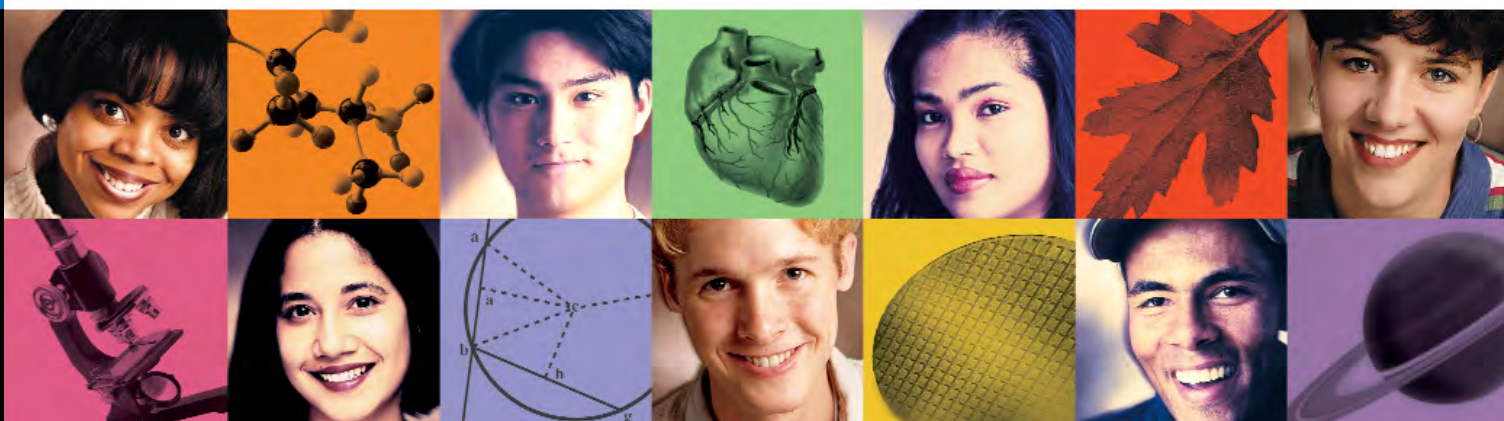


# Semifinalists

Wednesday, January 16, 2008



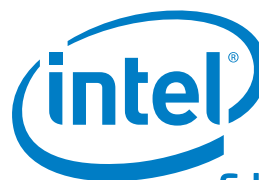
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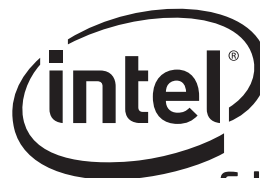


# 2008 Semifinalists

The Intel Science Talent Search is the country's most prestigious science scholarship competition. For more than 60 years, the Science Talent Search has recognized and rewarded the country's top young science students. Six former competitors have gone on to win the Nobel Prize.



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## **Intel Science Talent Search**

The Science Talent Search was created to encourage high school seniors who demonstrate exceptional ability in science, math and engineering through individual research projects. Over the years the Science Talent Search has become the most prestigious high school science competition in the country, with broad support of the academic and scientific communities. Educators, scientists, engineers and journalists throughout the U.S. have enthusiastically enabled this annual event. Many STS participants have gone on to distinguished careers; six of these remarkable scientists have won the Nobel Prize.

Society for Science & the Public (SSP) is one of the nation's oldest non-profit organizations dedicated to public engagement in science and science education. Founded as Science Service in 1921, SSP is a leading advocate for the understanding and appreciation of science and the vital role it plays in human advancement. Through its acclaimed education competitions and its award-winning magazine, *Science News*, Society for Science & the Public is committed to inform, educate, and inspire.

### **Intel Science Talent Search Semifinalists – 2008**

The Semifinalists of the 67th Science Talent Search were chosen from among 1602 entrants representing 504 high schools in 45 states, Puerto Rico, the Virgin Islands and two overseas schools. From among the Semifinalists, 40 Finalists will be selected to attend the Intel Science Talent Institute in Washington, D.C. from March 6-11, 2008. During their visit to 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 in the Spring.

Additionally, to recognize excellence in teaching and school support of individual student research, the high schools of Semifinalists will receive an award of \$1,000 for each Semifinalist named in the Intel Science Talent Search. This award is used to further excellence in science, math and engineering education at the recipient school. Home school awards are made by special arrangement. School awards are distributed in Spring, upon return by the principal of the completed School Award Program Application.

Colleges and universities regard the Semifinalist award to be evidence of exceptional scientific promise. Each Semifinalist is provided with a certificate of accomplishment, which may be sent with their applications for college admission and scholarships. A listing in this book, as well as at [www.societyforscience.org/sts](http://www.societyforscience.org/sts), is also generally accepted as documentation of the honor.

Many Intel Science Talent Search projects are the product of a research environment in which scientist mentors dedicate themselves to the intellectual development and technical training of students. SSP and the Semifinalists acknowledge with gratitude the guidance, expertise and patience of the experienced researchers who made many of these projects possible.

The 40 Intel STS Finalists will be announced January 30, 2008 and published in *Science News* magazine.

*This list of Intel STS Semifinalists is compiled by Society for Science & the Public, based upon entry form data. If a student's city of residence differs from that of the school, it will be listed also.*

## ALABAMA

Mobile

Alabama School of Mathematics & Science

*Zhang, Mike Weng, 17, Tuscaloosa*

Iron Nickel Platinum Ternary Alloy Nanoparticles for Hyperthermia Therapy

## ARIZONA

Phoenix

Brophy College Preparatory

*Weigel, Andrew, 17*

A Ketogenic Diet Induces Antiproliferative Effects in Glioblastoma Multiforme *in vitro*

Sierra Vista

Buena High School

*Houston, Matthew Aaron, 18*

Experimental Analysis of the Acoustic Cavitation Mechanism for Sonoluminescence

## ARKANSAS

Little Rock

Little Rock Central High School

*Ye, Anne Zijing, 17*

Finding Rootless Matrices Using Jordan Normal Form

## CALIFORNIA

Alhambra

Alhambra High School

*Luo, Jiajun, 17*

Temperature Dependence of NMR Frequency in Random Anisotropic URu<sub>2</sub>Si<sub>2</sub> Powder

Arcadia

Arcadia High School

*Wang, Xuanji, 17*

The Synthesis of Silicon Nanoparticles for Macrophage Cellular Imaging in Atherosclerosis

Claremont

Vivian Webb School

*Agarwal, Kanika, 16*

Toll-like Receptor Ligands Modulate Mouse B- and T-Cell Lymphoma Survival without Affecting Proliferation and Activation

Cupertino

Monta Vista High School

*Penn, Alexander Andy, 17*

Advancement of Printed Circuit Boards: Manipulating Metal Adhesion of Masked Polymer Thin Films through Exposure to Supercritical Carbon Dioxide

