

INQUIRE. INNOVATE. INSPIRE.



2010 Semifinalists



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The Intel Science Talent Search (Intel STS) is America's most prestigious pre-college science competition. Alumni of STS have made extraordinary contributions to science and hold more than 100 of the world's most coveted science and math honors, including seven Nobel Prizes and three National Medals of Science. The Intel STS recognizes 300 students and their schools as Semifinalists each year—pulling from approximately 1,700 applicants—to compete for \$1.25 million in awards. From that select pool, 40 student Finalists are then invited to Washington, D.C. in March to participate in final judging, display their work to the public, meet with notable scientists, and compete for the top award of \$100,000.

The Semifinalists of the Intel Science Talent Search 2010 were chosen from among 1,736 entrants representing 472 high schools in 44 states, the District of Columbia, Puerto Rico and four overseas schools.

Each of the 300 students named a Semifinalist in the Intel STS 2010 will receive a \$1,000 award for their outstanding research. 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 STS 2010. This award is used to further excellence in science, math, and engineering education at the recipient school.

Colleges and universities regard the Intel STS Semifinalist award to be evidence of exceptional academic 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 official publication at www.societyforscience.org/sts, is also generally accepted as documentation of this 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. The 2010 Semifinalists, Intel, and the Society for Science & the Public acknowledge with gratitude the guidance, expertise, and patience of the experienced researchers who supported many of these projects.

From this group of 300 Intel STS 2010 Semifinalists, 40 Finalists will be chosen to attend the Intel Science Talent Institute in Washington, D.C. from March 11-16, 2010. During their trip to Washington, these Finalists will participate in a final judging process and share in \$630,000 in awards.

The 40 Intel STS 2010 Finalists will be announced January 27, 2010 and published in *Science News* magazine.

The list of Intel Science Talent Search 2010 Semifinalists is compiled by Society for Science & the Public and based on entry data. If a student's city of residence differs from that of the school, it also will be listed. Intel STS 2010 Semifinalists are listed by state, high school city, and high school for group reference. Please refer to pages 23-24 for an alphabetical listing of the Semifinalists.

ALABAMA

Birmingham

Jefferson County International Baccalaureate School

McCormick, Lydia Louise, 17,

The Effect of Honey Hydrogen Peroxide Concentration on Small Hive Beetle (*Aethina tumida*) Survival

Huntsville

Virgil I. Grissom High School

Praharaj, Dave Raj, 17,

Small Heat Shock Proteins as a Novel Therapeutic for Experimental Autoimmune Encephalomyelitis: A Potential Treatment for Multiple Sclerosis

Wetumpka

Wetumpka High School

Christensen, Nicholas Mycroft, 18

Do You 'ear Wha' I 'ear?: Lowering Voice Frequencies in Real Time to Revolutionize Hearing Assistance Technology

ARIZONA

Scottsdale

Horizon High School

Zheng, Lingjin, 17

A Modified Attentional Set Shifting Task May Differentiate Types of Errors in a Rodent Cognitive Function Assay

ARKANSAS

Little Rock

Little Rock Central High School

Ma, Siteng, 17

Design and Fabrication of Low Cost Nano-Structured Solar Cells

CALIFORNIA

Davis

Davis Senior High School

Nawar, Saraf, 17

Novel Engineered Hollow Nanoparticle Cluster Array (NCA) SERS Substrates for Biological Applications

Yeung, Angela Yu-Yun, 17

Distributed Learning for Dynamic Spectrum Sharing in Cognitive Radio Networks: A Decision Theoretic Approach

Diamond Bar

Diamond Bar High School

Chang, Hao-Yu, 17

Forecasting Hurricanes: A Market-Consensus Forward-Looking Approach

Fremont

Mission San Jose High School

Xu, David Bin, 17

Analyzing the Genetic Basis of Root-Knot Nematode Reproduction

Zhou, Zhejun, 17

Cloning Transcription Factors that Potentially Underscore Yield and Quality in Transgenic Tomato Fruits

Fullerton

Troy High School

Tao, Jim, 17, Brea

Optimal Separation on Two-Dimensional Arrays

Thomas, Tito Joe, 17, Brea

Efficient Green Synthesis of Functionalized Disulfonylmethanes as Novel Substituted Methylating Agents

