

Intel Science Talent Search

The Science Talent Search was created to discover and encourage high school seniors who demonstrated exceptional ability in science, math and engineering through individual research projects. Over the years the Science Talent Search has become an institution, a prestigious tradition widely approved and supported by the academic and scientific communities. Many of the young scientists discovered by the STS have gone on to distinguished careers, including six who have won the Nobel Prize.

Science Service, a nonprofit organization whose mission is to advance the understanding and appreciation of science through publications and educational programs, has administered the Science Talent Search since its inception in 1942. Educators, scientists, engineers and journalists across America have enthusiastically cooperated in this annual activity -- a pinnacle event for high school seniors focused on science, math and engineering.

2005 Semifinalists

The Semifinalists of the 64th Science Talent Search were chosen from among 1600 entrants representing 508 high schools in 47 states, the District of Columbia, Puerto Rico and two overseas schools. From this group of 300 Semifinalists, 40 Finalists will be chosen to attend the Science Talent Institute in Washington, D.C. from March 10-15, 2005. During their visit in Washington, the Finalists will present their research to the public, participate in final judging and share in \$530,000 in scholarships.

Each of the 300 students named a Semifinalist in the Intel Science Talent Search will receive a \$1,000 award for their outstanding science research. These awards will be mailed to the Semifinalists after the Science Talent Institute, in April 2005.

Additionally, to recognize excellence in teaching and school support of individual student research, every school will receive an award of \$1,000 for each Semifinalist named in the Intel Science Talent Search. This award must be used to further excellence in science, math and engineering education at the recipient school. In the case of home schooling, the awards will be given to the affiliated school/district of the home school. The award will be mailed to the school in late Spring, upon the principal's completion and return of the School Award Program Application.

Many colleges and universities regard the Semifinalist award to be evidence of exceptional scientific promise. Each Semifinalist is furnished with certificates of this accomplishment, which may be sent with their applications for college admission and scholarships. A listing in this book, as well as at www.sciserv.org/sts, should be accepted as equivalent certification of the honor.

The Finalists will be announced January 26, 2005 and published in the January 29, 2005 edition of *Science News* magazine. A copy will be sent upon request.

This listing of Intel Science Talent Search Semifinalists is compiled by Science Service, based upon information provided by each student in their entry form. If the student's city of residence differs from that of her/his school, it will be listed.

ARIZONA

Flagstaff

Flagstaff High School

Cahill, James Andrew (17)

Assessment of Equinoctial and Cross Quarter Alignments of Anasazi Origin in the Lomaki Pueblo of the Wupatki National Monument

ARKANSAS

Hot Springs

Arkansas School for Mathematics, Sciences, & the Arts

Komander, Johann Kasper (18), Greenwood

Near-Infrared Albedo and Flux Variation of Saturn's Rings at 2.00 μm

CALIFORNIA

Alhambra

Alhambra High School

Hu, Jiamin (17)

The Role of Kinesin II in Endomembrane Trafficking in Rabbit Lacrimal Acini

Arcadia

Arcadia High School

Cheng, Allen (16)

Impact of Impaired Mitochondrial DNA Repair on Mouse Brain

Carson

California Academy of Mathematics & Science

Chirayath, Ved (17)

Approaching Dawe's Limit: The Photometric Detection of an Extra Solar Planetary Transit and High Resolution Imaging of the International Space Station

Cerritos

Gretchen Whitney High School

Rizal, Rachel Elise Aquino (17), La Mirada

Examining Potential Transcriptional Gain-of-Functions by p53 Cancer Mutants Through Interactions with p73 Isoforms

Chico

Pleasant Valley High School

Rosenhaus, Vladimir (17)

Method for Determining Albedo of Venus by Amateur Astronomer Using Small Aperture Telescope

Woodbury, David Arejula (17)

Magnetoresistance in Co/Al₂O₃/Co Granules/Cu Magnetic Tunnel Junctions

Cupertino

Monta Vista High School

Kim, Jong-Moon (17)

Applying Dynamic Markov Random Fields for Sensor Data Analysis

Kim, June-Ho (17)

An Investigation into Multiple Sclerosis: Antibodies to CD44 and $\alpha_4\beta_1$ Differentially Affect Myelin-specific T Cell Responses

Encinitas

San Dieguito High School Academy

Goldin, Aaron Sargent (17)

Autonomous Gyroscopic Wave-powered Generator: Invention of a New Energy Conversion Technology

Fullerton	<u>Troy High School</u> Lu, Diana (16) <i>Theoretical Mechanisms and Kinetics for the Gas-Phase Reactions of Sulfur Dioxide with Simple Criegee Intermediates</i>
Irvine	<u>University High School</u> Mandelstam, Olga V. (17) <i>A Study of the $3x+1$ Transformation and Its Continuous Limit</i>
Los Angeles	<u>Milken Community High School</u> Skrzypek, Joshua Estrin (17), Pacific Palisades <i>Measurement of the Ion-Acoustic Dispersion Relation in a Spectrum of Incoherent Waves</i>
North Hollywood	<u>Harvard-Westlake School</u> Layne, Scott Solomon (18), Pacific Palisades <i>High Temperature Ferromagnetism in Chromium-Doped Indium Oxide Semiconductor Thin Films</i>
Pebble Beach	<u>Robert Louis Stevenson School</u> Berry, Amanda Gail (17), Carmel <i>Are Stock Options Congruent with Maximizing Share Holder Value? A Mathematical Derivation</i> Hess, Amber Irish (17), Carmel <i>Digitally-Enhanced Thin-Layer Chromatography: An Inexpensive, New Technique for Qualitative and Quantitative Analysis</i>
Sacramento	<u>C. K. McClatchy High School</u> Harris, Kelley (17) <i>Comparative Structural and Functional Characterization of a New Z-DNA-dependent Protein Kinase</i>
San Jose	<u>Andrew P. Hill High School</u> Ha, Ally (17) <i>In-vitro 3-D Dose Distribution Measurements in Prostate Brachytherapy</i>
Valencia	<u>Valencia High School</u> He, Darren (17), Castaic <i>Phospholipase C-ϵ (PLC-ϵ) Inhibits the Function of Ras in <u>Caenorhabditis elegans</u></i>
COLORADO	
Colorado Springs	<u>Rampart High School</u> Smith, Lauren Marie (18) <i>Treatment of <u>Xanthomonas campestris</u> pv. <u>Vesicatoria</u> (Xcv) Induced Bacterial Blight with UV-altered Bacteriophages</i>
Greenwood Village	<u>Cherry Creek High School</u> Sridhar, Balaji V. (17), Denver <i>Optimization of a Novel Process of Removing Arsenic from Drinking Water Treatment Sludge</i>
CONNECTICUT	
New Fairfield	<u>New Fairfield High School</u> Ingraham, Stephen Harold (18) <i>Superluminal Electromagnetic Wave Propagation in the Near-Field</i>

