CS019	Meyer, T.C.	EA303T	Muralidhar, V.	CS313T
Manzano, R.J.	PH014	Meyers, A.S.	EN061	Murphy, Q.L.	EN310T
Marash-Whitman, D.I.	EV099	Mi, M.	MI046	Murray, S.A.	MI034
Margishvili, L.E.	MA002	Michelena, E.D.	BO301T	Mynhier, K.N.	BE008
Marivate, H.B.	EN051	Micheva, N.I.	CH310T	Naber, J.J.	PH013
Marquardt, A.E.	EA011	Mierzwa, A.V.	EN024	Nadlman, A.R.	CS042
Marquez Palacios, M.J.	ME320T	Mikell, B.L.	MA046	Naegeli, K.M.	ME040
Marshall, J.	BE314T	Mikhaylovskiy, F.	MA304T	Naftz, D.C.	EV025
Martin, C.A.	SP020	Mikhaylovsky, O.V.	MA302T	Nagai, Y.	CH303T
Martin, H.A.	EN029	Mikkilineni, S.	BI303T	Nagel, J.L.	CH022
Martin, P.J.	ME077	Mikkilineni, S.V.	BI303T	Nagel, S.D.	EV117
Martinez, L.G.	EN321T	Miles, J.L.	MI017	Nangle, S.N.	MI003

Narvaez, J.A.	CH007	Parekh, J.K.	CS026	Qu, F.	EN339T
Nasir, M.	CS045	Park, C.	MI314T	Quintana, D.	EN011
Navarro, C.S.	CS035	Park, J.	BI023	Quispe Iquiapaza, M.L.	SP309T
Neely, R.R.	EA012	Park, P.J.	EA017	Racigh, S.A.	CH305T
Neuberger, A.J.	EN055	Park, R.H.	SP007	Rafes, C.A.	EN065
Ng, J.	EV326T	Parker, B.S.	ZO016	Rainville, R.B.	EN122
Nguyen, B.P.	EV315T	Parker, J.R.	MI311T	Raja, S.N.	ME029
Nguyen, C.V.	EN075	Parrott, D.J.	CS008	Ramachandran, R.	ME038
Nguyen, D.T.	MA311T	Pasricha, T.S.	BE018	Ramanlal, N.P.	MA003
Nguyen, T.T.	MA311T	Patel, A.R.	CH003	Ramasesh, V.V.	MA029
Nicholas, K.J.	ME035	Patel, E.	ME076	Rambhia, S.H.	ME071
Nida, B.A.	EV308T	Patel, K.S.	MI048	Ramesh, A.V.	PH317T
Niemann, A.L.	ZO059	Patel, M.V.	BO051	Ramesh, A.P.	BO044
Nieto- Polo Abanto, C.E.	BE313T	Patterson, M.L.	CH302T	Ramjeawan, R.	EV110
Nijhawan, S.	CS052	Paulk, K.L.	CH009	Ramos, L.	EV304T
Nikbakht, D.	BE041	Paulsen, L.F.	SP015	Ramzan, D.	BO311T
Nikolov, P.	CS305T	Paxton, P.N.	BE007	Ranade, R.G.	EN048
Nimarpan, K.	ZO310T	Pa` ahana, J.K.	BO050	Rangel, M.P.	EV329T
Nix, M.A.	EN037	Peart, B.J.	EN099	Rao, S.G.	BI013
Nixon, F.	CS015	Pendleton, M.M.	EN007	Rao, V.V.	EA003
Nong, X.	BI033	Peresich, L.M.	EV079	Rapoport, A.L.	SP303T
Norniella Parache, R.S.	PH036	Perez, A.R.	BO014	Raso, N.M.	ME062
Northcut, B.E.	EN087	Perez, M.T.	ME306T	Raspberry, P.K.	EV018
Nosakhare, E.	CH307T	Perez, W.	EN109	Ratai, D.	CS010
Notz, C.C.	BI035	Perez Castaneda, E.I.	BE313T	Rawal, K.	ME086
Novikova, M.A.	EV016	Peterson, H.A.	BO030	Rector, S.E.	EV029
Novodvorskiy, Y.	EN311T	Peterson, M.A.	EN306T	Redding, P.C.	BO041
Nunes, P.d.	BE305T	Petry, B.M.	EV050	Reddy, R.B.	EV310T
Nunes Pinheiro, A.D.	ME315T	Pham, L.D.	PH304T	Register, T.J.	PH309T
O'Sullivan, E.A.	BO305T	Phelan, C.M.	ZO039	Reichert, K.E.	CH008
Obaid, S.	ME063	Phelps, K.G.	ME054	Reid, A.E.	MI305T