- Irvine** **University High School**
Mitra, Sumit Peak, 17
The Effect of Photosensitization of Fullerene-based Nanoparticles on Reactive Oxygen Species Generation and Toxicity to Viruses in Various Aqueous Environments
- Los Angeles** **Marlborough School**
Huh, Julie Jung, 17, Chatsworth
Dynamics of Fecal Indicator and Other Bacteria During Varying Tidal Conditions in Del Rey Lagoon, Playa Del Rey, California
- Lee, Jenny Boram, 17***
The Relationship between Lip Reading Ability and the McGurk Effect in Adolescents
- Palo Alto** **Palo Alto Senior High School**
Ye, Lynnelle Lin, 17
Chomp on Graphs and Subsets
- Pleasanton** **Foothill High School**
Chowdhury, Abhiraj, 17
Adolescents Who Exercise Regularly Are Less Likely To Be Overweight or Obese
- Ghanta, Druthi, 17***
TDP-43 Neuronal Cytoplasmic Inclusions Are Associated with Somato Dendritic Atrophy in Von Economo Neurons and Fork Cells
- Riverside** **Woodcrest Christian School**
Jakpor, Otana Agape, 16
Indoor Air Pollution: A Comparison of Fine Particulate Matter (PM_{2.5}) Emissions from Paraffin and Soy Candles
- Rolling Hills Estates** **Palos Verdes Peninsula High School**
Sinow, Carolyn Susan, 17, Palos Verdes Estates
Construction of an IGF-NAGLU Fusion Protein: Towards Enzyme Replacement Therapy for MPS 111B Syndrome
- Suh, Jane Yoonhae, 18, Rancho Palos Verdes***
Microfluidic Device for Quantitative Single Cell Profiling of Human Pluripotent Stem Cells
- San Diego** **Patrick Henry High School**
Simpson, Anna Kornfeld, 17
A Mobile Autonomous Chemical Detecting Robot
- San Jose** **Lynbrook High School**
Ho, Tony, 17
Ontology Driven Semantic Annotation Method for Public Microarray Repositories
- Liu, David Chienyun, 17, Saratoga***
Semantic Image Retrieval and Interactive Exploration of Large Image Collections
- Maheshwari, Akshay Jitendra, 17, Saratoga***
Zergling: An Optimizing Expert System for Linear-Time Detection of Chimeras Formed during PCR Amplification of 16S rRNA
- Malhotra, Ritik, 17***
Improving the Sensitivities of Mass Spectrometers for Cancer Drug Discovery and Development
- Navaratna, Tejas Ajay, 17***
Application of Semi-major Axis Length Analysis to the Determination of Temperature and Surface Composition of Solar System Objects in Various Stages of Solar Evolution

Nelakanti, Raman Venkat, 17, Sunnyvale

Inducing Anaerobic Conditions Using Sulfur Deprivation for Hydrogen Production in *Chlamydomonas reinhardtii*

The Harker School

Anand, Namrata, 17, Los Altos Hills

A Spectral Analysis of the Chemical Enrichment History of Red Giants in the Andromeda Galaxy Field (M31) vs. Its Dwarf Spheroidal (dSph) Satellites

Jain, Vishesh, 17, Los Gatos

The Prevalence of Hidden Cardiovascular Risk: The Inadequacy of the Standard Lipid Panel

Zhang, Kevin Jerry, 17, Saratoga

Extracting Information from Spectra of Andromeda Red Giant Stars: Temperature and Chemical Abundance

Zhou, Andrew Chen, 17

Quantifying the Mix of Stellar Populations in Studies of the Andromeda Galaxy

West Hills

Chaminade College Preparatory

Shahmirian, Sarine Gayaneh, 17, Northridge

Propargyl Methyl Ethers: Novel Precursors to Cobalt-complexed Propargyl Cations

COLORADO

Colorado Springs

Home School

Kruse, Caleb Lloyd, 17

Addressing Coral Tissue Regeneration, Bleaching, and Calcification Using Ascorbic Acid Supplementation

Rampart High School

Shankar, Aarthi, 17

Proteomic Characterization of Extracellular Matrix (ECM) to Identify Tumor Associated Biomolecules

CONNECTICUT

Greenwich

Greenwich High School

Newberry, William Cummings, 18, Riverside

Laser Induced Microfluidic Motion of a Liquid-Liquid Interface

New Canaan

New Canaan High School

Casavant, Caroline Mary, 17

Bacterial Membrane Depolarization by Trypanosome Lytic Factor: A Component of Innate Immunity

New Haven

Hopkins School

Pung, Leland, 17, Madison

A *Drosophila* Model for Alzheimer's Disease and the *in vivo* of APP

Southbury

Pomperaug High School

Lu, Jenny, 17

Determination of the Relationship Between Retina-Cognin and Neural-cadherin in the Characterization of a Disulfide-Dependent Cell Adhesion Complex