Danville

Monte Vista High School

*Li, Richard Jay, 17*

A Novel Approach to Rapid Diagnosis of Cancer by FTIR Spectroscopy Combined with Ligand-Receptor Specific Binding

El Cajon

Grossmont Middle College High School

*Spevack, Samuel Charles, 17*

Seismic and Petrographic Analyses of the Victoria Island Structure

- El Dorado Hills**                    **Oak Ridge High School**  
***Ramesh, Vinayak, 17***  
A Practical Approach for Hole Detection in Wireless Sensor Networks Based on Simplicial Homology Theory
- Fremont**                            **Mission San Jose High School**  
***Chen, Rebecca Iris, 17***  
Disruption of TCR-pMHC Multimerization Impairs TCR Triggering
- Zhang, Aimee, 17***  
***Arabidopsis thaliana*** Aux/IAA Proteins Have Distinct Rates of Degradation
- Fullerton**                         **Troy High School**  
***Huang, Efrem Yuan-Fu, 17, Yorba Linda***  
Theoretical Mechanisms and Kinetics of the Oxidation of Dimethyl Sulfoxide by Hydroxyl Radical to Form Methanesulfinic Acid
- Los Angeles**                    **Marlborough School**  
***Rees, Amanda Michelle Morita, 18***  
Biocompatible Metal-Organic Frameworks as Potential Drug Delivery Carriers
- Milken Community High School**  
***Hakimi, Michael, 17***  
The Effects of International Terrorism on the Dow Jones Industrial Average and Respective Stock Markets
- Manhattan Beach**             **Mira Costa High School**  
***Rosen, Emily Ann, 18***  
Direct Formic Acid Fuel Cells and the Electrochemical Reduction of CO<sub>2</sub>
- Riverside**                         **John W. North High School**  
***Keremane, Sravya Ramadugu, 17***  
Biochemical Analysis of Mechanisms of Cold Tolerance in Citrus
- Sacramento**                    **Mira Loma High School**  
***Stauber, Zachary Jason, 17, Gold River***  
Non-Toxic Silicon Nanoparticles for Cellular Imaging and *in vivo* Detection of Lymphoid Cancers
- San Jose**                         **Lynbrook High School**  
***Lin, Bryan Wang, 17***  
Modeling and Analysis of Human Binocular Perception of Position and Velocity in the Visual Cortex
- Suen, Caroline, 17***  
On Search Techniques for Root-Unitary Polynomials
- The Harker School**  
***Ebrahim, Senan, 17***  
Properties of Silk III Fibroin at the Air-Water Interface
- Roxlo, Thomas Quan-Li, 17, Saratoga***  
Small Molecule Induction of the Heat Shock Response: Cytoprotective Effects and Potential Clinical Applications of Celastrol

- San Jose**                            **The Harker School (cont'd)**  
*Wang, Frank Yi-Fei, 18, Santa Clara*  
 The Effect of Oxygenated Fuels on Pollution Formation in Diesel Engine Emissions
- Walnut**                                **Walnut High School**  
*Lee, Christopher Kelvin, 17, West Covina*  
 Characterizing and Enhancing the Mechanical Strength of Cesium Hydrogen Sulfate as a Fuel Cell Electrolyte
- Walnut Creek**                      **Northgate High School**  
*Almasi, Susann Melinda, 17, Clayton*  
 Development of a Monte Carlo User Code for the Calculation of Glandular Dose and Estimation of Relative Risk Associated with Mammography
- Westlake Village**                  **Westlake High School**  
*Shao, Philip, 17, Thousand Oaks*  
 A Time-Offset Correlation Study of Global Temperature Anomaly, Solar Activity, World Population, and Carbon Dioxide Concentrations

## **COLORADO**

- Boulder**                                **Fairview High School**  
*Bergman, Atticus John, 18*  
 That Flocking Convection
- Colorado Springs**                 **Kruse Home School**  
*Kruse, Cameron, 18*  
 The Dirt on Baseball: Standardizing the Baseball Mudding Process

## **CONNECTICUT**

- Greenwich**                            **Greenwich High School**  
*Hansel, George James, 17, Old Greenwich*  
 Quantification of Photosynthetic Biomass: An Autofluorescence and Laser Scattering Approach
- New Canaan**                         **New Canaan High School**  
*Belopolski, Ilya Boris, 17*  
 The Effect of Short-Chain Fatty Acids on Gene Expression in *Entamoeba histolytica*
- Sandy Hook**                         **Newtown High School**  
*Horvath, Dayton Thomas, 17, Newtown*  
 Design, Construction, and Testing of a Novel, Rapid, Inexpensive Coliform Detection System
- Westport**                              **Staples High School**  
*Shenoy, Andrew Frederick, 17*  
 Acceleration of Angiogenesis through Novel Protein Delivery Systems
- Weiner, Zachary Isaac, 17*  
 A Detect-and-Verify Framework for Specific Face Detection

## FLORIDA

### Fort Pierce

#### Lincoln Park Academy

*Norvell, Leighton Marie, 18*

Can *Microcystis aeruginosa*, *Anabaena flos-aquae* and *Aphanizomenon flos-aquae* Be Biologically Controlled by Isolating Viruses from the Environment?

### Ft. Lauderdale

#### Fort Lauderdale High School

*Sparling, Kimberly May, 17, Fort Lauderdale*

Drugs from the Sea: Purification of Conopeptides from the Venom of *Conus virgo*

### Lecanto

#### Lecanto High School

*Shah, Sonia Vikram, 17*

The Role of Akt/PKB in the Regulation of Cholinergic Gene Expression by NGF

### Melbourne

#### Melbourne Central Catholic High School

*Batista, Michael Anthony, 17*

Modeling the Behavior of a Quantum Well Utilizing the P-N Junction

### Merritt Island

#### Edgewood Senior High School

*Sotherlund, Emily Anne, 16*

The Feasibility of Sustaining Artificial Surf Reefs in an Ever-Changing Ocean Environment

### Miami

#### Dr. Michael M. Krop High School

*Lossos, Chen, 17*

AZT-Interferon Alpha Induced Gene Expression Changes Correlate with Clinical Response of HTLV-1 ATL Patients

#### Miami Palmetto Senior High School

*Jiao, Yunxin, 17*

Contrast Enhancement with Biocompatible Scattering Medium in Optical Coherence Tomography for Corneal and Contact Lens Cross Sectional Imaging

*Li, Alexander, 17, Palmetto Bay*

Effects of Supporting Electrolytes on the Electrochemical Behavior of Metallocene-Functionalized Dendrimers and Related Electroactive Compounds

### Miami Beach

#### Rabbi Alexander S. Gross Hebrew Academy

*Sussman, Mollie Ann, 18, Bay Harbor Islands*

Human Twin Hand Scent: A Means of Identification Chemical Analysis Using SPME GC/MS