Oberg, K.	MI035	Phipps, J.M.	BE003	Reigle, J.D.	EV006
Odlum, R.W.	EN320T	Pierce, A.G.	CS314T	Reile, J.L.	BE304T
Odnobokov, N.Y.	MA035	Pierre, J.I.	EV301T	Reinbold, S.K.	MI303T
Oh, H.	EV120	Pietrantoni, A.J.	BE010	Reinhold, K.E.	CS049
Ohr, D.R.	BO303T	Pilishvili, A.	BO021	Resch, R.W.	PH319T
Oliveira, P.M.	EN081	Pinnock, W.	BE309T	Rethlefsen, C.C.	MI015
Olson, M.R.	BO309T	Piyapramote, N.	CS041	Reyes, R.C.	ME306T
Olson, R.T.	EN009	Pizer, M.J.	PH028	Reyna, O.	EV064
Omonuwa, O.	CH307T	Plank, K.J.	CH058	Rezac, E.M.	ZO038
Ong, W.	EN305T	Plattner, D.L.	BI066	Rezvanian, J.H.	CS303T
Ontiveros, J.	PH318T	Polepeddi, L.K.	ME316T	Rhines, A.S.	ME085
Ortiz-Correa, Z.M.	MI309T	Pollack, B.A.	BO310T	Rhinesmith, J.L.	MI040
Osaki, K.K.	MA311T	Polmear, M.M.	ME316T	Rhodes, R.E.	MA028
Osentoski, A.M.	MI030	Polu, A.F.	ZO058	Richards, K.S.	BO035
Oster, E.	MA038	Ponne, B.G.	BE015	Ricq, E.L.	SP023
Otobhiale, B.I.	EN043	Posey, S.E.	ME311T	Ridenour, A.L.	EN340T
Owen, E.R.	EV096	Post, S.M.	EN020	Riegel, R.J.	EV037
Padilla, C.	MI008	Potasiewicz, K.L.	ZO050	Ritter, A.M.	EV055
Padilla, V.	MA309T	Potter, A.L.	ME309T	Ritter, J.	CH304T
Painter, K.B.	EA008	Potter, K.V.	ME309T	Rivas Rodriguez, K.M.	BE047
Palaniappan, A.M.	SP012	Powell, A.W.	CS001	Rivera, M.L.	MA305T
Panchamia, R.K.	CH061	Powell, B.C.	BI047	Rivera Santos, S.E.	ME067
Pandey, N.R.	MA018	Powell, J.H.	MA017	Rivera-Garcia, B.	MI013
Pandit, C.M.	EV073	Powell, T.L.	EV003	Roark, M.M.	MI036
Pang, G.C.	MI313T	Preston, R.L.	EA303T	Roberts, E.G.	EA303T
Paniagua, E.L.	PH039	Priester, J.L.	BI026	Roberts II, J.	ME049
Pappano, N.E.	CH033	Ptichkin, M.A.	MA302T	Robillard, J.J.	EN040
Pardee, C.B.	EV316T	Qiu, S.	ME321T	Robinson, B.W.	BO047
Paredes, D.	BI057	Qiu, S.	BO057	Robinson, E.L.	BE301T

Rochet, J.	ME308T	Schroeder, J.R.	MI027	Slane, G.C.	CH002
Rodgers, W.C.	EN336T	Schuetz, N.M.	BO054	Small, B.L.	MA023
Rodriguez, I.G.	EN317T	Schulte, M.L.	CH066	Smaltz, D.J.	CH048
Rodriguez, M.G.	BE034	Schultz, C.B.	PH016	Smith, C.L.	EV115
Rodriguez-Santa, N.M.	BO036	Schulz, S.	CH012	Smith, D.S.	CS039
Rodriguez-Torres, K.J.	MA307T	Schwank, B.A.	MI051	Smith, E.A.	PH302T
Rogers, C.S.	BI071	Schwarber, A.K.	EV112	Smith, L.W.	EV121
Rogers, H.N.	PH046	Schweiss, H.M.	EN041	Smyth, A.P.	EN082
Rohatgi, P.K.	ME050	Schwob, A.E.	BI054	Snitker, G.J.	BE020
Rohret, S.A.	SP005	Scott, R.A.	EV075	Soderberg, L.J.	MI301T
Rojas-Quiros, D.C.	EV334T	Scott, W.E.	PH304T	Sokolov, A.	EV325T
Rollins, A.K.	PH037	Segal, M.	BI075	Solis- Rojas, V.E.	CS315T
Roquero, M.A.	PH307T	Selinger, M.C.	BE050	Solomon, J.M.	CS051