New Milford

New Milford High School

Mandeville, Elizabeth Gage (17), Sherman

A Paleolimnological Analysis of the Creation and Development of Candlewood Lake

Westport

Staples High School

Mulligan, Shane Evan (17)

The Construction of a Self-Assembling DNA Nanohexagon Capable of Protein Storage and Release

DISTRICT OF COLUMBIA

Washington

Sidwell Friends School

Powell, Samuel Hayden (17), Chevy Chase, MD

Characterizing Collisional Dynamics of Macroscopic Particles in a Viscous Fluid

FLORIDA

Fort Myers

Canterbury School

Langberg, Sarah Rose (18)

Morphology and Geochemistry of the Southern Juan de Fuca Ridge: Evidence for Off-Axis Volcanism

Ft. Lauderdale

Pine Crest School

Fernandez, Cristina Victoria (17), Pembroke Pines

abp1, A Homologue of the Human CENP-B Protein, Is Required for Efficient Initiation of DNA Replication in the Fission Yeast S. pombe

Gainesville

Eastside High School

Jones, Britta Elyse (18), Archer

Transmission Electron Microscopy Investigations of Triggered-Lightning Oxide Fulgurites

Jacksonville

Stanton College Preparatory High School

Eng, Donald (17)

Factors Affecting Cooperative Robotic Behavior

Miami

Coral Reef Senior High School

Ramachandran, Reshma (17)

Immunostimulating Properties of an Herbal Polysaccharide from Tinospora cordifolia for Biodefense and Treatment

Ying, David Qianli (16)

Meristem-Tip Culture Boosts Yield of an Important Sweet Potato Cultivar, 'Picadita'

Dr. Michael M. Krop High School

Knee, Shannon Alexandra (17)

Predicting Familial Hypertrophy Cardiomyopathy Mutations and Their Effect on the Physiological Function of Cardiac Muscle Contraction

Miami Palmetto Senior High School

Nong, Xiaoyun (17)

Inhibitors Modulate E-cadherin, N-glycosylation: Structure-Function Relationship and Implications for Antimetastasis

Pembroke Pines

Charles W. Flanagan High School

Jotwani, Pooja Sunil (17)

The Effects of a Quark Matter Core on Neutron Star Cooling

Satellite Beach**Satellite High School**

Bewerse, Catherine Nicole (17), Merritt Island
Super Cool, Super Strong

Spring Hill**F.W. Springstead High School**

Bartlett, Megan K. (17)
The Effects of Iron Deficiency and Excess on Zinc Uptake and Translocation in Water Hyacinth

Vero Beach**Vero Beach High School**

Fichtelman, Jon Roger (18)
As the Worm Turns: Altered Gravity's Pathologic Effects on Dugesia trigrina as a Cancer Model

GEORGIA**Conyers****Rockdale County High School**

Costley, Mitcham Hudson (18)
Effects of Methanol/Ethanol Ratios and Circuit Load on Fuel Cell Performance

Wu, Jodie Zujone (17)
The Effect of Red LED Irradiation on Neuronal Survival

Duluth**Northview High School**

Chen, Sisi Monica (17)
Expressing Integers Using the Least Number of 1's

Ling, Vincent Yung (17), Alpharetta
Unlocking the Secrets of Aging: Life Extension in Drosophila Using MsrA

IDAHO**Boise****Timberline High School**

Ye, Diana Fan (16)
Can Average Color Guide Visual Search? A Study of Statistical Cueing

Pocatello**Century High School**

Hanin, Boris Leonid (16)
A Remarkable Property of the Geometric Center of Mass for Points on a Conic Section

ILLINOIS**Aurora****Illinois Mathematics & Science Academy**

Bhobe, Rohan Shailesh (17), Woodridge
Controlled Large-Scale Synthesis and Magnetic Properties of Single Crystal Cobalt Nanorods

Credo, Timothy Frank (17), Highland Park
Picosecond Time-of-Flight Measurement for Colliders Using Cherenkov Light

Govind-Thomas, Vijay (17), Schaumburg
The Role of Glycosylation on PrP Protein Trafficking and Acquisition of Prion-like Characteristics

Gulati, Abhi (18), Bloomington
Coloring Finite Abelian Groups to Avoid Monochromatic Solutions to a Given Equation

Haas, Lyra Creamer (17), Wheaton
Using Textiles to Date Sites in the Norte Chico, Peru

Keller, Andrew Joseph (18), Lindenhurst
Computational Prediction of Song Genre with Recurrence Quantification Analysis

Chicago

The University of Chicago Laboratory High School

Easton, Alice Van Antwerp (17), Homewood
A Biological Model for Neurotransmitter Release

Rohrman, Brittany Ann (17), Whiting, IN
Quantum Chemical Design of Hydroxyurea Derivatives for the Treatment of Sickle Cell Anemia

Evanston

Evanston Township High School

Franks, Alexander Myers (18)
Understanding Evolved Strategies for System-wide Coordination in Noisy Environments

Jones, Matt Knight (17)
High Frequency Kink Interaction in Vertically Vibrated Granular Media

Kath, James Evon (17)
Planet Habitability in a Binary Star System

Naperville

Naperville North High School

Yang, David Cherngchiun (18)
Pointed Isoperimetric Inequalities

Niles

Notre Dame High School for Boys

DeVience, Stephen Jacob (18), Chicago
The Photoelectric Effect Spectrophotometer

IOWA

Urbandale

Urbandale High School

Kausteya, Roy (17), Des Moines
Low Pressure Gas Mixtures for a Parallel-Plate Avalanche Chamber

KENTUCKY

Louisville

duPont Manual Magnet High School

Frank, Evan Eric (18), Fisherville
Thrust Optimization of Asymmetrical Capacitors

MAINE

Cumberland Center

Greely High School

MacLeod, Morgan Elowe (17), Cumberland
A Search for Variable Stars in Two Northern Open Clusters

South Berwick

Berwick Academy

Moebius, Michael Gerhard (17), Durham, NH
Remote Sensing of Jupiter's Flattened Parabolic Shock

MARYLAND

Baltimore

Baltimore Polytechnic Institute

Harrison, Ryan Marques (17)

A Novel Approach to Modeling pH-Sensitive Regions Within Proteins

Bethesda

Walt Whitman High School

Kominers, Scott Duke (17)