### Orlando

#### Lake Highland Preparatory School

*Raghavan, Avanthi, 17*

Characterization of Novel Protein Trafficking Pathways in *Plasmodium falciparum*

### Vero Beach

#### Saint Edward's School

*Pechter, Diana Michelle, 18*

Isolating Biologically Active Compounds from the Porifera *Hexactinellida* to Aid in Pancreatic Cancer Therapies

#### Vero Beach High School

*Fichtelman, James Edward, 18*

Histopathologic Investigation of Carcinogenesis in Planarians Secondary to Ultraviolet C, B, and A Exposure

**West Palm Beach**

**A.W. Dreyfoos, Jr. High School of the Arts**

*Moustafa, Zaki Daniel, 17*

Resilience/Survivalship of a Fringing Coral Reef under Extreme Environmental Conditions:  
A Four-Year Study

**GEORGIA**

**Athens**

**Cedar Shoals High School**

*Dong, Yihe, 17*

Maternal Effects of Dietary Restriction in Fruit Flies

**Clarke Central High School**

*Stunzi, Joseph Robert, 17*

Enzymatic Hydrogen Production: Expression of the Hydrogenases from the Hyperthermophile  
*Pyrococcus furiosus*

**Atlanta**

**North Springs High School**

*Velamuri, Sriram, 17, Duluth*

A Neuronal Conductance Switch from Bursting to Silence

**College Park**

**Woodward Academy**

*Cohen, Joshua David, 17, Atlanta*

Investigations of the Dechlorination of a Purine Nucleoside Analog by Adenosine Deaminase

**Marietta**

**Lassiter High School**

*Hipsman, Nathaniel Edward, 18*

Analysis of Entanglement-enhanced Quantum Time Standards

**Wheeler High School**

*Mohler, Shannon, 17*

Factors that Contribute to the Increased Sensitivity of Naive T Cells to Fludarabine

**HAWAII**

**Mililani**

**Mililani High School**

*Mocz, Philip, 18*

Dissecting the Nearby Universe: Monothetic Divisive Analysis Based on Voronoi Tessellations  
Reveals New Star Associations

**ILLINOIS**

**Aurora**

**Illinois Mathematics & Science Academy**

*Cai, Steven Benson, 17, Naperville*

On the Structure of a 30-nm Field Effect Transistor Under Uniaxial Stress

*Fang, Zexi, 18, Naperville*

Hydrogen Sensing with Palladium Nanobead Arrays Based on Porous Anodic  
Aluminum (AAO) Substrates

*Nayak, Jagannath, 17, Elmhurst*

Synthesis of Magnetic Nanostructures with Increased Magnetic Susceptibility and Saturation  
Magnetization through Shape Anisotropy for Improved Application as Agents for Cancer  
Detection and Therapy



Aurora

**Illinois Mathematics & Science Academy (cont'd)**

*Zhao, Emily, 16, Grosse Pointe Park, MI*

Correlation Mapping: An Alternative fMRI Analysis of the Neural Response to Visual Stimuli

Naperville

**Neuqua Valley High School**

*Zhao, Yuan, 17*

Notes on Extension of Schrödinger Equation to Non-Hermitian Quantum Dynamics and Boltzmann Statistics

## INDIANA

Carmel

**Carmel High School**

*Zou, Tan, 18*

A Geometric Evaluation of the Distribution of Free Flight Lengths for the Three-dimensional Periodic Lorentz Gas

South Bend

**John Adams High School**

*O'Rourke, Joseph Ghilarducci, 17*

Investigating the Effects of Various Methanol Management Techniques on the Performance of the Direct Methanol Fuel Cell

Terre Haute

**Terre Haute South Vigo High School**

*Kopparty, Swara Satya, 16*

The Nature of Bonding in Metal-Carbonyl Complexes

## IOWA

Iowa City

**West High School**

*Zeng, Xiaomeng, 18*

Crowding-out or Crowding-in? The Relationship between Government and Private Funding for Public Libraries

## KANSAS

Olathe

**Olathe East High School**

*Dorri, Ameen, 17, Overland Park*

A Novel Biotechnology to Solve Perchlorate and Nitrate Pollution Problems in Water

Prairie Village

**Shawnee Mission East High School**

*Sarma, Nandini, 17, Overland Park*

Cellular Translation Factors Are Required for the Virion Host Shutoff (Vhs) Function of Herpes Simplex Virus: Use of siRNA-induced Depletion of Cellular Factors to Test Involvement in Vhs Activity

## KENTUCKY

Louisville

**duPont Manual Magnet High School**

*Uhlenhuth, Max Evan, 17*

Visual Searches of Natural Scenes

## LOUISIANA

### Baton Rouge

#### Baton Rouge Magnet High School

*Jindal, Granton Adarsh, 17*

The Dependence of Friction on Size and Areal Density of Particles between Tractional Surfaces

### Shreveport

#### Caddo Parish Magnet High School

*Jain, Niharika Sanjay, 17*

Genetic Polymorphisms Impact Warfarin Therapy: A Clinical Pharmacogenomics Model

*Mijalis, Alexander James, 17*

The Caveolin-1 Regulation of Endothelial Cell Activation and Its Implications in IBD

## MARYLAND

### Baltimore

#### Carver Center for Arts & Technology

*Biondo, Gabriella Nicole, 17, Parkton*

Snail Gene Controls the Migration of the Border Cells in the *Drosophila* Ovary

### Bethesda

#### Walt Whitman High School

*Aqil, Anushka, 17*

Assessing the Effect of COMT Polymorphisms and Haplotypes on Cognitive Performance in Healthy Controls

*Kominers, Paul Myer, 17*

Chip-Firing Analysis of Stabilization Behaviors, Hitting Times, and Candy-Passing Games

### Rockville

#### Richard Montgomery High School

*Lu, Benjamin Brice, 17, Potomac*

From the G-protein Gq to AP-1-Dependent Gene Expression: Mapping a Novel Signaling Pathway for Cancer Growth

### Silver Spring

#### Montgomery Blair High School

*Kung, Andrew, 18, Rockville*

Temporal, Compositional, and Compressional Behavior of H<sub>2</sub>-O<sub>2</sub> Compound Formed by X-ray Excitation of H<sub>2</sub>O at High Pressure

*Lee, Benjamin Yuhua, 17*

Optimizing Dynamical Decoupling in the Central Spin Decoherence Problem

*Peng, Timothy, 16*

A Geochemically Plausible Prebiotic Pathway to Uracil Synthesis under Hydrothermal Conditionals

*Salwan, Jasleen Kaur, 17, Potomac*

Determining Markers of Tumorigenicity in Differentiating NTera2 Cells

*Wasserman, Louis Eric, 17, Derwood*

A Monotone Characterization of P

## MASSACHUSETTS

**Andover**                                **Phillips Academy**  
*Feldman, Zachary Michael, 17, Boston*  
The Gamma Domain of SpoIIIE Is Necessary for Chromosome Translocation During Sporulation in *Bacillus subtilis*