Rosario-Torres, D.M.	MA013	Sells, A.M.	EV104	Soltys, M.K.	CH064
Rosensteel, T.T.	BI061	Seman, S.R.	EV093	Somsikov, D.A.	CS005
Rossi, P.J.	ME002	Semenkovich, N.P.	ME096	Song, D.D.	EV307T
Rosswurm, E.M.	BI034	Servas, A.T.	ME027	Song, Y.	BO049
Rotkevich, A.	MA007	Sfeir, N.	BO005	Sorensen, J.W.	BO306T
Ruiz, M.M.	ME303T	Shadfan, B.H.	BO304T	Sorensen, K.	EV022
Rumala, C.Z.	BO002	Shaffer, H.H.	CH056	Sorum, E.D.	EN030
Rumery, R.L.	EN326T	Shafi, R.	EN312T	Soto, G.	EV086
Rummel, M.R.	ME318T	Shah, K.S.	ME072	Soto, N.	EV087
Rutherford, E.M.	MI021	Shah, S.N.	BI081	Spadaccia, M.R.	BI045
Ruzic, J.D.	EV307T	Shaikh, N.A.	BO058	Spahn, C.S.	EN098
Ryu, M.	EV323T	Shaket, L.A.	BI076	Sparling, K.M.	ZO003
Sabapathy, K.V.	ZO309T	Shakil, S.S.	ME084	Sparrow, R.J.	ME087
Saenger, S.L.	EN331T	Shami, F.	BI067	Spikes, S.D.	MA303T
Saez, A.O.	ME308T	Shanah, A.A.	EN103	Sridhar, B.V.	BO034
Saez, G.D.	CH046	Shao, Q.	CH029	Srinivas, M.L.	MI029
Sakuda, H.	CS048	Shaw, C.E.	ME041	Srinivasan, H.M.	CS303T
Samsing, J.G.	SP016	Shi, X.	EV311T	Stagg, M.C.	CS037
Sanchez, E.C.	PH318T	Shillington, R.L.	EN045	Stalker, A.E.	BE053
Sanchez, T.M.	SP309T	Shinsel, A.N.	ZO303T	Stanton, J.C.	BE009
Sanchez Zalazar, M.I.	BE307T	Shirer, K.R.	PH319T	Starcke, C.C.	BO015
Sanderlin, K.J.	ZO018	Shkuro, S.A.	CH023	Steed, J.B.	EV046
Sanderson, E.M.	BE309T	Shubnikov, A.Y.	MA031	Steen, M.K.	EV005
Sandoval, Z.M.	BO024	Shults, R.C.	PH044	Stelly, A.B.	BI012
Sankur, O.	CS055	Shunin, A.Y.	MI307T	Stelly, B.T.	EV314T
Sanning, D.F.	ZO031	Shupe, W.J.	PH012	Stevens, W.J.	EV333T
Saparamadu, N.V.	PH310T	Sicard, A.B.	EN121	Stewart, A.J.	EV057
Saraf, S.V.	BI036	Sickels, S.N.	BE002	Stewart, L.M.	BO032
Sarasija, S.	ZO049	Siden, C.G.	CS043	Stidd, R.L.	BE038
Sarkozi, M.K.	PH320T	Sider, A.D.	CS301T	Stoughton, S.A.	PH311T
Sarma, N.	ME081	Sider, G.	CS306T	Strausbaugh, D.M.	BE304T
Sartor, T.E.	EN330T	Sidhu, G.S.	PH010	Streiff, C.T.	EV306T
Sass, R.E.	ZO006	Sidman, A.D.	EN013	Stricherz, J.L.	PH040
Sathananthan, S.	ME044	Sieck, D.C.	MI308T	Strickland, A.M.	CH036
Sautin, Y.Y.	BI020	Siler, A.L.	ME004	Strickland, Z.C.	ZO022
Sayas Hernandez, J.A.	CS309T	Sillcox, J.M.	MA042	Stunkard, K.M.	EN027
Schaer, C.H.	ZO054	Silpe, J.	ME094	Stunzi, J.R.	MI059
Schaffer, T.E.	ZO030	Simmers, M.K.	EN086	Su, W.	CS307T
Schleich, T.L.	ME312T	Simmonds, B.A.	EN110	Suarez, A.M.	EV318T
Schlievert, A.C.	EN092	Simon, A.	CS308T	Suarez, G.S.	ME303T
Schlottmann, C.A.	BO309T	Simpson, J.M.	EN050	Suarez, L.M.	CS312T
Schmerling, E.F.	MA303T	Singh, T.	ME022	Suazo, S.	EV324T