Wallingford

Choate Rosemary Hall

Pendri, Pooja Reddy, 17, South Glastonbury

Natural Molecule Inspires Novel Anti-Tuberculosis Drugs

Westport

Staples High School

Gandelman, Jason A., 17

Bioinformatic and Synthetic Approaches to Studying Advanced Glycation End-products

DISTRICT OF COLUMBIA

Washington

National Cathedral School

Nabel, Katherine Grace, 17

Alternative Genotypes of Brain-Derived Neurotrophic (BDNF) Differentially Affect Regional Cerebral Blood Flow: A Two-Year Study of Individual Variation in Human Brain Function, Learning, and Personality

Saint Albans School

Balasubramanian, Anirudha, 17, Bethesda, MD

On the Lower Central Series Quotients of a Graded Associative Algebra

FLORIDA

Tampa

Howard W. Blake High School

Woodward, Nicholas David, 18

In Search of Topological Insulators

GEORGIA

College Park

Woodward Academy

Isenstein, Jared Benjamin, 17, Sandy Springs

Bioengineered Vessels as a Model for Observation and Manipulation of Immune Cell Induced Vascular Inflammation

Fayetteville

Fayette County High School

Reddy, Sonika, 17

The Role of PGC-1 α as a Neuroprotector in the Pathogenesis of Parkinson's Disease

Marietta

Joseph Wheeler High School

Patel, Darpan Naran, 17

Tumorigenic Potential of a Novel 14-3-3 Adaptor Protein in Lung Cancer

HAWAII

Hilo

Waiakea High School

Kamitaki, Nolan Mint Kyoshi, 17

Programming a Network Approach to Contain the Spread of Epidemics

ILLINOIS

Aurora

Illinois Mathematics & Science Academy

Chen, Irene Xiong, 16, Chicago

Coordinate-Free Characterization of Homogeneous Polynomials with Isolated Singularities

Jain, Bonny, 16, Moline

Modification of Polyelectrolyte Multilayer Films to Increase Cation Selectivity

Kontsevoi, Vladislav Olegovich, 16, Evanston

Enhancement of Thermoelectric Properties of Lead Telluride by Doping

Kumar, Anusha Mohan, 17, Moline

Evidence for Evolutionary Reductions in the β -adrenergic System of the Texas Toad, *Bufo speciosus*

Evanston

Evanston Township High School

Damashek, Aaron Kyle, 18

Planetary Habitability in a Binary Star System

Naperville

Naperville Central High School

Rudolph, Katherine Rebecca, 18

Maximal Densities of High-Dimensional Sphere Packings

Palatine **William Fremd High School**
Puranik, Arjun Ranganath, 17
Finite-dimensional Irreducible Representations of Rational Cherednik Algebras Associated to the Coxeter Group H_3

Urbana **University High School**
Suslick, Benjamin Adam, 17, Champaign
Discrimination of Complex Mixtures by a Colorimetric Sensor Array: Coffee Aroma

INDIANA

Carmel **Carmel High School**
Ma, Angela, 18
Multiplex Detection of microRNAs

O'Brien, David Chen, 17
Potential Biocompatibility of Quantum Dots as a Function of Thiol Ligand Length

Sun, Hong Yang, 18
Dihydroceramides Alter Molecular Forces and Affect Ion Channels in Lipid Membranes

Munster **Munster High School**
Kondamuri, Neil Sai, 17, Dyer
Relay Landscape Learning: A New Mode of Learning in Honeybees, *Apis mellifera*

South Bend **John Adams High School**
Fein, Frieda Rose, 18
Investigations of Faunal Diets at Pokagon Village Site to Determine Farming Practices of the Pokagon Band *circa* A.D. 1830

West Lafayette **West Lafayette Junior-Senior High School**
Park, Jungsoo, 18
Analysis of Simplified Gas Dynamics for Bubble Expansion of a Rising Bubble in Water and Air Compression within a Destroyed Submarine

KANSAS

Stilwell **Blue Valley High School**
Roy Chowdhury, Monica, 17, Leawood
Nanotechnology Based Anti-Cancer Drug Therapy for Targeting Uveal Melanoma Cells in Retinoblastoma

KENTUCKY

Louisville **duPont Manual Magnet High School**
Branson, Zachary Joseph, 18
Does the Brain Process Sounds Mathematically?