**Concord**                                **Middlesex School**  
*Huggins, Jonathan Hunter, 18, Arlington*  
Performance Boosting Methods for Named Entity Recognition in Financial News

**Dover**                                    **Dover-Sherborn High School**  
*Raman, Anugraha Mahalakshmi, 16, Sherborn*  
Computation Protein Function: *In silico* Allergenome and Vaccinome Epitope Identification

**Falmouth**                               **Falmouth Academy**  
*Pickart, Matthew Forrest, 18*  
Effects of Petroleum Hydrocarbons on Salt Marsh Sediments

**Holden**                                  **Wachusett Regional High School**  
*Valcourt, James Ryan, 18, Sterling*  
Suspended Animation: Elucidating the Anoxia Response Pathway

**Lexington**                              **Lexington High School**  
*Chen, Sway Peng, 17*  
Electrochemical Reactions on Metals under AC Electric Currents

*Colucci, Lina Avancini, 17*  
Getting to the Pointe: Development of Innovative Pointe Shoes

*Shaw, Daniel Leonard, 18*  
Synthesis of Novel Triazole-based Antimalarial Small Molecules

**Peabody**                                **Bishop Fenwick High School**  
*Duca, Alicia Stetson, 17, Wenham*  
The Development of an Ethological Model Based on the Male Guinea Pig Courtship Vocalization

**Waltham**                                **Waltham High School**  
*Appasani, Raghu Kiran, 18*  
Targeting Brain Tumor Stem Cells by Silencing Stem Cell Marker Gene CD133

## MICHIGAN

**Ann Arbor**                              **Washtenaw Technical Middle College**  
*Chvykov, Pavel Vladimirovich, 17, Ypsilanti*  
Development of a Novel Ultra-Fast Laser Pulse Contrast Improving System

**Beverly Hills**                        **Detroit Country Day School**  
*Arul, Hari Senthil, 17, West Bloomfield*  
Synthesis and Replenishment of Silver Nanoparticle-enabled Membranes for Biofouling Mitigation

*Mikkilineni, Shravani, 17, Bloomfield Hills*  
Continued Fractions and Orbits of a Linear Fractional Transformation

**Morley**                                **Morley Stanwood High School**  
*Lyons, Ana Marie, 17, Stanwood*  
The Effects of Imidacloprid Soil-Drenching on Terrestrial Tardigrada of the Great Smoky Mountains National Park, Tennessee: Bio-Monitoring Insecticide Persistence

**Novi**                                    **Detroit Catholic Central High School**  
*Nguyen, Harrison Phu, 16, Northville*  
Combating Muscle Atrophy: A Novel Study of Myofibril Turnover in *Sternopygus macrurus*

**Troy**                                   **Troy High School**  
*Hu, Philip Zhangfan, 17*  
Connectivity of Unidirectional Hyper-stars

## MINNESOTA

**New Prague**                        **New Prague High School**  
*Trettel, Stephen Jerome, 17, Jordan*  
Propellantless Propulsion: Theoretical and Experimental Evidence for EHD Flow in Asymmetrical Capacitors

**Plymouth**                           **Wayzata High School**  
*Hu, Melody Yin, 16*  
The Effect of Hyperoxia on Neurovascular Coupling

**Winona**                               **Winona Senior High School**  
*Klages-Mundt, Ariah Aram, 18*  
Solving the Hydrogen Storage Problem:  $\text{Ca}(\text{NH}_3)_8\text{Cl}_2$  as a High Density, Carbon-Neutral Hydrogen Carrier

## MISSOURI

**Chesterfield**                       **Parkway Central High School**  
*Levary, David Andrew, 17*  
A Novel Approach to Protein Engineering Using Multivalent Cell Surface Interactions  
  
*Liu, Andrew Zhangyanchu, 18*  
Effect of RNA Interference of Isoflavone Biosynthesis Enzymes on Pathogen and UV-induced Isoflavone Levels in Soybean Cotyledons

**Columbia**                           **David H. Hickman High School**  
*Mitrea, Adrian, 17*  
The Six-Point Circle Theorem

**Jefferson City**                    **Jefferson City High School**  
*Mirts, Evan Neal, 17*  
Scanning Ion Conductance Microscopy of Light-induced Volume and Surface Area Changes in Chloroplasts *in vitro*

## MONTANA

**Missoula**                            **Hellgate High School**  
*Stroethoff, Morielle Mathanja, 17*  
Surface Compositions of Kuiper Belt Objects Obtained through Spectrum Matching

## NEBRASKA

Lincoln

**Lincoln East High School**

*Churchill, Alexander Lee, 18*

Restrictions and Generalizations on Comma-Free Codes

Omaha

**Brownell-Talbot School**

*Rao, Keshav, 17*

Identification of CXCR2 and Cadherin 3 as Molecules Involved in Lung-Specific Homing of Melanoma Cells by Using Computational Biology Methods

## NEW HAMPSHIRE

Derry

**Pinkerton Academy**

*Bochkov, Ivan Dmitrievich, 17*

Constraining the Mass of the Black Hole in the X-ray Binary LMC X-1

## NEW JERSEY

Bayonne

**Bayonne High School**

*Delgado, Eric Nelson, 17*

Engineering a Novel Gram-negative Effective Efflux Pump Inhibitor

Bridgewater

**Bridgewater-Raritan High School**

*Jain, Abhinav, 17*

Method for the Rapid On-site Detoxification of Chemical Warfare Agents

Fort Lee

**Fort Lee High School**

*Galicki, Sarah Elyse, 18*

The Ideal Portion Size: Application of a Computer-based Program to Assess Actual Consumption in Children Aged Four to Six

Hackensack

**Academy for the Advancement of Science & Technology**

*Lisica, Steven Konstantin, 17, Oakland*

Adaptive Resistance of *E. coli* to Triclosan and Antibiotic Cross-Resistance

*Savitskaya, Judith Ginda, 17, Fair Lawn*

Time Course of Cognitive Control in the Color-Word Stroop Task

Holmdel

**Holmdel High School**

*Singhal, Ashutosh, 17*

Potential Connectivity Analysis of Granule and Tufted Cells from the Rat Olfactory Bulb

Lincroft

**High Technology High School**

*Gayen, Sujoy Kumar, 17, Marlboro*

Altered Resting-state Brain Connectivity in Autistic Patients

*Shum, Andrew Jonathan, 17, Marlboro*

Time-Correlation Functions and Rare Events in Deeply Supercooled Glass-Forming Liquids