Schmerling, J.F.	MA303T	Sinha, S.L.	EN074	Suh, C.Y.	BI050
Schmidt, N.L.	BE052	Sink, S.D.	EV320T	Sullivan, S.K.	EV008
Schmidt, S.J.	EN111	Siss-Zomer, F.S.	EV334T	Surguladze, R.L.	MA021
Schneider, H.M.	EV058	Sister, T.	BE032	Sutherland, C.M.	EV301T
Schneider, S.L.	BI063	Sizer, I.	EV327T	Suzuki, T.	EV107

Svab, J.	EN119	Turner, J.C.	EA001	Weegman, M.M.	EV305T
Swartzfager, C.L.	BO009	Turner, J.R.	EN336T	Weegman, M.D.	EV305T
Swartzfager, D.W.	EV303T	Turner, S.T.	EV309T	Welcker, K.E.	ZO034
Swartzfager, R.W.	EV303T	Turnquist, R.M.	ZO060	Welsh, E.J.	EV011
Sylvester, A.N.	CH001	Tvaruzkova, Z.	BO056	Wermuth Figueras, S.L.	CS036
Sylvester, M.L.	ME042	Ullrich, D.M.	ME324T	Werner, A.P.	PH029
Symanow, K.A.	CS020	Umez-Eronini, I.U.	EN077	Wheeler, L.P.	ZO007
Symm, A.M.	ME070	Underbakke, K.T.	BI006	White, D.L.	EV051
Takahashi, T.M.	MI313T	Unsworth, B.T.	EN060	White, J.C.	ME073
Talib, K.B.	EV321T	Uskup, D.K.	EV040	Wilde, B.R.	EV061
Tandon, M.	EN329T	Valentine, M.M.	EV111	Wilfahrt, M.L.	MI302T
Tarleton, J.C.	EN028	Valles, N.M.	ZO307T	Wilfahrt, S.A.	MI302T
Tartaglia, C.E.	ME053	Van Cott, T.J.	CS024	Wilke, T.W.	EV100
Tasleem, M.	BO311T	Van Prooyen, S.M.	BO038	Willard, A.J.	PH306T
Tatum, B.M.	MI024	Vanderburg, S.B.	EV081	Williams, E.A.	CH057
Tavara, M.A.	EN070	VanWinkle, Z.J.	BI031	Williams, S.D.	CH311T
Taylor, J.A.	EV074	Vardhana, A.A.	MA043	Wilson, D.M.	CH024
Teague, Z.E.	ZO011	Vargas-Valenciano, E.	CS315T	Wilton, A.E.	CH059
Tedja, M.	ME307T	Vasquez-Sancho, F.N.	CS315T	Winegar, D.R.	EN332T
Teixeira Roberto, D.M.	EN325T	Vasudevan, J.	ME012	Wojakowski, M.M.	ZO027
Thaemert, A.M.	EV014	Vazquez, J.R.	MA039	Wolf, H.L.	EA019
Thomas, D.E.	ME032	Vechery, A.K.	EV035	Wolff, S.M.	MI304T
Thompson, B.L.	BO028	Vega Otero, L.A.	BO039	Wolochow, J.L.	SP027
Thompson, K.A.	EN022	Velasquez Bautista, I.	CH312T	Wonders, H.A.	ME318T
Thompson, K.L.	BE016	Vera, M.d.	BI302T	Wong, C.D.	EV320T
Thompson, L.L.	EN083	Veres, A.	BI053	Wong, K.	PH305T
Thompson, R.H.	EN316T	Verwholt, D.T.	BE027	Wong, S.C.	EV335T
Thurmon, A.L.	ZO043	Viradia, R.A.	CH308T	Wong-Lei, Y.W.	EV334T
Thurmon, J.T.	EN326T	Vitale, R.J.	BI059	Woo, G.H.	EN078
Tierney, M.R.	MA010	Vlahos, J.D.	ME323T	Wood, J.M.	CS011
Tinder, P.C.	EV007	Vosters, S.L.	BO023	Woods, B.L.	PH316T
Tiwari, M.V.	EN093	Vyas, P.S.	ME034	Worlax, H.E.	ME064
Tkachenko, M.S.	CS033	Wafford, E.L.	EV091	Worley, J.L.	EN104
Todd, C.J.	EN319T	Wagner, C.M.	ZO002	Wray, A.W.	PH038
Tomsheck, C.D.	EV012	Walchuk, Z.M.	EN053	Wu, G.	CS304T
Toribio, T.J.	ME312T	Walker, Q.M.	BI017	Wu, J.C.	EV083
Torres, D.M.	ME317T	Walker Jr., L.J.	PH018	Wu, J.	ZO026