On Universality Properties of Positive-Definite Integral Quadratic Forms

Clarksville

River Hill High School

Fu, Anqi (17), Dayton

The Effect of Metal Additions on the Magnetocaloric Properties of the $Gd_5Ge_2Si_2$ Magnetic Refrigerant Compound

Thakor, Mitali (17)

Stem Cell Tissue Engineering Using a Nanowire-Hydrogel Matrix

Zhang, Christina Yiwei (17), Dayton

Neuroprotective Effects of Bacterial Glutamic Acid Decarboxylase Against Epilepsy-Induced Brain Damage

Ellicott City

Centennial High School

Lee, Angela Singing (17)

*Phosphoinositide 3-Kinase Signaling Regulates Autophagic Programmed Cell Death During *Drosophila* Development*

Potomac

Winston Churchill High School

Germain, David Aaron (17)

Novel Electron Tomography and Computational Image Analysis Methods Applied to Nanoscale Determination of Cell Architecture

Silver Spring

Montgomery Blair High School

Abutaleb, Ameer Osama (17), Derwood

A Nonlinear Analog Scattering VLSI Model for the Cochlea

Bullen, Peter Stanley (17), Gaithersburg

Effect of Grain Misorientation Texture on the Fractal Character of Heated Calcite

Detzner, Patrick John (18)

The Effects of Powder Concentration and Wire Length on the Attenuation of Microwave Powder Filters

Dunn, Jeffrey Scott (17), Potomac

Evaluation of Soil Moisture Predictions from GSWP Land Surface Schemes

Forbes, Michael Andrew (17)

Capacitated Vehicle Routing and the k -Delivery n -Traveling Salesman Problem

Fraeman, Abigail Ann (17), Olney

Modeling the Distribution of Comets Around the Star IRC +10216

Geng, Sherri Yifan (17), Rockville

Automated Seizure Detection Using Statistical Analysis of EEG Time-Domain Signals

Montgomery Blair High School (cont'd)

Kovac, Justin Alexander (17), Miami, FL

The Effects of Warm Core Rings on Hurricane Intensification in the Gulf of Mexico

Lee, Tencia Cathay (17), Gaithersburg

Probing Superstring/M-Theory with Quantum Mechanics

Park, Renee Hei-kyung (17), Spencerville

The Effects of Atmospheric Turbulence on Simulated Starlight in a Low-Pressure Telescope Environment

Vasudevan, Prasanna (17), Gaithersburg

Toward Early Detection of Alzheimer's Disease: Developing a Method to Determine Activity in the Cerebral Cortex Using Surface Analysis

Wight, Samuel Friend (18), Rockville

Improved Sequences for Code Division Multiple Access in 3-D Imaging LADAR

Yin, Kenhui (17), Rockville

A Mathematical Model of AV Conduction Block in Time-Domain

MASSACHUSETTS

Acton

Acton-Boxborough Regional High School

Dao, Eugene Vinh (18), Boxborough

Optical Coherence Tomography for Under-Skin Non-Invasive Microscopy

Andover

Phillips Academy

Grover, Vaishali Kiran (17), Miami, FL

The Development of an Environmentally-Friendly Enzyme Based Antifouling System

Gupta, Krishna Kumar (17)

Photochemistry of CH₃OCCIO and Dissociation of the Nascent CH₃OCO Radical

Boston

Boston Latin School

Yuan, Yan Emily (17), West Roxbury

Pharmacological Studies on Planarian Regeneration

Brookline

Brookline High School

Kehayias, Pauli Mark (17)

Development of a Portable X-Ray Instrument for Body Composition Analysis

Tsao, Albert (17)

Optimal Properties of Silica Nanofiber Loops

MICHIGAN

Beverly Hills

Detroit Country Day School

Ramesh, Rahul (17), Troy

Testing a DNA-based Biosensor for Escherichia coli Detection in Water Samples

Subramanian, Muthiah (16), Bloomfield Hills

Abelson Tyrosine Kinase Helps Regulate Myosin II Activity During Axon Guidance at the Drosophila Embryonic Midline

Livonia **Winston Churchill High School**
Bhagwat, Samuel Mohun (16)
Classification of Determinantal Sequences

Spring Lake **Spring Lake High School**
Lowing, Jennifer Lynn (18), Nunica
Growing on the Lunar Surface: The Impact of Reduced Gravity on Growth of Coleus blumei

MINNESOTA

Roseville **Roseville Area High School**
Barany, Michael Jeremy (17), Falcon Heights
Ring Around the Nitrogen: A Synthetic Pathway to a Class of Protecting Groups for Organic Synthesis

MISSOURI

Chesterfield **Parkway Central High School**
Lee, Intelly Shang-Zhi (17), Town & Country
X-Ray Structure Analysis of a Butadiene Compound: Evaluation of Crystal Packing as a Basis for Possible Polymorphism

Columbia **David H. Hickman High School**
Palaniappan, Anand (17)
Adjusted Kalman Filter-based Multiple Hypothesis Tracking of Millions of Near-Earth Objects

Saint Louis **Ladue Horton Watkins High School**
Semenkovich, Nicholas Paul (18)
Using Comparative Genomics and Bioinformatics to Analyze the Effects of Single Nucleotide Polymorphisms on Disease and Aging

NEW JERSEY

Cherry Hill **Cherry Hill High School East**
Kumar, Vipul (17)
Gene Expression and Regulation on Drosophila melanogaster: An Analysis of the Promoter Targeting Sequence

Freehold **Freehold Borough High School**
Swaminathan, Swarup Sai (17), Howell
Discovery of the Predictors of the Standard Heats of Formation of Group 1 and 7 Compounds: A Heuristic Genetic Algorithm with Multiple Regression

Hackensack **Academy for the Advancement of Science & Technology**
Kim, Hyun Soo (17), River Edge
The Assignment of Distinct Path Lengths to a Tree

Sanders, Jacob Nathan (17), River Edge
Glucocorticoid Regulation of Cell Survival in Normal and Cytokine-treated Gastric Chief Cells

Watchung **Mount Saint Mary Academy**
Mok, Stephanie Iris (18), Bridgewater
Epidemic Models for Smallpox Outbreak Planning and Assessment of Intervention Strategies

Westfield

Westfield High School

Yang, Qiaozi (17)

Positively Charged Components from the Herb Goldthread Selectively Penetrate and Kill Cancer Cells

NEW MEXICO

Albuquerque

Manzano High School

Cordwell, Robert Thomas (17)