Livingston

**Livingston High School**

*Liu, Wen, 17*

Effects of Mood on Working Memory

**Millburn****Millburn High School*****Koven, Barnett Samuel, 17, Short Hills***

Engineered Anaerobic Digestion (AD) Utilizing a Thermophilic Media

***Ramani, Vijay, 17, Short Hills***

Hydroxyapatite-coated Nanotube Thin Films for Bone Tissue

**Parsippany****Parsippany High School*****Ye, Ben Bin, 17***

Novel Fuel Contamination Sensor Based on Fabry-Perot Interferometry

**Princeton****Princeton High School*****Witten, Rafael Lawrence, 17***

On the Stability of Three-body Systems

**Ridgewood****Ridgewood High School*****Buirkle, Emily Nicole, 17***An Analysis of *Pinus rigida* Susceptibility to Recent Southern Pine Beetle Infestation in the Cape May Region of New Jersey**NEW MEXICO****Los Alamos****Los Alamos High School*****Dozier, Benjamin Edward, 18***

Descriptive Complexity of Random Bit Strings

**NEW YORK****Armonk****Byram Hills High School*****Batheja, Nandita Omprakash, 17***

Nonconscious Goal Pursuit through Environmental Lyric Priming

***Blum, Jeremy Evan, 17***

Using Force Sensors to Effectively Control a Below-Elbow Intelligent Prosthetic Device

***Gardner, Kristen Scholes, 17, Bedford***Nutrient Limitation and Autotoxicity in the Red Tide Dinoflagellate *Alexandrium fundyense***Bellmore****John F. Kennedy High School*****Breen, Cameron Logan, 17, Merrick***

The Ability to Discriminate Differences in Fat Content as a Predictor of Obesity in African-American Adults

***Klebanoff, Matthew Jordan, 18***The Effects of Cytoskeletal Disrupting Agents on Cotton (*Gossypium hirsutum*, cultivar MAXXA GTO) Fiber Quality**Wellington C. Mepham High School*****Degani, Isaac, 17***

The Discrimination of Radio Signals Reflected by Atmospheric Ionization and Airborne Bodies

***Leibowitz, Mitchell Louis, 17, N. Bellmore***

Genetic Relationships to Chill Diminished Volatiles within the Lipoxygenase Pathway in Tomato Fruit

- Bergen**                                **Byron-Bergen High School**  
**Long, Emmaline Anne, 17**  
 Census and Split Plot Analysis of *Cypripedium candidum* in the Bergen Swamp, Bergen, New York
- Briarcliff Manor**                    **Briarcliff High School**  
**Nowara, Azure Elizabeth, 17, Garrison**  
 The Neural Correlation of the Executive Attention System in Long-term Practitioners of Focused Meditation
- Bronx**                                    **Bronx High School of Science**  
**Bishop, William Franklin, 17**  
 A Systems Biology Approach to Identify a Transcriptional Network for Breast Cancer Metastasis
- Maluto, Jan Michael Rionda, 17, Jamaica**  
 Methylation Differentially Regulates Microprocessor Efficacy in Head and Neck Cancer
- Plaza, Melanie Ann, 17, Maspeth**  
 The Effects of Allelic Differences of Candidate Genes on the Penetrance of DYT1 Dystonia
- Serganov, Artem, 17, New York**  
 The Crystallization of Riboswitches: Potential Targets for Antibiotics
- Singal, Vineet, 17**  
 Ambient Exposure to Particulate Matter 2.5 and Ozone Is Associated with Progression of Liver Disease and Cirrhosis in Patients with Hepatitis C Virus (HCV) Infection
- Fordham Preparatory School**  
**Stevens, Michael Anthony, 17, Larchmont**  
 Variations in Composition of Cached *Quercus rubra* Seeds as Related to Torpor in *Tamias striatus*
- The Fieldston School**  
**Loffredo, Benjamin Michael, 17, New York**  
 From Offense to Defense: Direct and Carry-Over Justification of Global and Local Systems in Response to System Threats
- Burnt Hills**                            **Burnt Hills-Ballston Lake High School**  
**Wolf, Matthew William, 18, Ballston Lake**  
 A Comprehensive Study on CO<sub>2</sub>: Measurements from Lakes, Howe Caverns, and CO<sub>2</sub> Sequestration Utilizing Oak Wood Ash
- Cedarhurst**                            **Lawrence High School**  
**Alpert, Matthew Nathaniel, 17, North Woodmere**  
 Electron Transport through Self-Assembled Gold Alkanethiol Monolayers: The Observation of Coulomb Blockade at Room Temperature
- Kastriner, Jared Craig, 18, North Woodmere**  
 Seeing Red: Can Ink Color Undermine the Impact of Teacher Encouragement on Student Papers in Middle and High School?
- Chappaqua**                            **Horace Greeley High School**  
**Katz, Johanna Tovah, 17**  
 The Role of the PI3K/Akt/mTOR Signaling Pathways in Glioblastoma Multiforme Growth, Migration and Drug Resistance

**Dix Hills**

**Half Hollow Hills High School East**

***Choi, Jung Hee, 18***

Perceptions of Attractiveness as Influenced by Personal Space

***Schlingbaum, Joanna Lauryn, 17, Melville***

Use of Phospholipid Bilayers to Immobilize and Examine Model Radicals

***Silver, Daniel Keith, 17***

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**Half Hollow Hills High School West**

***Beller, Bryan, 17***

The Bio-Barcode Assay for the Detection of *Salmonella enterica*

***Lisann, Lauren Rose, 17***

RNAi Against Dyslexia Genes Disrupts Neuronal Migration

***Zhu, Dana, 17***

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**Dobbs Ferry**

**Dobbs Ferry High School**

***Tsamis, Niki Alexandra, 17***

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**East Meadow**

**East Meadow High School**

***Barsky, Andrew Ross, 17***

The Use of Video Modeling in Teaching Social Skills to Children with Autism

**East Setauket**

**Ward Melville High School**

***Anderson, Steven Kim, 17, Setauket***

Voice Separation: A Practical Solution to the Cocktail Party Problem

***Cooper, Eric Robert, 17***

Solvation Energetics of Electron Transfer Reactions in Face-to-Face Porphyrin-Quinone Dyads

***Freiss, Mary Martha, 18, Stony Brook***

Path Analysis of Brain Addiction Network

***Gartner, Michael Dominic, 17***

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***Gudjonson, Herman, 17***

Reduced Taste in *Drosophila melanogaster* Mutated for an Obesity Syndrome Protein

***Guo, Jin, 17, Stony Brook***

Sirrolimus Blunts CD40/CD154 Mediated IL-8 and MCP-1 Stimulation and ICAM-1 Production via the SAPK/JNK MAPK, NF- $\kappa$ B and p70 S6 Kinase Signaling Pathways in Human Proximal Tubule Cells

***Kao, Teresa Yi, 17***

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**East Setauket**

**Ward Melville High School (cont'd)**

***Li, Hefei, 17***

Magneto-Optical Imaging for Enhanced Authentication and Data Retrieval in Magnetic Stripe Cards

***Li, Yang, 18, Setauket***

Enhancement of Winter Mid-latitude Precipitation over North America by Upper Level Waves Propagating from the Pacific Ocean

***Mar, Krista, 17, Stony Brook***

Synthesis of a Molecular Nanostructure for Applications in Single-Electronics

***Moss, Hillary Caroline, 17, Port Jefferson Station***

Hemophilia B and Glycosylation Sites on Human Clotting Factor IX: How Do Mutations on Factor IX Interact with the Body and Affect Glycosylation?