LOUISIANA

Natchitoches **Louisiana School for Math Science and the Arts**
Findley, Elizabeth Jean, 17
Quantifying English Coding Evolution

MARYLAND

Baltimore **Baltimore Polytechnic Institute**
Fan, Wuqiong, 17
Gene Expression Signature-based Chemical Genomics Identifies Drug Candidates in a Mouse Rheumatoid Arthritis Cell Model

- Bethesda** **Walt Whitman High School**
Griswold, Kettner John Frederick, 17
 ATP Production by Electromagnetic Induction in Bacterial Nanowires: A Novel Method of Photosynthesis?
- Clarksville** **River Hill High School**
Li, Richard, 17
 Novel Applications of Herbal Therapeutics in Inflammatory Bowel Disease: An *in vitro* Mechanistic Study
- Ellicott City** **Centennial High School**
Choa, Ruth En-Yeung, 17
 Fourier Analysis and Its Applications to Music Instrument and Nano-Scale Quantum Devices
- Frederick** **Tuscarora High School**
Ahmed, Shaan Ali, 17
 Palmerolide A, a Natural Compound from an Antarctic Tunicate, Induces Stress Pathways in Human Melanoma Cells Involving Autophagy and the Garbage Packaging Protein p62
- Marriottsville** **Marriotts Ridge High School**
Fu, Yebo, 17, Woodstock
 BP1 Homeoprotein Enhances the Metastatic Potential in ER-negative Breast Cancer
- Rockville** **Richard Montgomery High School**
Yang, Jiayi Nathaniel, 17, Gaithersburg
 Predicting Mortgage Default Risk in the Subprime Loan Market
- Thomas Sprigg Wootton High School**
Papatsenko, Ilya Dmitrievich, 17
 Algorithm for Mapping Temporally Local Massive Switches of Gene Expression and Its Application to *Drosophila melanogaster* Embryogenesis
- Silver Spring** **Montgomery Blair High School**
Cohen, Michael Benjamin, 17, Chevy Chase
 Superconformal Algebras Associated with Representations of $D=1$, N -extended Supersymmetry
- Ko, Pin-Joe, 17, Rockville***
 Spatial and Temporal Expression of Methionine Cycle Genes in Zebrafish Development
- Li, Yifan, 18, Rockville***
 Differentiation of Mouse Embryonic Stem Cells into Retinal Pigment Epithelium Cells in Culture
- Lin, Haozhi, 17, Potomac***
 Assessment of the Biophysical and Functional Alterations of Human Umbilical Vein Endothelial Cells Exposed to High D-Glucose
- Ma, Li, 17, Rockville***
 Comparing the Mechanics of Electromechanical Deposition of Copper and Silver Nanowires in Porous Alumina Templates
- Molina, Nils Federico, 18, Bethesda***
 Monochromatic Right Triangles on the Integer Grid
- Ndousse, Kamal Kuango, 17, Boyds***
 The Baryon Mass in the Large N_c and Heavy Quark Limits
- Puttagunta, Rohan, 16, Gaithersburg***
 Finding Monochromatic Rectangles in Grids

Rosano, Kristen Knutsen, 17, Rockville

Screening for Predisposing Genetic Variations in *BCL11A* in Carney Complex Patients Who Are Negative for Mutations in *PRKARIA*

Shaya, Benjamin Louis, 17, Bethesda

Enhancement of Optical Filaments via Multiple Femtosecond Laser Pulse-Induced Molecular Alignment

Xu, Conway, 17, Potomac

Genomic Analysis of Metabolic Pathways Involved in Cobalamin Assimilation, Branched Chain Amino Acid Oxidation, and Biotin Metabolism

Zhou, Xinyi Yedda, 17, Rockville

Exploring Alternative Splicing as a Novel Mechanism for Circadian Rhythm Dysregulation in Severe Autism

MASSACHUSETTS

Belmont

Belmont High School

Kang, Jenny Jeongyun, 17

Identification and Analysis of a Novel Cytotoxic T-Lymphocyte Antigen-4 Binding Partner in T-cells

Bolton

Nashoba Regional High School

Jiang, Yivan, 17, Stow

A Method for the Preparation of Nanoparticulate CoQ10 Powder

Boston

The Winsor School

Byrne, Elizabeth Hockfield, 18, Cambridge

The Evolution of EDAR: Using Statistics, Bioinformatics and Protein Analysis to Understand Positive Natural Selection in the Human Lineage, Specifically in the Gene EDAR