Some Results on Inclusive and Exclusive Partitions of Complete Graphs

Los Alamos

Los Alamos High School

Claytor, Kevin E. (18), White Rock

Acoustic and Ultrasonic Resonances Induced by Laser Irradiation

NEW YORK

Albany

Academy of the Holy Names

Kloc, Michelle Lynn (17), Greenville

Characterization of mPFC Interneurons from Normal and NVHL Rats and Their Response to the D2 Agonist Quinpirole

Armonk

Byram Hills High School

Ding, Jennifer Jia (17)

Designing Effective Information Visualization for Graphics-based Search Engines

Hiramura, Nicholas Tsukasa (17)

Creation of Noun Classification System by Which Criteria Based Subject-Object Relationship Labels May Be Applied Through the Linguistic String

Kim, Melissa S. (17)

The Identification of Risk Factors Associated with Adolescent Asthma Using a Novel Three-tier Differentiation Scheme

Kramer, Stephen Curt (17), Bedford

Comparison of the Effect of Animal-Assisted Therapy, Human Interaction, and AIBO-Assisted Therapy on Long-Term Care Dementia Residents

Kroll, Adam Ross (17), Bedford

Green Gasoline: A Proposed Model for the Integration of Air Capture and Fischer-Tropsch Synthesis Technologies

Syed, Zeba Almas (17), Chappaqua

The E1A Paradox in the Use of Conditionally Replicative Adenoviruses for Cancer Gene Therapy

Bedford

Fox Lane High School

Reilly, Mackenzie Elizabeth (17), Bedford Hills

The Role of Seasonal Birthrates and Corresponding MMR Vaccination Dates in the Etiology of the Autism Spectrum Disorder

Simons, Leah Elizabeth (18), Pound Ridge

An Analysis of Competition Between Western Atlantic Harbor Seals and Commercial Fisheries

Bellmore**John F. Kennedy High School**

Breakstone, Samantha Allyne (17)

Social Spacing in Juvenile African Weakly Electric Fish, Mormyrus rume proboscirostris (Teleostei, Mormyridae)

Reizner, Wayne Scott (17), Merrick

A Screening for Artificial Activators Targeting a Novel Subunit of the Transcriptional Machinery in Saccharomyces cerevisiae

Steinberg, Dara Michelle (17), Merrick

The Effect of Ageism on Long-Term Recall in the Elderly Population

Swiss, Zachary Alan (17), Merrick

Quantitative Comparison of Indole-3-Acetic Acid Concentration on Fiber Production in MD 51 Cotton Plants (Gossypium hirsutum) up to Five Days Post Anthesis

Waller, Eric (17), Merrick

Multiple Scattering in Curved Stacks of Polycarbonate Plastic Films and Its Affect on Transmittance

Wellington C. Mepham High School

Mancuso, Catherine Elizabeth (17), North Bellmore

A Question of Order: The Relationship Between Item Order and Exam Performance Among Adolescents

Briarcliff Manor**Briarcliff High School**

Gessner, Spencer Jake (17)

Packing Uniform Spheres Within Cylindrical Constraints

Bronx**The Bronx High School of Science**

Kline, Allison Blair (18)

Dissociation of Neural Responses to Happy and Fearful Emotional Faces Within the Right Superior Temporal Sulcus: An fMRI Study

Leffler, Abba Elias (18)

Accurately Modeling Neuronal Dendritic Spine Morphology

Leffler, Shoshana Regina (18)

Hypothermic Circulatory Arrest Induced Apoptosis in the Pig Prefrontal Cortex and Hippocampus

Lubin, Nathaniel Jacob (17)

Electromagnetic Calorimeter Resolution, Particle Identification and Analysis of a Higgs Signature Using Monte Carlo Simulation for the ATLAS Detector

Shin, Tai Ho (18), Flushing

Oxygen Gas Permeability Through Polystyrene Nanofilm with Clay Added

Zaurova, Milana (17), Fresh Meadows

Gene Therapy Meets Chemotherapy: Exposure of Malignant Glioma Cells to Transgenic Embryonic Stem Cells and Temozolomide

Brooklyn**Brooklyn Technical High School**

Chan, Jack Chun Chieh (17), Flushing

The Relationship Between Presentation Format of Information and Recall

Brooklyn Technical High School (cont'd)

Ivnitskaya, Anna (17)

The Relationship Between Disease Susceptibility and Awareness with Reference to Institutional Influences on Risk Perception and Knowledge

Wang, Susan Lin (17)

Predictors of Intravenous Gamma Globulin Failure in Kawasaki Syndrome

Edward R. Murrow High School

Boltyanskiy, Rostislav (17)

Factors Affecting Ionization Equilibria of Monocarboxylic, Dicarboxylic, and Polycarboxylic Acids

Midwood High School

Liang, Lena (17)

Crystal Structures of Multidrug Resistance Regulator NorR

Pikovskaya, Olga (17)

Structural Studies of Metabolite-Sensing Messenger RNA

Tullo, Louis William (17)

A New Mechanism of Receptor Regulation: Ecto-Site Phosphorylation

Burnt Hills

Burnt Hills-Ballston Lake High School

Klapper, Jessie Rae (17), Glenville

Experimental Verification of a Rational Prediction Method for Hammerhead Ribozyme Activity

Cedarhurst

Hebrew Academy of the Five Towns & Rockaway

Shapiro, Michael Chaim (17)

Novel Polyacrylonitrile/Single Walled Carbon Nanotube Composite Synthesis and Structural Infrared Spectroscopic Analysis

Lawrence High School

Mallik, Sarah (17), Woodmere

Beyond the 9/11 Question: Factors Influencing Religious and Social Conservatism Among Muslim-American Girls

Yurkiewicz, Shara Marissa (17), Woodmere

Lovastatin as an Anti-Inflammatory Agent Against Alzheimer's Disease

Central Valley

Monroe Woodbury High School

Misra, Vedant (16), Harriman

Quantum Tunneling of Electron Bubbles Generated by Neutrino Scattering in LHe

Commack

Commack High School

Muniz, Jeanette (17)

The Impact of Nanoscale Substrate Morphology on Macroscopic Wetting

Croton-on-Hudson

Croton-Harmon High School

Feigenbaum, Jamie Sarah (17)

Auditory Discrimination and Rapid Auditory Processing in Infants as an Indicator of Phonological Awareness at Sixty Months of Age

Dix Hills

Half Hollow Hills High School East

Gordon, Chelsea G. (17), Melville

A Novel Method of Polymer Metallization

Half Hollow Hills High School East (cont'd)

Qu, Feini (17), Melville

Using Supercritical Carbon Dioxide to Enhance Polymer Compatibility in Ultra-Thin Films