Torres-Aviles, M.D.	BI018	Wallace, N.N.	EV070	Wu, L.	CS021
Tosun, H.	CS009	Walsh, J.J.	EV315T	Wu, M.Y.	PH311T
Toub, L.N.	ME310T	Wamble, L.T.	CH301T	Wu, Y.Y.	ZO021
Townley, J.A.	BO003	Wang, C.	CH018	Xiao, X.	EN309T
Tran, A.H.	CH309T	Wang, C.	CH021	Xie, X.	MI022
Traner, G.A.	EN323T	Wang, D.Z.	MA027	Xu, S.	EN091
Trejos Castro, D.	EV332T	Wang, D.D.	EN311T	Xu, Y.	CS025
Trettel, S.J.	PH027	Wang, J.Z.	EN314T	Xu, Z.	EN309T
Trevino, M.N.	BO029	Wang, J.H.	EN025	Yadava, R.	EN329T
Tripp, J.E.	ME047	Wang, S.	EN047	Yakaitis, S.P.	ME321T
Tripuraneni, V.	ZO028	Wang, S.	CH025	Yan, F.	SP301T
Troncoso, A.	CH305T	Wang, Y.	EV311T	Yang, F.	BI082
Troup, J.D.	EN302T	Wang, Y.	PH009	Yang, J.C.	ME045
Trubnikov, V.N.	MA302T	Ward, N.K.	ZO017	Yang, K.Y.	BI022
Trudel, T.A.	EN079	Warren, A.D.	MI002	Yang, Q.	ME020
Trusheim, M.E.	EN108	Waseem, H.	PH301T	Yawn, K.J.	BO043
Tsai, P.	ME060	Wasser, F.	PH322T	Yeh, Y.	EA304T
Tsang, H.A.	CH013	Watson, C.G.	BE315T	Yi, X.	SP306T
Tse, J.L.	BI052	Watson, W.D.	BE051	Yilmaz, E.	PH321T
Tse, L.W.	ME028	Weaver, A.M.	CH311T	Yingling, C.A.	EV068
Tucker, C.E.	MA041	Weaver, J.M.	EV078	Yoshifuji, K.	EN335T
Tuley, K.	MA036	Webb, M.J.	PH023	Young, W.C.	CH060
Turner, C.A.	ZO053	Webb, R.M.	SP011	Yu, H.	CS304T

Yuanyuan, G.	EN309T
Yurkanin, A.M.	ZO306T
Zacharias, Z.R.	ZO301T
Zakharov, I.S.	CS311T
Zaman, S.A.	BE311T
Zambrano, P.M.	BE024
Zang, P.	ZO009
Zaske, L.M.	BO016
Zaurova, M.	ME031
Zaworski, I.R.	PH306T
Zelnio, H.K.	CS018
Zenisek, S.M.	BI048
Zhang, A.M.	CS312T
Zhang, B.	ZO302T
Zhang, J.C.	BI046
Zhang, Y.	CS028
Zhang, Z.R.	PH001
Zheng, Y.	MI060
Zhong, Y.	CH010
Zhou, J.C.	BI078
Zhou, Y.	CH055
Zhu, C.	BI037
Zhu, X.	MA025
Zhu, Y.	SP026
Zimmerman, L.A.	BI043
Zinshteyn, B.	BI074
Zulkifli, N.b.	EV321T
Zvenigorodsky, J.B.	ME323T

# FINALIST STATISTICS

CATEGORY	TOTAL FINALISTS	PREV ISEF	-- SEX --		----- GRADE -----			
			M	F	9	10	11	12
Behavioral and Social Sciences	87	10	33	54	12	11	26	38
Biochemistry	92	16	32	60	11	19	19	43
Botany	86	15	45	41	14	23	22	27
Chemistry	96	13	51	45	11	14	25	46
Computer Science	94	12	83	11	5	16	33	40
Earth Science	29	6	9	20	4	2	13	10
Engineering	213	32	159	54	20	44	52	97
Environmental Sciences	198	32	88	110	26	46	63	63
Mathematics	75	10	58	17	5	9	32	29
Medicine and Health	154	32	58	96	12	35	56	51
Microbiology	93	20	36	57	16	15	26	36
Physics	97	16	62	35	12	13	32	40
Space Science	48	7	25	23	5	4	19	20
Zoology	82	15	24	58	7	25	21	29
Team Project Finalists*	514	65	291	223	54	107	154	199
---- TOTAL ----	1444	236	763	681	160	276	439	569

\* There are 232 total team projects.