***Polyakov, Anne Yuri, 17***

SQIF Setup for Measurement of Extremely Low Absolute Magnetic Field

***Ray-Mazumder, Kalyan, 17***

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**Fairport**

**Fairport High School**

***Manfred, Katherine Marya, 17***

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**Fresh Meadows**

**Francis Lewis High School**

***Cha, April, 17***

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***Long, Rebecca Ann, 17***

Dating Dakhleh Desert Dwellers and Disasters: ESR and Electron Microprobe Analyses of Teeth and Impact Glass from Egypt

**St. Francis Preparatory School**

***Reilly, Eleanor Meaghan, 18***

A $\beta$  Accumulation Prompts Malfunction of the Ubiquitin-Proteasome System Which Impairs Multivesicular Body Sorting and Recycling Endosomal Action

***Singh, Anuradha, 17, Jamaica***

The Colavita Effect Revisited: A Behavioral Study of the Automaticity of Multisensory Integration and Its Behavioral Consequences

**Great Neck**

**John L. Miller-Great Neck North High School**

***Mueller, Benjamin Julius, 18***

The Neural Basis of the Decision to Reward or Punish in Parenting: An fMRI Investigation

***Rosengarten, David Alex, 17***

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**William A. Shine-Great Neck South High School**

***Miranda, Stephen Patrick, 17***

Use of Microarray Analysis to Examine Immunoregulatory Transcriptional Differences between Recurrent Respiratory Papillomatosis Patients and Normal Subjects

<b>Greenlawn</b>	<p><b><u>Harborfields High School</u></b>  <i>Hilgeman, Alexandra Elaine, 17, Centerport</i>  Kinetics and Thermodynamics of Aspartic Acid Deamination</p> <p><i>Reichert, Matthew John, 17, Centerport</i>  Benefit from a Competitor: Predation Preference of the Common Sea Star (<i>A. forbesi</i>) on a Dominant Epifauna (<i>C. fornicata</i>) Associated with Oyster (<i>C. virginica</i>) Culture</p>
<b>Jericho</b>	<p><b><u>Jericho High School</u></b>  <i>Holtz, William Benjamin, 17, Brookville</i>  The Correlates of Adolescent Financial Efficacy: An Empirical Study</p> <p><i>Ji, Bowei, 18</i>  High Flux Filtration Medium Based on Nanofibrous Poly(Vinyl Alcohol) Substrate with UV-Curing</p> <p><i>Rab, Ahmed, 17</i>  MRI Tracking of Single Cancer Cells</p> <p><i>Raoof, Sana, 17, Muttontown</i>  Computation of the Alexander-Conway Polynomial on the Chord Diagrams of Singular Knots</p>
<b>Kings Park</b>	<p><b><u>Kings Park High School</u></b>  <i>Dziudziel, Patryk Marek, 17</i>  Determination of the Spatial and Temporal Extent of High Energy Density Nuclear Matter Produced in Relativistic Au+Au Collisions at the Relativistic Heavy Ion Collider</p> <p><i>Sridhar, Hamsa, 18</i>  A Novel Astigmatic Laser Mode Converter for Optical Vortex Tweezers</p>
<b>Levittown</b>	<p><b><u>Gen. Douglas MacArthur High School</u></b>  <i>Melvin, Emily Rose, 17, Seaford</i>  The Rich Get Richer: An Analysis of Equity in High School Graduation Rates</p>
<b>Manhasset</b>	<p><b><u>Manhasset High School</u></b>  <i>Chang, David, 18</i>  On the Use of Segmented Flow to Enhance the Performance of Micro-heat Exchangers for Microelectronics</p> <p><i>Lee, Brian, 17</i>  The Effects of Nicotine on Endogenous Morphine and Nitric Oxide Release</p>
<b>Merrick</b>	<p><b><u>Sanford H. Calhoun High School</u></b>  <i>Hackett, Robert Helmut, 17</i>  Tumor-Targeting SWNT-based Drug Conjugate with Double Warheads</p>
<b>New Hyde Park</b>	<p><b><u>Herricks High School</u></b>  <i>Chen, Andrew, 17, Roslyn Heights</i>  A Major Component of Green Tea, Epigallocatechin-3-gallate, Inhibits HMGB1, a Novel Pro-inflammatory Cytokine in Lethal Sepsis</p>
<b>New York</b>	<p><b><u>New Explorations into Science, Technology &amp; Math High School</u></b>  <i>Stolarski, Allan Edward, 17</i>  Fountain Motion</p>

**New York**

**Stuyvesant High School**

***Banks, Katherine Rose, 17, Brooklyn***

The Nonagon Anomaly

***Bu, Paula, 17, Little Neck***

Evidence for Basil Leaf Extract as a Nutraceutical Inhibiting Oxidative Stress

***Chang, Timothy Zuchi, 16, Rego Park***

Kinetics of Bioremediation and Electricity Production in a Novel Microbial Fuel Cell

***Dmowski, Artur, 18, Corona***

The Expected Shortest Path in a Randomly Weighted Graph

***Fok, Alice, 17, Oakland Gardens***

Synthesis and Characterization of CdTe Quantum Dots for *in vivo* Imaging

***Hu, Olivia, 17, Little Neck***

Cerebral Lateralization in Chinese-English Bilingualism

***Lazar, Andre Mingyuen, 17***

A Statistical Analysis of Protein Evolution Indicates Extreme Plasticity in Sequences Outside of Functional Interaction Sites

***Min, Elizabeth Kyunghi, 17, Little Neck***

Synthesis of a Slow, Tight-Binding Inhibitor of InhA in *Mycobacterium tuberculosis*

***Westling, Theodore Gasteyer, 17, Bronx***

Analysis of a Formal Chip System

***Yin, Xiaoyun, 17, Forest Hills***

The Effects of Maternal Separation on Adult Neurogenesis in the Dentate Gyrus of Mice

***Zhang, Annie Chen, 17, Bronx***

Fragile X Mental Retardation Protein and the Dysregulation of AMPAR Modulating Proteins

**The Brearley School**

***Gong, Jing Jing, 17***

ESR Dating Pleistocene Barnacles from British Columbia and Maine: A New Method for Tracking Sealevel Change

**Yeshiva University High School for Boys**

***Bochner, Elie Joshua, 17, Springfield, NJ***

Improving the Feasibility of Avalanche Gain X-Ray Detectors

**North Massapequa**

**Plainedge High School**

***Sole, Jonathan Peter, 17, Massapequa***

An Analysis of Institutional Capacity and Volunteer Willingness to Act During an Influenza Pandemic