Roberts, Daniel Adam (17), Melville

Design of a Radial Electric Field System Leveled with Sub-ppm Accuracy for the Deuteron Electric Dipole Moment Experiment

Half Hollow Hills High School West

Rosenman, David Jacob (17)

Analysis Through MD Simulations on the Effects of the Y88C Mutation in Bacillus stearothermophilus MutY Adenine Glycosylase on Its Repair of 8-oxoG:A DNA

East Setauket

Ward Melville High School

Akhtar, Aisha (17)

Development of a Thermo-responsive Graft Copolymer

Botchkina, Katya (17), Stony Brook

What Can Be Done to Recover the Roseate Tern on Long Island? Sensitivity Testing on a Demographic Model of the Long Island Sterna dougallii Population

Fei, Jeffrey Zhaoke (17), South Setauket

Mutagenic Bypass Pathway Involved in the Eukaryotic Cellular Response to Anticancer Drug Resistance

Kenigsberg, Alexander Paul (18)

Biochemical and Genetic Studies of a Highly Attenuated Poliovirus: A Vaccine Candidate for the Post Poliovirus Eradication Era

Miller, Lauren Mohr (17)

The Effects of High Concentrations of Petroleum Hydrocarbons on Growth Rate and Bioaccumulation of the Polychaete Nereis succinea

Ocko, Samuel Alan (17), Stony Brook

A Study of the Thermal Properties of the 1D Lennard Jones System

Petrenko, Andrei (17), Centereach

Investigation of Nuclear Mass Formula Fits to the Liquid Drop Model of the Nucleus

Prakash, Smita (17), Stony Brook

Grasping Einstein's Gravitational Waves

Ramakrishnan, Aditi (17)

Are Nanoparticles Safe? Cytotoxicity of Citrate Coated Gold Nanoparticles

Wadhwa, Neal (17)

On Super Calabi-Yau Manifolds

Wang, Lily Xi (17)

How Much Heat Can Charmonium Take?

Wei, John Oliver (17)

Construction of Indoleamine 2,3-Dioxygenase (IDO) Expressing Keratinocytes

Fairport

Fairport High School

Brewington, Bruce X. (17)

3-D Characterization of Deuterium Ice-Layer Imperfections in Cryogenic Inertial Confinement Fusion Targets

Farmingdale

Farmingdale High School

Mead, Allison Elizabeth (17)

Visual Processing and Memory: Evaluating Gender Differences

Flushing

Robert F. Kennedy Community High School

Lei, Yingqiuqi (18)

Mining the Past: Geochemical Analyses of Fossil Teeth and Sediment Illuminate Ancient Environments

Townsend Harris High School

Sridhar, Padmavati (17), Fresh Meadows

Computational Identification of 11 Candidate Small Nucleolar RNAs in the Region of Human Chromosome 15 Associated with Prader-Willi and Angelman Syndromes

Wojakowski, Maria Malgorzata (17), Brooklyn

*Nest Site Microhabitat Influences Nest Temperature and Offspring Sex Ratio of the Diamondback Terrapin (*Malaclemys terrapin*)*

Fresh Meadows

St. Francis Preparatory School

Reynolds, Rebecca Ann (17), Brooklyn

Sleep and the Differentiable Improvement on a Sequential Motor Skill Task: A Profile of Healthy Individuals vs. Schizophrenics

Garden City

Garden City High School

Chiang, Debbie (16)

A Statistical Thermodynamic Analysis of a New Model Created to Explain the Anomalous Properties of Water

Glen Head

North Shore High School

Silverman, Joshua Max (17)

Engineering and Development of Short Hairpin RNA Libraries

Travis, Zachary Sebastian (17)

The Development of a New Vertebral Loading Model Based on the Effects of Prolonged Hind Limb Suspension

Great Neck

Great Neck South High School

Mirkin, Joshua N. (17)

*The Interrelationship Between Sleep, Immune Response, and Immune Challenge in *Drosophila melanogaster**

Wu, Jonathan (17)

The Beauty of Less Perfect Light: A High Resolution Interferometer for Characterizing Broadband Light Sources

Yuen, Grace Jiali (17), New Hyde Park

Cloning and Activity of Human IL4II Variants

John L. Miller-Great Neck North High School

Admoni, Sha-har (17)

The Beat of Floods in the Western United States: How the Pacific Sets a Hazardous Tone

John L. Miller-Great Neck North High School (cont'd)

Chiang, Stanley Shang (17)

A Step Closer to the Quantum Computer: Fabrication of Novel Superconducting Josephson Junctions to Couple Multiple Flux States of a Quantum Bit

Gordon, David Jacobs (17)

Perceptions of Support by Patient's Significant Others in a Brain Injury Day Treatment Program

Hollander, Samuel (17)

Manipulating DNA, Poly-L-Lysine, and PEO-PPO-PEO Triblock Copolymer Nanoparticles for Use in High Efficiency Gene Delivery Vehicles

Harrison

Harrison High School

Kumthekar, Rohan N. (17)

Fueling of Active Galactic Nuclei in the Nearby Universe

Hauppauge

Hauppauge High School

Leventhal, Stephanie Ilene (17)

Value Differences in the Age of the Internet

Hewlett

George W. Hewlett High School

Cohen, Jennifer Leigh (17), Woodmere

Stepmothers Speak Out: A Cross-Ethnic Study of How Societal Myths Have Influenced Their Perceptions and Experiences

Dix, Adam Skylar (17), Woodmere

My Country 'Tis of Me: Does Patriotism Have a Hidden Agenda?

Milgramm, Anastasia (17), Valley Stream

An Exposition of the Many Faces of Bullying as Perceived by Students and Teachers

Huntington Station

Walt Whitman High School

Vicari, Anthony Christopher (17), Huntington

Optimizing Dendritic Cell Vaccines for Cancer Immunotherapy Using a Novel Antigen Loading Strategy

Irvington

Irvington High School

Suchow, Jordan William (17)

Learning to Identify Letters: Generalization in High-level Perceptual Learning

Jericho

Jericho High School

Rambhia, Suraj Hitendra (17), Glen Head

Modulation of the Ubiquitin-Proteasome Complex Via Morphine Induced Nitric Oxide: A Possible Mechanism for the Prevention of Neurodegenerative Diseases

Sillcox, John Michael (17), Glen Head

Nonagonal Numbers in the Fibonacci Sequence and Related Diophantine Equations

Yang, Angela Mary (17)

The Relationship Between the Normal and Mutated Expression of Connexin 43 and Oculodentodigital Dysplasia (ODDD)

