

NEBRASKA: Nebraska Academy of Sciences, C.B. Schultz, Executive Director, Nebraska Academy of Sciences, 306 Morrill Hall, University of Nebraska, Lincoln 68588-0339

NEW JERSEY: The New Jersey Academy of Science, Douglas Garatina, 13 West 50th Street, Bayonne 07002

NEW MEXICO: New Mexico Tech, Dr. David Shortess, Biology Department, New Mexico Tech, Campus Station, Socorro 87801

NORTH CAROLINA: North Carolina Student Academy of Science, Dr. Charles F. Lytle, Biological Sciences, Box 7611, North Carolina State University, Raleigh 27695

OHIO: The Ohio Academy of Science, Lynn Edward Elfner, Executive Officer, The Ohio Academy of Science, 445 King Avenue, Columbus 43201

OKLAHOMA: Oklahoma Junior Academy of Science, Jim Pigg, Director, Oklahoma Junior Academy of Science, 300 N. Eastern, Moore 73160

OREGON: Oregon Museum of Science and Industry, David Heil, Director, Grant Program Development and Outreach, Oregon Museum of Science and Industry, 4015 SW Canyon Road, Portland 97221

PENNSYLVANIA: Pennsylvania Academy of Science, Dr. Kurt C. Schreiber, Professor, Department of Chemistry, Duquesne University, Pittsburgh 15282

TEXAS: Texas Section of the American Association of Physics Teachers, Dr. James R. Crawford, Department of Physics, Southwest Texas State University, San Marcos 78666-4616

UTAH: Utah State Office of Education, R. LaMar Allred, Specialist in Science Education, Utah State Office of Education, 250 East 500 South, Salt Lake City 84111

VERMONT: The University of Vermont, Dr. George C. Crooks, 74 Spear Street, South Burlington 05401

VIRGINIA: Virginia Junior Academy of Science, John Liebermann, 10106 Spring Lake Terrace, Fairfax 22030

WASHINGTON: Washington State Science Talent Search, Dr. Paul A. Lepse, Chemistry Department, Seattle Pacific University, Seattle 98119

WEST VIRGINIA: West Virginia Academy of Science, Joseph F. Glencoe, Jr., Department of Biology, Box 31, West Virginia Wesleyan College, Buckhannon 26201

WISCONSIN: Wisconsin Science Talent Search, Dr. Dean Nelson, Professor of Chemistry, University of Wisconsin-Eau Claire, P-458, Eau Claire 54701

WYOMING: (See Colorado-Wyoming)

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THE 46th ANNUAL  
*Science Talent Search*®  
for the  
Westinghouse Science Scholarships  
and Awards

1987 HONORS GROUP



Administered by SCIENCE SERVICE  
1719 N Street N.W., Washington, D. C. 20036

FOR RELEASE: WEDNESDAY, JANUARY 14, 1987

The Science Talent Search was the pioneering endeavor to discover at the high school senior year level those who have the potential to become the research scientists and engineers of the future. It has fulfilled this function far beyond the hopes entertained when this educational project was conceived. Many millions of dollars in scholarships in colleges and universities throughout the nation, supplementing the Westinghouse Science Scholarships, have been given to those who have thus been discovered to have high science talent.

This selection of students with research ability in science and engineering has become an institution and tradition due to approval from the academic community and the creditable records of winners in colleges, universities and professional positions.

The participation of a great industrial organization in the financing of the annual Science Talent Search is a notable contribution to the advancement of science in America. This activity can be considered a support of "pure research" of importance equal to the fundamental researches in the Westinghouse Research Laboratories. Science and education are grateful for the financial support of the forty-six Science Talent Searches by the Westinghouse Electric Corporation and the Westinghouse Educational Foundation.

Science Service, engaged in the interpretation and public understanding of science on a broad front, is proud of administering the annual Science Talent Search. From the newspapers, educators, scientists and engineers of America, there has been enthusiastic cooperation in this annual activity that means so much to high school seniors interested in science and engineering.