**Northport**

**Northport High School**

***May, Jessica, 17***

Unraveling the Functional Interaction between DJ-1, Parkin and PINK1, Mutated Proteins Linked to Familial Forms of Parkinson Disease and Set-up of a Cellular Model to Study PINK1 Mutant Toxicity



**Port Washington**

**Paul D. Schreiber High School**

***Bernstein, Madeleine Sarah, 17, Sands Point***

Children's Knowledge of Gendered Words: A Test of Self-socialization Theories of Gender Development

***Glasser, Eric Michael, 17***

Cardboard to Carbon: Storing Hydrogen Gas Using Three Dimensional Crystalline Structures Consisting of Hybrid Frameworks

***McCulloh, Katherine Ellen, 17***

Determining the Efficiency of Various Emulsifying Agents in Creating Emulsions with Propellants Tetrafluoroethane (P-134a) and Heptafluoropropane (P-227)

***Muller, Stefan Klein, 17***

Computer Modeling of the Lateral Border Recycling Compartment in Endothelial Cells

***Mychajliw, Alexis Marie, 16***

The Impact of Vegetative Coverage on Sex Ratios, Prey Availability and Predation Risk in Wetland Odonate Populations

***Siegel, Taryn Ruth, 17***

The Authority-Subordinate Dynamic and Its Effect on Perceptions of Procedural and Distributive Justice

**Riverdale**

**Horace Mann School**

***Cagen, Katherine Thompson, 17, New York***

Evidence for a Tsunami Generated by an Impact Event in the New York Metropolitan Area Approximately 2300 Years Ago

***Makarov, Nicholas Peter, 18, Old Greenwich, CT***

The Asymmetric Nature of the Supernova Remnant CTB 1

**Roslyn Heights**

**Roslyn High School**

***Babazadeh, Evan Joseph, 17, Roslyn***

Vascular Cells Support Maintenance and Differentiation of Embryonic Stem Cells into Functional Sca1<sup>+</sup> Hematopoietic Cells

***Kahn, Jenna Suzanne, 17, Roslyn Estates***

When the Third Degree Is Necessary: Do Pediatricians Obtain Enough Information to Detect Patients at Risk for Hypertrophic Cardiomyopathy?

***Wasserman, Benjamin David, 17***

¿Qué? Quoi? Do Romance Languages Promote Sexist Attitudes?

***White, Jonathan David, 17, Roslyn***

An Analysis of the Relationship between Pressure and Performance in Major League Baseball Players

**Sag Harbor**

**Pierson High School**

***Thiele, Josephine Catherine, 17***

Potent Antifungal Metabolites from the Sooty Mold *Scorias spongiosa*

**Saint James**

**Smithtown High School East**

***Chandran, Ashok, 17, Nesconset***

The Distinctive Molecular Signature of Nicotine in Breast Cancer Cells

**Scarsdale**

**Edgemont High School**

*Brodsky, Alexandra Zoe, 17*

Mutation in NDUFS4 Identified Using 100K Microarrays Results in Leigh Syndrome in an Ashkenazi Jewish Family

*Plestis, Thanases George, 17*

Development of an Experimental Model to Assess Type 1 Endoleak

**Scarsdale High School**

*Schwartz, Joseph Harry, 17*

Differential Diagnosis and Predictive Value of Testing for Genetic Polymorphisms in Pediatric Inflammatory Bowel Disease

**Smithtown**

**Smithtown High School West**

*TerBush, Ryan Nicholas, 17*

Optimizing Carbohydrate Recognition by Cyanovirin-N through Computational Methods

**Spring Valley**

**Spring Valley High School**

*Hahm, Eason, 18, Chestnut Ridge*

Proliferation of Osteoblast Cells on Biodegradable Scaffolds in Varying Conditions

**Staten Island**

**Staten Island Technical High School**

*Koullias, Theodora, 17*

The Effect of Surface Texture and Distance on Impact Angle Calculation in Bloodstain Pattern Analysis

**Suffern**

**Suffern High School**

*Kurtzman, Rebecca Zoe, 17, Sterlington*

Polychlorinated Biphenyl (PCB)-Induced Alterations in Whole Brain L-Aromatic Amino Acid Decarboxylase Protein Levels in Fish Are Time-dependent

*Tatapudy, Sonali, 17*

Development, Validation, and Use of a Computer-Based Counting Procedure to Quantify BrdU-Labeled Proliferating Hippocampal Cells

**Syosset**

**Syosset High School**

*Bajaj, Shirin, 17, Muttontown*

The Application of Potentiometric Response to the Development of a Biosensor for the Detection of Anthrax-causing *Bacillus anthracis* Spores

*Doyle, William Daniel, 17, Jericho*

Federal Open Market Committee Transparency and Effects on National Economy

*Garuthara, Melissa, 17*

Substituting an Immobilized Ferromanganese Catalyst into the Belousov-Zhabotinsky Chemical Reaction

*Kim, Paul Young, 16, Woodbury*

Induction of Bioluminescence in *Vibrio fischeri* via *Erwinia carotovora* Autoinducers

*Shen, Nancy, 17*

Searching for Signs of Anisotropic Cosmological Expansion in High-z Supernova Data

**Uniondale**

**Uniondale High School**

***Ramjeawan, Radha, 17***

Nanomedicine: Utilizing Nanofibers and Nanoparticles to Enhance Transplant Techniques and Cancer Therapy

**West Sayville**

**Sayville High School**

***Tuozzolo, Stephen, 17, Sayville***

The Effectiveness of Hypo and Hypersaline Treatments of the American Oyster, *Crassostrea virginica*, to Control Biofouling by the Polychaete Worm *Sabellaria vulgaris* and Treatment Effects on Oyster Growth in the Great South Bay, Long Island, New York

**White Plains**

**White Plains High School**

***Lanman, Adam Eudene, 17***

A Physical Model for the Grouping Behavior of Adolescent Pedestrians

**Yorktown Heights**

**Yorktown High School**

***Wu, Andrew, 17***

Human Mesenchymal Stem Cell Seeding on Decellularized Human Cardiac Tissue: Evaluation of Passive and Centrifugal Methods

## **NORTH CAROLINA**

**Durham**

**Charles E. Jordan High School**

***Sud, Shivani, 17***

A Genomic Strategy to Refine Prognosis and Treatment of Early Stage Colon Cancer

**North Carolina School of Science & Mathematics**

***Li, Eric Chen, 17, Hope Mills***

Improving the Anticoagulant Activity of a Heparin Drug Using a Specialized Sulfotransferase

***Ravindranathan, Deepak, 17, Calabash***

Effect of Nanocomposite Fire Retardants on Flammability of Wood and Carbon Dioxide Emissions

***Wang, Ray Li, 16, Greenville***

Prediction of HPLC Retention Using Gibbs Free Energy Values

## **OHIO**

**Canton**

**Hoover High School**

***Sinha, Jyotiraditya, 17, Union Town***

An EDTA-encapsulated Nanofiber Filtration Device for Eliminating Divalent Heavy Metals from Water