Katonah

John Jay High School

Song, Dawn (17), South Salem

Human Endogenous Retrovirus K113 (HERV-K113) Activity is Regulated by Sex Hormones

Kings Park**Kings Park High School**

Bosco, Joan RoseAnn (17), Fort Salonga

The Apoptotic Effect of Lipoic Acid Palladium Complex, a Novel Non-toxic Chemotherapy, on Breast Cancer Cells

Iraci, John Michael (17)

*Tri-blends: A Novel Procedure to Create Ideal Plastics Using Recycled Materials Exposed to Supercritical Carbon Dioxide***Manhasset****Manhasset High School**

Alagesan, Brinda (17)

Dynamics of Genomic DNA

Calluzzo, Nicholas Thomas (17)

*The MMP-7 Gene Regulates the *in vitro* Invasion of DOV13 EOC Cells***Massapequa****Massapequa High School**

Glassberg, Phillip Francis (17)

The Analysis of Tidal Ellipse Structure in Central Long Island Sound with Correlation to Increasing Mortality Rates of Benthic Organisms

Paniagua, Eric Louis (17)

*An Analysis of Network Motifs in the *C. elegans* Nervous System***Merrick****Sanford H. Calhoun High School**

Fallon, Katherine Frances (17)

The Effect of Mattering on Suicide Ideation in Adolescents

Shaev, Jason Eric (17)

*The Viability of Comparing Ω -K Momenta as Evidence for Baryonic Junctions***Middle Island****Longwood High School**

Huang, Shan Yuan (17), Coram

*Charged Particle Production in High Energy Nuclear Collisions***Montrose****Hendrick Hudson High School**

Becker, Justin Scott (17), Cortlandt Manor

*Hyperhomocysteinemia, A Cardiac Metabolic Disease: Role of Nitric Oxide and the p22^{phox} Subunit of NADPH Oxidase***New Hyde Park****Herricks High School**

Panchamia, Rohan Kirit (17), Manhasset Hills

*Development of Novel DNA Sensitive Dyes Using Combinatorial Approach***New Hyde Park Memorial High School**

Bandyopadhyay, Sheila (17)

*Effects of Carbon Monoxide Signaling on DNA Repair in the Ischemic Heart***New Rochelle****New Rochelle High School**

Gulati, Nicholas David (17)

Loss of Anti-Thrombotic Endothelial Cells in Systemic Lupus Erythematosus (SLE) Contributes to Vasculopathy

New York

Columbia Grammar & Preparatory School

Stein, Bart (17)

Selecting Analog-to-Digital Converter Dynamic Range and Resolution in an OFDM-based Ultrawideband Wireless System

Friends Seminary

Newman, David Timothy (17)

Para-Amino Benzoic Acid Promotes Chemotherapy-induced Growth Inhibition in SKOV3 Ovarian Cancer Cells, But Not in PC3 Prostate Cancer Cells

Hunter College High School

Bauer, David Lawrence Vigliarolo (17), Bronx

Covalent Assembly of a Nanodot-based Neurotoxin Biosensor

Chen, Walter (18)

Alteration of Female Sexual Behavior Using Viral-Mediated RNA-Interference (RNAi) in the Mouse Brain

Yang, Oliver (17), Woodside

Synthesis and Analysis of New Pyridyl-Substituted Cerium Bisporphyrinates

Regis High School

Pak, Theodore (16), Miller Place

Relational Roles of β -Amyloid and Nitric Oxide in Alzheimer's Disease: A Novel Pathological Mechanism

Solomon Schechter High School of New York

Levine, Samuel R. (17), Teaneck, NJ

Serotonin's Effects on Metabolic Rate, Feeding Behavior, and Anxiety

Stuyvesant High School

Bagley, Jacob Hill (17), Brooklyn

*Significance of *M. tuberculosis* Lipoprotein Processing in TLR2 Stimulation, Macrophage Proinflammatory Response, and Mycobacterial Growth*

Cai, Cindy Xinji (17), Brooklyn

Effects of the mGluR5 Antagonist MPEP on Fragile X Human Neural Stem Cells

Ma, Barbara (17), Brooklyn

In vitro Characterization of Oncolytic VSV for Treatment of Ovarian Carcinoma

Wei, Xiao (17), Hollis

An Improved Model of the Growth and Control of Glioblastoma Multiforme

Xu, Yuetian (17), Woodside

A Practical Implementation of Gradient Based Convolutional Neural Networks in Handwriting Recognition

The Brearley School

Pan, Ling (18)

Identification and Characterization of Six New Alternatively Spliced Variants from the Human Mu Opioid Receptor Gene, Oprm

Trinity School

Johnnidis, Avril Andromache (18)

The Critical Importance of Olfaction in Malaria Mosquito-Human Interactions

North Massapequa

Plainedge High School

Geringer, Karen Lynn (16), Massapequa

The Dynamics of Demographic Differences in the Perceptions of Terrorism Prevention

Zahn, Lindsey Ann (17)

How Hard It Is To Hardly Work for Low-Wage Workers: The Effects of Less-than-Full Employment on Job Stress and Its Implications on Worker Attitudes

Oceanside

Oceanside High School

Altman, Ross Everett (17)

Synthesis of Kekulene on a Cyclodextrin Scaffold: Computational Analysis

Old Westbury

The Wheatley School

Mehta, Sagar Viplov (17), Roslyn Heights

Optimizing the Properties of Hyaluronic Acid (HA) Hydrogel Scaffolds for Wound Healing and Tissue Engineering

Scholl, Jonathan Andrew (18)

Surface Directed Crystallization of Polymer Thin Films in Supercritical Fluids

Ossining

Ossining High School

Gates, Alexander Joseph (17)

Designing a Nanoelectronic Circuit to Control a Millimeter-scale Walking Robot

Healey, Michael Scott (17)

The Effects of Positive African American Images in Motion Pictures on Pre-Existing Racial Attitudes in Caucasian Subjects

Penfield

Penfield High School

Chang, Jeremy Tzung-Yi (17)

Grating Compressor Modeling

Plainview

Plainview-Old Bethpage John F. Kennedy High School

Casper, Heather Ann (17)

Carbon Anhydrase: Expression in Dioscorea and Molecular Evolution in Arabidopsis thaliana, Oryza sativa, and Dioscorea Species

Goldblatt, Marissa Fawn (17)

The Evolution of Male Courtship Behavior in Oriental Drosophila Species with Wing Spots

Schlossberger, Matthew Jordan (17)

Electrospinning of Polystyrene and POSS Nanofibers

Pleasantville

Pleasantville High School

Eichinger, Colin David (17)