Brookline

Brookline High School

Kim, Minhye, 17

Hepatitis B Virus Infection Increases the Risk for Developing Diabetes

Cambridge

Buckingham, Browne & Nichols School

Wang, Elizabeth Yi-Wen, 17, Belmont

Increased Activation of the Dorsal Anterior Cingulate Cortex in Preparation for a Hard *versus* an Easy Task Shown by Functional MRI

Cambridge Rindge & Latin School

Yedidia, Adam Blair, 17

Counting Independent Sets and Kernels of Regular Graphs

Lexington

Lexington High School

Chonofsky, Mark Adrian, 17

Phylogeny of the Taxaceae Inferred from Phytochrome Sequences

Lung, Genesis, 17

High-Variance Comparative Genomic Methodology: A Bacteriophage Case Study

Sheffield

Berkshire School

Guo, Xiao Rui, 18

Deposition of Alginate Microbioreactor Array through Polyelectrolyte Interactions

Shrewsbury

Shrewsbury High School

Sharma, Sunanda, 17

Modification of Developing and Mature Brain Circuits in an Autism Model through Sensory and Social Enrichment

MICHIGAN

Ann Arbor

Greenhills School

Guan, Mary Linpei, 17

Analysis of Peroxisome Proliferator-activated Receptor Gamma in the Regulation of Angiogenesis

Beverly Hills

Detroit Country Day School

Wu, Sherwin Zhang, 17, Novi

Glucosaminyl (N-acetyl) Transferase 2 (GCNT2) Expression Highly Influences Breast Cancer Metastasis and Promotes an Epithelial-Mesenchymal Transition (EMT)

Canton

Plymouth High School

Kothari, Shan Amar, 16

Mitochondrial DNA Phylogeny of the Family *Alligatoridae*

Grand Rapids

Catholic Central High School

Capodilupo, John Vincenzo, 18

Analyzing the Clustering of Point Sources in the 74 MHz VLSS Survey

Okemos

Okemos High School

Tsai, Jennifer Wei-Cha, 17

The Effects of Diabetes on Human Retinal Fatty Acids Profiles

MINNESOTA

Minneapolis

Breck School

Mokhtari, Daniel Alexander, 18, Eden Prairie

Applications of Bis(trimethylsilyl) Acetylene in Copper-Catalyzed Azide-Alkyne "Click" Chemistry

Morris, Charles David, 18, Minnetonka

Role of PKC ϵ / λ in Carrageenan-Induced Inflammatory Pain Response

MISSOURI

Columbia

Rock Bridge High School

Misra, Sidhant, 17

Early Detection of Breast Cancer: Using Gold Nanoparticles to Detect a Single Circulating Tumor Cell in a Photoacoustic Cytometry System

Kansas City

Pembroke Hill School

Lawhon, Carl Edward, 18

The Practical Utilization of Wireless Protocol and Swarm Mentality to Improve Overall Efficiency and Effectiveness in Autonomous Robot Platforms

MONTANA

Missoula

Big Sky High School

Michels, Katherine Zeita, 17

Malathion: Hydrolytic Breakdown via Chemical and Enzymatic Means

Villarreal-Calderon, Rodolfo, 17

Air Pollution and Myocardial Inflammation

NEW JERSEY

Belle Mead

Hillsborough High School

Feng, Jason Yifan, 17, Hillsborough

Regeneration of Arsenic-Laden Adsorbent and Recovery of Arsenic from Spent Regeneration Solution

Fort Lee

Fort Lee High School

Park, Christine Soyoan, 17

Preliminary Study of Delay Frustration Task (DeFT) on Healthy Adolescents

Sadeghian-Nia, Bahar, 17

Potential Natural Remedy for Cancer-Related Immunosuppression: Mushroom-Derived Beta-Glucans and Extracts Stimulate Monocyte-Derived Dendritic Cell Maturation and Peripheral Blood Mononuclear Cell Activation

Hackensack

Academy for Medical Science Technology

Cervino, Stephanie, 17, Ridgefield

Effect of Resveratrol on Viability and Caspase Production in HepG₂ Cells

Choi, April Hea Yon, 18, Glen Rock

Effects of Bisphenol A on Rotifers and an Alternative Method for BPA Detection

Zhou, Linda, 17, River Edge

The Double Life of hTERT: Identification of a Novel Function and an Explanation of the Mechanism Involving the Epidermal Growth Factor Receptor