**Columbia Station**

**Columbia High School**

***Bailey, Elizabeth Jean, 18***

The Investigation of Three Biofuels: Ethanol from Corn Grain and Stover, Biodiesel from Oilseeds, and Pyrolysis of Biomass

**Shaker Heights**

**Hathaway Brown School**

***Oreh, Allison Blair, 17***

The Effect of Lateral Substituents on the Mechanical Properties of Diene Monomers and Their Networks

## OREGON

- Hillsboro**                    **Liberty High School**  
*McCarthy, Brian Davis, 18*  
Photoactive Polymer Films from Interfacially Polymerized Porphyrin and Phthalocyanine Derivatives
- Portland**                    **Oregon Episcopal School**  
*Snyder, Kathryn Ann, 18*  
Removal of Arsenic from Drinking Water by Water Hyacinths (*Eichhornia crassipes*)

## PENNSYLVANIA

- Bethlehem**                **Freedom High School**  
*Jain, Isha, 16*  
Bone Growth in Zebrafish Occurs via Multiple Pulses of Cell Proliferation
- Harrisburg**               **Central Dauphin High School**  
*Rastogi, Sumit Anil, 17*  
Modification of the Debye-Huckel Equation for Concentrated Binary Aqueous Electrolyte Mixtures
- Johnstown**               **Westmont Hilltop High School**  
*Bhat, Utsav Krishna, 17*  
Baseline Physical Health Is an Independent Predictor of Long-Term Mortality after Myocardial Infarction: A Ten-Year Study
- Lancaster**                **Lancaster Catholic High School**  
*Roda, Anastasia Nast, 18*  
Impact of a Boiling Water Nuclear Reactor on Water Quality and on the Benthic, Biofouling and Microbial Communities in the Reactor's Intake and Discharge Creeks
- Laureldale**               **Muhlenberg High School**  
*Zimmerman, Christopher Allen, 18, Reading*  
A Thermodynamic Model for the Synthesis of Multi-Walled Carbon Nanotubes
- Newtown**                 **George School**  
*Kao, Chun-Kai, 18*  
Nanoparticle Enhancement of PEM Fuel Cell Power Output
- Pittsburgh**               **North Allegheny Senior High School**  
*Kim, Clifford Byungho, 18, Wexford*  
Capillary Action in Continuously Tapered Narrow Gap Space

## SOUTH CAROLINA

- Columbia**                **Spring Valley High School**  
*Van Schaik, Graham William Wakefield, 17*  
Pyrethroids and Their Potential to Promote Breast Cancer and Neurodegeneration
- Hilton Head Island**      **Hilton Head Preparatory School**  
*Gintz, Graham Edward, 17*  
The Development of a Novel Nanocomposite Armor: A Five-Year Study of Stealthware™





**Lubbock****Lubbock High School*****Huang, George Xi, 17***

Developing a Model of Parathyroid Hormone Removal During Hemodialysis and Hemoperfusion

**Plano****Plano Senior High School*****Huang, Alexander Chi-Jan, 17***

Mathematical Modeling of a Eukaryotic Circadian Clock

**San Antonio****Keystone School*****Rohret, Sasha Annalicia, 18****Phaseolus lunatus* Growth Patterns in a Simulated Mars Environment: Year IV**Sugar Land****William P. Clements High School*****Ramachandran, Arathi, 17***

Cathodic Electrodeposition of Mixed Molybdenum-Titanium Oxides

**The Woodlands****The Woodlands College Park High School/CISD Academy of Science & Technology*****Burger, Alexander Michael, 18***Investigating the Phenotypes of the *XTH5* and *KOR1* *Arabidopsis thaliana* Genes**VERMONT*****Rupert*****Rolnick Home School*****Rolnick, David Sebastian, 16***

Subspace Intersection: Multidimensional Representation of Graphs

**VIRGINIA****Alexandria****Thomas Jefferson High School for Science & Technology*****Chen, Jeff Zhifan, 17, Centreville***

Dynamic Speech Recognition Language Model Training via Real-Time News Corpus Monitoring

***Deng, Francis, 17, Oakton***

AMD3100, A Specific Antagonist of the Chemokine Receptor CXCR4, as a Potential Therapeutic for WHIM Syndrome

***Fan, Ao, 16, Annandale***The Role of Iron Responsive Element and Hap1 Binding Sites in *Candida albicans* Heme Oxygenase Regulation***Gilbert, Sappho Zoe, 18, McLean***

Survivin Correlates with Prognosis and Inhibits Drug-induced Apoptosis in Ewing Sarcoma Family Tumors

***Keyser, Samantha Grace, 17, Fairfax Station***

Analysis of Polymer Films Using Nuclear Magnetic Resonance

***Lu, Kevin Frank, 18, Great Falls***

Improving Imaging Systems with Unconventional Imaging Elements

***Mattay, Raghav Ram, 17, McLean***

Interhemispheric Connectivity of Homologous Brain Regions

**Alexandria**

**Thomas Jefferson High School for Science & Technology (cont'd)**

*Rohlfing, Anne Bragg, 17, Falls Church*

Radon Capture via Nanocapillarity of Carbon Nanotubes

*Steinhardt, Jacob Noah, 18, Vienna*

Cayley Graphs Formed by Conjugate Generating Sets of  $S_n$

*Yang, William Edward, 17, Fairfax*

fMRI Evidence for the Effects of Sleep Deprivation on Inhibition of a Prepotent Response

**Burke**

**Lake Braddock Secondary School**

*Mulpuri, Kedar Nath, 16, Fairfax Station*

Nanoscale Electronic Sensors for Explosives

**Falmouth**

**Stafford Senior High School**

*Alt, II, Richard Charles, 17*

Developing and Testing a New Seasonal Snowfall Forecasting Method

**Moneta**

**Staunton River High School**

*Vaden, Sarah Narceille, 18, Huddleston*

Opposed Jet Burner Extinction Limits of Hydrocarbon Fuels for Surrogate Determination

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**Menchville High School**

*Watson, Anne Melissa, 18*

Apodization of Optical Apertures to Optimize Laser Performance

**Warwick High School**

*Siochi, Anmar Lou de Joya, 17*

Electric Field Assisted Purification of Biodiesel

**Yorktown**

**York High School**

*Chen, Alex Hao, 17*

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**WASHINGTON**

**Bellevue**

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*Yuan, Qiaochu, 17*

Explicit Equations in the Plane for Elliptic Curves Given as Space Quartics

**WISCONSIN**

**Appleton**

**Appleton High School East**

*Wage, Matthew Michael, 17*

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**WYOMING**

**Pinedale**

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*David, Erica Elizabeth, 18*

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The National Association of Secondary School Principals has listed this program on the National Advisory List of Contests and Activities for 2007-2008.



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