# 1987 Honors Group

The achieving of Honors in the Science Talent Search is an evidence of ability and interest in science and engineering which should be taken into consideration by colleges and universities in admissions and granting of scholarships. For this reason this Honors List is distributed to all universities and colleges in the United States. Each of those winning honors is being furnished with multiple certifications intended to accompany applications for college admissions and for scholarships, but a listing in this pamphlet should be accepted as an equivalent certificate. Listed are 101 girls and 199 boys.

From this list of 300 Honors, 40 are being chosen as Winners of the Washington trip. Among these, \$140,000 in scholarships and awards will be distributed. The Winners are being announced subsequent to the distribution of this list and their names will be published in SCIENCE NEWS of January 24, 1987, and it will be sent upon request accompanied by a self-addressed stamped envelope.

(age follows name; home address underlined)

## ALABAMA

Huntsville Granger, Darryl Edward 18 Randolph H.S. 2307 Gladstone Dr. 35811 Design and Construction of a Railgun

## ARIZONA

Tucson McLaughlin, Kenneth Dean 17 Amphitheater H.S. 5560 N. Maria Dr. 85704 Introduction to Cellular Automata

## ARKANSAS

Ravenden Springs Schuchman, Deidre Michelle 18 Oak Ridge Central H.S. Rt. 1, Box 191 72460 Presence or Absence of Auditory Stimuli: Their Effect on Cardiovascular and Neuromuscular Functions

Sheridan Lowrey, Seth Mingea 17 Sheridan H.S. P.O. Box 153 72150 Excursions Into Experiential Geometry

Weiner Weld, Kyle Jones 17 Weiner H.S. P.O. Box 313, Fisher 72429 Isolation of Bacteria That Modify Antibiotics

## CALIFORNIA

Alhambra Hou, Lisa Jou-Fei 17 Alhambra H.S. 1341 College View Dr., #5, Monterey Park 91754 Basic Studies of Optical Coating Thermal Properties

La Habra Nigrini, Jennifer Lynn 17 La Habra H.S. 510 Papyrus Dr., La Habra Heights 90631 Analysis of Modern Human Footprints as Applied to the Study of Ancient Man

Los Alamitos Book, Robert Aaron 17 Los Alamitos H.S. 3530 Clover Cir., Seal Beach 90740 Tar Sand Bitumen Extraction with Surfactant-Producing Bacteria and Sonication

Orinda Jacobson, Jessica Lynn 18 Miramonte H.S. 53 E. Altarinda Dr. 94563 Effects of Calcium Channel Blockers in Daphnia

Riverside Wilkins, Mark Randall 15 Riverside Poly H.S. 2266 Century Ave. 92506 Viability of the Use of Rayleigh Scattering to Determine Planetary Atmosphere Surface Pressure

Sierra Madre Kuwata, Keith Tadao 17 Maranatha H.S. 4848 Hampton Rd., La Canada 91011 Increasing Foam Stability for Enhanced Oil Recovery

## COLORADO

Colorado Springs Shepard, Thomas Claude 17 William J. Palmer H.S. 2104 N. Cascade Ave. 80907 Ant-agonistic Pheromones

Denver Prasad, Kedar Che 18 Colorado Academy 351 Fairfax St. 80220 Induction of Differentiated Phenotype in Melanoma Cells by a Combination of an Adenosine 3',5'-Cyclic Monophosphate Stimulating Agent and Vitamin E Succinate

## CONNECTICUT

East Lyme DeVore, Kimberly Michelle 17 East Lyme H.S. 34 Valley Dr., Salem 06415 Enumeration of Microorganisms and Theoretical Determination of Biomass in a Hazardous Waste Land Treatment

Milford Barrett, Jennifer Genevieve 16 Academy of Our Lady of Mercy 20 Foran Rd. 06460 Pollution: The Effect of Cupric Chloride on Crassostrea virginica

## DELAWARE

Seaford Dujari, Rajeev 17 Seaford Senior H.S. R.D. 5, Box 53 19973 Investigation of the Coding Technique in Computer Storage of Textual Data

## DISTRICT OF COLUMBIA

Washington McMahon, Joseph Edward 17 Gonzaga College H.S. 8224 Inverness Hollow Terr., Potomac, MD 20854 Artificial Intelligence Applied to Robotics