Academy for the Advancement of Science & Technology

Cho, Yeonjeong, 17, Norwood

The Effect of β -Lapachone and Jag1 Antibody on Cell Viability and IL-6 Production

Choi, Eun Young, 17, Paramus

Synthesis of Novel Sunscreen Candidates Derived from Resveratrol

London, Dennis, 17, Haworth

Control of Astrocyte Cell Growth Using Functionalized Multiwalled Carbon Nanotubes

Velednitsky, Mark Lipa, 17, Tenafly

The Importance of Ordering in Educational Design

Holmdel

Holmdel High School

Lai, Erica Lin, 18

Density and Size Effects in Liquid Water: The Formation of Nanobubbles, Source of Water Anomalies

Lincroft

High Technology High School

Chatterjee, Moyukh, 17, Manalapan

Development of a Resonant Optical Cavity Simulation

Song, Oliver Roy, 17, Holmdel

An Approach to Processing Noisy 3D Trace Data from Nuclear Particle Collisions

Livingston

Livingston High School

Kunisky, Dmitriy, 17

Probabilistic Properties of the Logarithmic Number Derivative

Madison

Madison High School

Mathew, Akhil, 17

Deligne Categories and Representation Theory in Complex Rank

Martinsville

The Pingry School

Lisko, Bozhena, 17, Branchburg

Transcription of vap-1:RFP in *Caenorhabditis elegans* Amphid Glia Is Regulated by Sensory Neurons

Millburn

Millburn High School

Chen, Amy Zhenlu, 17, Short Hills

Gating of a Cyclic Nucleotide-Modulated KcsA-MloK1 Ion Channel Chimera

Lieber, Benjamin Craig, 17

Production and Characterization of Bio-oil from Plywood and Particleboard Using Fast Pyrolysis in a Fluidized Bed Reactor

Okinow, Max Elijah, 18, Short Hills
Creating a Battery from the Iodide in Seaweed

Teaneck

MA'AYANOT YESHIVA HS FOR GIRLS

Applebaum, Kayla G., 17

The Protective Effects of a Multicomponent Polymer Coated Titanium Dioxide (TiO₂) on Human Adicytes and Lambda DNA in the Presence of Ultraviolet (UVA/UVB) Radiation

NEW MEXICO

Albuquerque

Albuquerque Academy

DeBenedictis, Erika Alden, 17

Traveling the Interplanetary Superhighway: An Autonomous Spacecraft Navigation System

NEW YORK

Armonk

Byram Hills High School

Cawkwell, Rachel Elizabeth, 17, Bedford

Examining the Role of Microvesicles in Communication between Tumor Cells and Macrophages in Cancer

Di Capua, John Federico, 17

The Use of the i-gel Laryngeal Airway Device for Rescue Breathing by Lay Responders: A Comparative Study of Three Airway Techniques

Kosminsky, Lily Simone, 17, Pleasantville

Assessing the Risk of Stress Shielding in Osseointegrated Transfemoral Implants

Schneider, Ian Michael, 17

Annealing of CulnA1 Precursors during Two Step Absorber Layer Deposition for CIAS Thin Film Solar Cells

Bay Shore

Bay Shore High School

Boktor, Deborah, 17

Electrospinning PVA: The Effects of Solution Conditions and Voltage on the Morphology and Fiber Diameter

Bellmore

John F. Kennedy High School

Bornstein, Daniel, 18, Merrick

An Analysis of Photosynthesis in Poplar Inoculated with Endophytic Bacteria

Bruno, Barri Danielle, 17

An Exploratory Study on the Effect of Music on Linguistic Productivity in Low Functioning Children with Autism

Weiner, Stephanie Miriam, 17

The Influence of Social Network Position on Preference Convergence

Briarcliff Manor

Briarcliff High School

Ellson, Gregory Thomas, 17

Shape Memory Polymer/Nylon Lycra Composites for Orthopedic Casts

Neider, Michelle Kate, 17

Lucid Dreaming and Prefrontal Task Performance

Bronx

Bronx High School of Science

Kim, Soo Kyoung Joanna, 18, Flushing

A Simulation Using C++ to Evaluate the Performance of Columbia University Non-Neural Torus Stellarator Based on a Pedersen Model for Optimization

Shetler, Oliver, 17, New York

Ampakine S18986 Protects Dopamineergic CATH.a Cells Against 6-Hydroxydopamine Mediated Toxicity and Increases GHS Expression: Implications for Treatment of Parkinson's Disease and Neurological Degeneration