Ultrastructure Study of Cell: Cell Junctions in Pathogenic Amoebae

Port Washington

Paul D. Schreiber High School

Arnett, Pamela (17), Sands Point

The Discovery and Characterization of Trypanosome Lytic Factor, A Novel Antimicrobial Agent

Paul D. Schreiber High School (cont'd)

Catanzaro, Sarah Emily (17)

Modified Tobacco Products Reveal a Critical Role of Nicotine in Promoting Atherosclerosis

Fainzilberg, Jacob Vladimir (17)

Magnetically-Induced Viscosity

Levine, Zachary David (17)

Doppler Shift and Lifetime Measurements for States of ¹³⁴Pr

Winters, Paul Alexander (17)

Subjective Well-Being, System Justification Theory, and Ingroup/Outgroup Relationships: Subjective Well-Being as a Moderator of Response to System Threats

Riverdale

Horace Mann School

Dubbs, Alexander Joseph (18), New York

L₂ Metrics for Analysis of Spike Data

Einzig, Zachary Meir (17), New Rochelle

Forward Detectors and Measurement of Proton-Antiproton Collision Rates

Rockville Centre

South Side High School

Foley, Megan Elizabeth (17)

The Correlation Between Shyness and Negative Risk-Taking in Teenagers

Randell, David Anthony (17)

The Chemosensory Basis for Aggregation in Terrestrial Isopods

Roslyn Heights

Roslyn High School

Bangaru, Saroja Devi (17), East Hills

The Effect of Retinoic Acids on C-myc Target Genes in Medulloblastoma

Goodman, Jason Matthew (17)

Investigations of Facial Recognition and Mechanical Properties of Aging Skin Through Digital Image Speckle Correlation

Herskowitz, Amy Helaine (17), East Hills

Factors That Contribute to Obesity and Unhealthy Eating Habits in High School Students

Nussbaum, Nicole Ashley (17), Roslyn

Truth or Deceit--The Words Will Tell: An Automated Linguistic Analysis of Deception in Computer-Mediated Interrogation

Rye

Rye Country Day School

Singer, Cara Danielle (17), Bedford Corners

Decreased Expression of a MicroRNA in Influenza A Virus-Infected Cells

Sag Harbor

Pierson High School

Bateman, Ailish Elizabeth (17)

Discovery and Structure Elucidation of Scoriosin, a Novel Antibiotic Compound Derived from the Sooty Mold Scorias spongiosa

Scarsdale

Edgemont High School

Paskov, Hristo Spassimirov (17)

An Efficient Quantum Algorithm for Mean Computation on Bounded-Error Input

Sleepy Hollow	<p><u>Sleepy Hollow High School</u> Hume, Dylan (17) <i>The Face in Fibrodysplasia Ossificans Progressiva</i></p>
Smithtown	<p><u>Smithtown High School</u> Ho, Tina (17), Kings Park <i>Design and Synthesis of Novel Cytotoxic Alkaloids by Mimicking the Taxoid Skeleton</i></p> <p>Mansfield, Eric Steven (17), Saint James <i>Optimization of Hyaluronic Acid Hydrogels for Wound Healing</i></p>
South Huntington	<p><u>Saint Anthony's High School</u> Mehta, Amit (17), East Islip <i>DNA Electrophoresis of Mega-Base Pair and Circular DNA on Micro-Patterned Surfaces</i></p>
Staten Island	<p><u>Staten Island Technical High School</u> Kim, Nina (17) <i>Assessment of Stimulus Overselectivity in Children with Autism Using Tactile Stimuli</i></p>
Syosset	<p><u>Syosset High School</u> Yeh, Tiffany (17), Plainview <i>Human Dermal Fibroblast Growth and Response to Polybutadiene and Polybutadiene-Cloisite 6A Nanocomposite Surfaces</i></p> <p>Yuen, Fiona Nga Wing (17) <i>Target Clustering in the Belousov-Zhabotinsky Reaction</i></p>
Upper Nyack	<p><u>Nyack High School</u> Safran, Jeremy Scott (17), Nyack <i>Three-toed Dinosaur Footprints at the Triassic/Jurassic Boundary in the Newark Supergroup Rocks of Eastern North America</i></p>
Valley Stream	<p><u>Valley Stream South High School</u> Tharani, Akash (17) <i>The Effect of Sleep on the Encoding and Consolidation Phases of Declarative and Procedural Memory</i></p>
Webster	<p><u>Webster Thomas High School</u> Chao, Daniel S. (17) <i>DNA Sequence Detection Using Selective Adsorption of Fluorescence Tagged Oligonucleotides by Gold Nanoparticle Coated Glass Beads</i></p>
West Nyack	<p><u>Clarkstown High School South</u> Gendler, Daniel (17), New City <i>A Bayesian Probability Based Filter for Palomar Five's Tidal Tails</i></p> <p>Sachs, Steven Brett (17), New City <i>Spectrophotometric Determination of Plant Pigment Ratios as a Means of Chemical Taxonomy for Broadleaf Deciduous Trees of the Northeastern United States</i></p>
Westbury	<p><u>Walter Tresper Clarke High School</u> Santoro, Katherin Monica (17) <i>Writing: Has Time Made it Right? A Longitudinal Analysis of the Writing Skills of Three Cohorts of Suburban High School Students After Graduation</i></p>

White Plains**White Plains High School**

Brown, Anya Leard (17)
The Antibacterial Activity of Porphyra

Hajal, Nicholas (17)
The Effects of Stable and Astable Direct Current on Aloe barbadensis Growth, Wound Healing, Root Formation and Gel Production

Pennucci, Timothy Thomas (17)
Radio Jet Velocity and Supermassive Black Hole Mass in Active Galaxies

Yorktown Heights**Yorktown High School**

Wu, Vicky (17)
The Role of Oxidative Stress in Influencing Vitamin A Dependent Pathways in Human Mammary Carcinoma

NORTH CAROLINA**Durham****North Carolina School of Science & Math**

Kulkarni, Aneesh Vaman (17), Charlotte
A Novel Countergraph Approach to Computing Ramsey Numbers

Mookerji, Bhaskar (17), Charlotte
Synthesis and Characterization of Novel Phenylbis(mercaptoimidazolyl)borates of Manganese and Zinc

Tang, Jeffrey (16), Greensboro
Multichannel Analysis of Surface Waves for Near-Surface Seismic Survey Data

OHIO**Cincinnati****Summit Country Day School**

Kathman, Stefan Grubow (17), Covington, KY
An RNAi Screen for Meiotic Genes in Caenorhabditis elegans

Granville**Granville High School**

Kraeva, Antoaneta D. (18)
Mathematical Model with Impulsive Perturbations and Their Applications in Biology