Shieh, Jason, 18, New York

A Stroma Culture System Supports the Growth of Primary Human B-Cell Acute Lymphoblastic Leukemia (B-ALL), and Reveals the Heterogeneity and the Hierarchical Structure of B-Cells

Siu, Ho Chit Hosea, 17, Douglaston

Evaluation of Hydraulic Conductivity from Grain Size Analysis and Slug Test in Araihasar, Bangladesh

Yan, Jingyi, 17

N-glycosylation Affects the Expression Level of Kv1.3 Potassium Channel in Breast Cancer Cells

Cedarhurst

Lawrence High School

Masih Das, Paul, 17, Lawrence

A Novel Chemical Synthesis for $>1 \mu\text{m}^2$ Graphene Sheets

Chappaqua

Horace Greeley High School

Roher, Natalie Sloane, 17

Intermanual Transfer of Motor Learning with Robotic Assistance

Commack

Commack High School

Tchaconas, Alexis Eleni, 17, East Northport

A Genetic Investigation of Autism: The Role of Type III Neuregulin-1/ErbB4 Signaling and Contactin4 Expression in Neurodevelopment

Dix Hills

Half Hollow Hills High School East

Emmer, Carly Jill, 17

Time Series Study of Quaternary Ammonium Compounds in Sewage Sludge during Peak H1N1 Media Coverage at Various Treatment Facilities with Alternative Sewage Pressing Methods

Half Hollow Hills High School West

Alpoge, Levent, 17

A Non-Parametric, Massively Parallelized Multiscale Vessel Detection Method for Complex Vascular Structures

East Setauket

Ward Melville High School

Calev, Yuval Yaacov, 17

Language Perception, Production, and Memory: A Comparison of Older and Younger Adults

Diviney, Conor Bodkin, 17, Stony Brook

The Synthesis of Compounds as Inhibitors of the Menaquinone Biosynthetic Pathway in *Mycobacterium tuberculosis*

Jiang, Ruoyi, 17

Targeting Loop Dynamics in $\beta\text{I}/\beta\text{III}$ Isotype Tubulin: The Application of *in silico* Techniques in Combating Chemotherapy Drug Resistance

Li, Andrew, 17

An Estimate of the Viscosity of the Quark-Gluon Plasma via Anisotropic Flow Measured in Au + Au Collisions at the Relativistic Heavy Ion Collider

Mysore, Pooja, 17, South Setauket

Effects of Algorithmically Derived Calcitonin Receptor Peptide on the Formation of Bone Matrix

Rao, Rashmi, 17, Stony Brook

Pattern Classification of fMRI Data for Understanding Brain Activity in Drug Users

Weerasooriva, Nimali Ayanthi, 17, Lake Grove

Inhibition of Fatty Acid Biosynthesis in *Mycobacterium tuberculosis*: Towards a Novel Tuberculosis Chemotherapeutic

Endicott

Union Endicott High School

Ou, Yiting Amy, 17

Characterization of Protease Involved in Degradation of Allergenic Peanut Storage Protein

Fresh Meadows

St. Francis Preparatory School

Tuminello, Stephanie Jane, 17, Floral Park

The Role of Feeding Type and Sleep Environment in Cases of Sudden Infant Death

Glen Head

North Shore High School

Korponay, Cole Harris, 17, Old Brookville

Creating a System of Three-Body Interactions without Two-Body Interactions Using DNA Nanotechnology

Great Neck

John L. Miller-Great Neck North High School

Chiang, Stephanie, 17

Characterization of Aerosolized Particles during a Cyanobacterial Bloom in Lake Agawam, NY: Implications for Cloud Condensation Nuclei (CCN) Formation

Katz, Daniel Ryan, 17

Using the Transport Coefficient to Probe the Coupling of the Quark Gluon Plasma Produced in Au + Au Collisions at the Relativistic Heavy Ion Collider

Kim, Ho Sung Harry, 19

Micro RNA Expression to Distinguish Mesothelioma from Adenocarcinoma

North Shore Hebrew Academy High School

Ditchek, Sarah Dunn, 17, Woodmere

Sea Surface Pressure: A Candidate Variable for Hurricane Tracking Prediction

Pfeffer, Joshua William, 17, Plainview

Super Kähler-Ricci Flow

Swartz, Solomon Victor, 18

Development of a Novel Thermoresponsive Hydrogel for Post-Lumpectomy Breast Reconstruction