Rocky River**Rocky River High School**

Bhasin, Jeffrey M. (18)
Comprehensive Evolutionary Study of Disease-Causing Amino Acid Substitutions Using Computational Analysis

Shaker Heights**Hathaway Brown School**

Chao, Elysa Wolf (17), Cleveland Heights
Surface Mediated Effects in Liquid Crystals

Hollinger, Amy (17), Westlake
Analyzing Strangeness Production in Au+Au Collisions to Search for Signatures of the Quark Gluon Plasma

Upper Arlington

Upper Arlington High School

Fan, Joline Marie (17), Columbus

Acoustic Excitation for Enhancing Interfacial Dynamics of Mesobubbles

OKLAHOMA

Custer City

Prairieview Academy

Webb, William Austin (18)

Quantitative Trait Loci Modulating Forebrain/Midbrain Volume in Mice

OREGON

Portland

Oregon Episcopal School

Lakin, Neil Robert (17), Tualatin

Investigating the Rheological Properties of Poly(vinyl alcohol)-Poly(acrylic acid) Gels for the Design of a Polymer Gel Linear Actuator

Westview High School

Lin, Da (17), Beaverton

Evaluation of cis-cis HOONO Production by Laser Photolysis Through Modeling of Reaction Kinetics

Salem

West Salem High School

Van Ness, Megan M. (17)

Chaotic Terrain on Europa: Evidence for Hydrological Resurfacing

PENNSYLVANIA

Bethlehem

Bethlehem Catholic High School

Lock, Stephen Jerome (17)

Identification of Electroculture Mechanisms

Bryn Mawr

Baldwin School

Bhat, Shubha Lakshmi (18), West Chester

3-D Imaging of Neurofibromatosis Tumor Growth: Towards Treatment Enhancement

The Shipley School

Komisarof, Justin Andrew (18), Haverford

Collagenolytic Properties of Enamelysin (Matrix Metalloproteinase 20)

State College

State College Area High School

Lesieutre, John Daniel (18)

On a Generalization of the Collatz Conjecture

RHODE ISLAND

Providence

Classical High School

Magyar, Paul MacDonald (17)

Characterizing Martian Soil Analogues with Optical Microscopy

SOUTH CAROLINA

Hartsville

Governor's School for Science & Mathematics

Han, Christopher (18), Clemson

Preparation of Calcium Sulfate-based Orthopedic Cements with Calcium Phosphate Additives

TENNESSEE

Memphis

Lausanne Collegiate School

Balakrishna, Kanya (17), Germantown

Structure Guided Drug Design Using Virtual Screening to Find an Inhibitor for M. tuberculosis 6-hydroxymethyl-7,8-dihydropteroate Synthase

TEXAS

Conroe

Oak Ridge High School

Burger, Megan Elizabeth (17), The Woodlands

Synthesis and Characterization of a New Solid Oxide Fuel Cell Electrolyte

Denton

Texas Academy of Mathematics & Science

Haken, Ian Robert (18), Plano

Development of Frequency Scaling Factors for DFT Functionals in Combination with the Correlation Consistent Basis Sets

Lu, Yike (18), Plano

Ab-initio Study in Silicon/Germanium-Transition Metal Bonding

Zhang, Xiangyu (17), Plano

Synthesis of a New Terbium Chelate Applicable in Luminescence Resonance Energy Transfer Studies

Fort Worth

Dunbar High School

Agarwal, Meena (17)

Mechanisms of Cigarette Smoke Condensate Induced Apoptosis of Retinal Ganglion Cells: Implications in Optic Neuropathy

Houston

Saint John's School

Kirtane, Sameer (17), Sugar Land

New Approaches to Olefin Amination

Raja, Kirtana (17), Bellaire

Poly(N-methylaniline): Morphology and Applications

Plano

Plano Senior High School

Oncescu, Cristian Alexandru (18)

Detection, Discrimination, and Location of Natural (Volcanoes, Auroras, Microbaroms) and Man-Made (Atmospheric Explosions) Events Using Infrasound Waves

Yang, Jimmy Chen (17)

Improving Cancer Treatment Through Telomerase Inhibition

San Antonio

Alamo Heights High School

Raliff, Camille Danice (17)

Role of Epigenetics in the Regulation of CCR5, the Major HIV-1 Coreceptor

Keystone School

Wu, Albert (17)

The Role of Melatonin in Plant Resistance to Disease and Stress

UTAH

Park City

Park City High School

Naftz, Douglas Calvin (18)

A Novel, Cost Effective Approach for Removing Arsenic from Drinking Water in Bangladesh

Plain City

Fremont High School

Wilde, Blake Robert (18), Hooper

Phytoremediation of Trichloroethylene Using Lemna gibba

VIRGINIA

Alexandria

Thomas Jefferson High School for Science & Technology

Kannarkat, George Thomachan (17), Fairfax

Ethanol Impairs Microtubule Dynamics in Hepatic Cells

Lederer, Samuel Stone (17), Lorton

The Effects of Chemical Additives on Ice Spike Formation

Moffatt, Robert Alexander (17), Reston

Design and Construction of a Variable Gain Amplifier for Tunable Diode Laser Spectroscopy

Ohlson, Alice Elisabeth (17), Falls Church

A Study of FEL-Induced Changes in Mirror Surface Roughness

Oppenheim, Jacob Nabil (17), Annandale

Development of an AC Impedance Model to Determine Lithium-Ion Cell Performance

West Potomac High School

Jachowski, Nicholas Robert (18)

Phytoplankton Community Response to Nutrient Enrichments by Deep Seawater Additions to Mixed Layer Seawater

Burke

Lake Braddock Secondary School

Wong, Hamilton Han-Hua (17)

On the Universal Class of Small-Scale Turbulence

Charlottesville

Charlottesville High School

Harrison, Sarah Maureen (17)

Temperature and Magnesium-dependent Pause Point Analysis in DNA Constant-Force Unzipping

Pearisburg

Giles High School

Olson, Ryan Thomas (18)

Freewing Aircraft Wing Design

WASHINGTON

Bellevue

Newport High School

Mengle, Advay Vinod (15)

Trainable News Broadcast Boundary Identification Using Feature Density

Bellingham

Squalicum High School

Plank, Karl James (17)

Toward Self-Assembling Nanocircuitry Using Liquid Crystal Solvents

WEST VIRGINIA

Charleston

George Washington High School

Cevallos, Marissa Theresa (17)

Flux Density Distribution and Detectability of Dark Matter in the Present Universe

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Madison

James Madison Memorial High School

Loh, Po-Ling (17)

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