William A. Shine-Great Neck South High School

Starr, Charles Hancock, 17

The Effect of N-Terminal Mutations on Rad54 Function

Guilderland Center

Guilderland Central High School

Lin, Cassie, 17, Schenectady

Resveratrol Induces COX-2-dependent Apoptosis in Human Ovarian Cancer Cells

Hewlett

George W. Hewlett High School

Brooks, Eric David, 16

Transition from Indolent to Metastatic Prostate Cancer Characterized through the Health Disparity between African American and Caucasian American Men

Shamir, Shira Ruth, 17, Woodmere

Why Do Students Continue to Cheat? A Comparative Study of Individual vs. Contextual Factors in Neutralization of Academic Dishonesty

Shapira, Jennie Michele, 16, North Woodmere

The Cost of Silence: A Study Examining the "Telling" Behavior of Victims of Bullying

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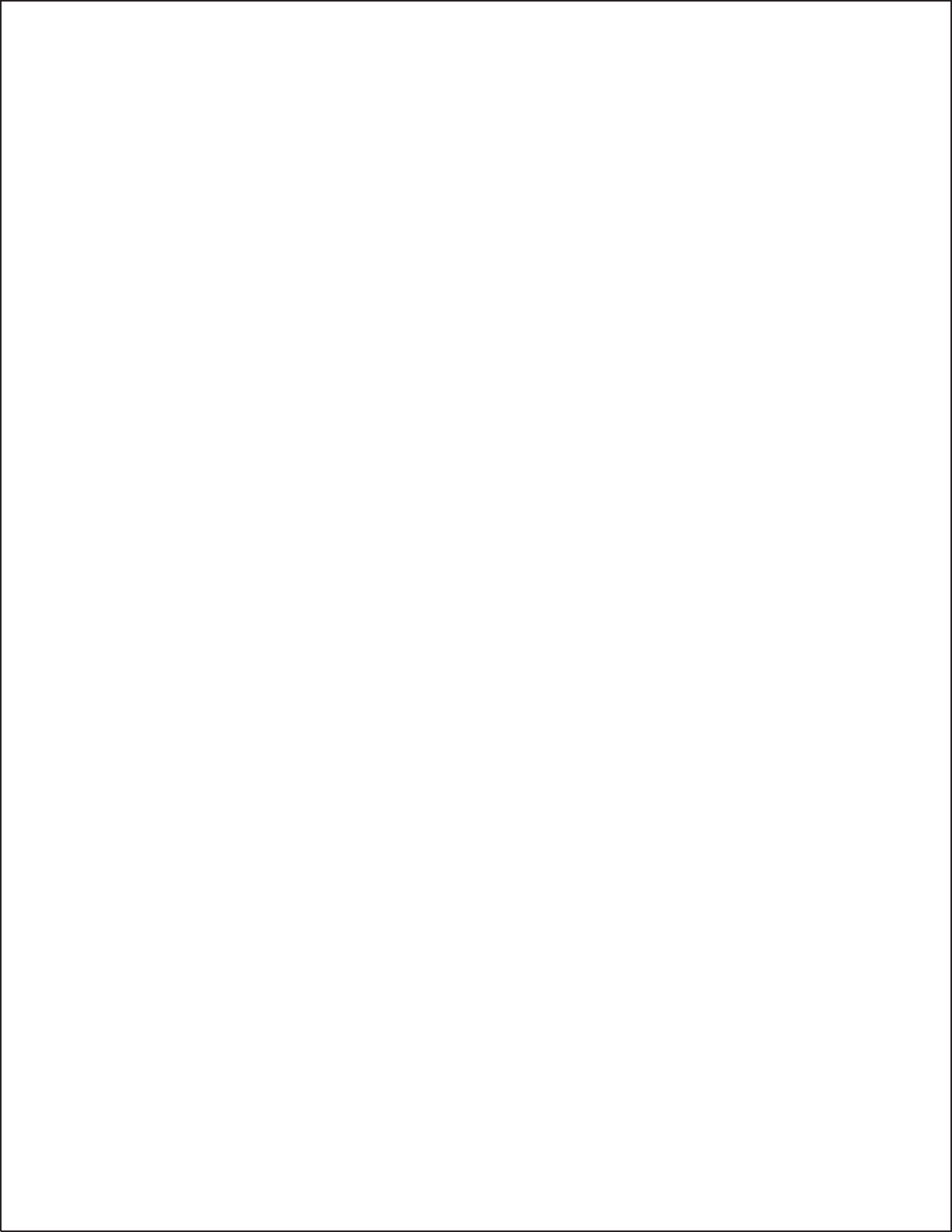
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