## FLORIDA

Daytona Beach Stryker III, Judson Philip 17 Mainland Senior H.S. 35 Mayfield Cir., Ormond Beach 32074 Measuring Brownian Movement

Hilliard Roberts, Derek Marcel 17 Hilliard Junior-Senior H.S. Rt. 1, Box 159-B 32046 Stored Energy in Reactor Graphite

Hudson Martens, Jeffrey Randall 18 Hudson H.S. 13004 Sawmill Way, Bayonet Pt. 33567 Effects of Lysozyme on the Bacterial Colonization of the Oral Cavity

Melbourne White, Jody Ann 17 Melbourne H.S. 2700 Filly Ln. 32935 Innovative Cam Engine Design and Testing

Miami Roberts, Victoria Marie 17 Miami Edison Senior H.S. 1011 N.W. 53 St. 33127 Effects of Interferon on Natural Cell Mediated Cytotoxicity in Acquired Immunodeficiency Syndrome

Millero III, Frank Joseph 17 Miami Killian Senior H.S. 7720 S.W. 90 Ave. 33173 Concentration of Platelet Analogs in Blood Flow Through Capillary Channels

Kay, Michael Steven 17 Miami Sunset Senior H.S. 13001 S. Calusa Club Dr. 33186 Amino Acid-Glucose Bond in Rabbit Heart Glycogen

New Smyrna Beach Griffy, Charla Cristal 17 New Smyrna Beach H.S. 1709 Orange Tree Dr., Edgewater 32032 Spectroscopic, X-Ray, and Radio Analysis of QSO Nebulosity

Ocala Wang, Joseph Chen-Yu 17 Forest H.S. 506 S.E. 36 Ave. 32671 Tilt Angles of Jovian Decametric Radiations

Pompano Beach Gerson, Michael Bryan 17 Ely H.S. 1328 N.W. 100 Ave., Coral Springs 33071 Computer Assisted Suspect Identification 1.00 (C.A.S.I. 1.00)

Jiralerspong, Sao 17 Ely H.S. 611 Palmetto Dr., Coconut Creek 33066 Bilateral Alpha Rhythm in the Human Brain During Perception of Words, Inverted Words, and Tones

Patel, Neeta Pravina Chandrakant 17 Ely H.S. 2971 N.W. 106 Ave., Coral Springs 33065 Identification of the Characteristics of Immune Cells That Produce Diabetes in BB Rats by Damaging Pancreatic Islet Cells

Rockledge Rowe, Robin Jane 17 Rockledge H.S. 827 Egret Rd., Cocoa 32926 Differentiation Between Human and Cow E.coli

Winter Park Baker, James Edward 18 Winter Park H.S. 9204 Eastport Terrace, Orlando 32817 Color Graphics and the Mandelbrot Set

## HAWAII

Honolulu Howarth, Francis Gard 18 Farrington H.S. 1558 Monte St. 96819 Shelf Formation in Lava Tubes

Kaneshiro, Shaun Yoshie 17 University Laboratory School 125 Ohana St., Kailua 96734 Computer Expert System for Univalve Mollusk Identification

## ILLINOIS

Barry Bauer, Julie Ann 17 Barry H.S. R. 2, Box 53 62312 Effect of Chitin Synthase Inhibiting Insecticides on the Germination of Apple Pollen

Chicago Chang, Louise Chia 17 University of Chicago Laboratory Schools H.S. 617 W. 58 St., Westmont 60559 Ras Induced mRNAs in NIH3T3 Cells Identified by Differential Screening



- Chicago (cont.) Kirschner, Joshua Lawrence 17 University of Chicago Laboratory Schools H.S. 6822 S. Euclid 60649 Effect of Ethanol on Lipid Metabolism
- Downers Grove Lundberg, Derek Lloyd 17 Downers Grove South H.S. 6112 Hillcrest Rd. 60516 Cytogenetic Effects of Chronic, Low-Dose Irradiation in Canis familiaris
- Evanston Giese, Scott Clayton 16 Evanston Township H.S. 1044 Lake Shore Blvd. 60202 One-Dimensional Model for the Collision Between Rods and Fixed Surfaces
- Grossman, Jeffrey Curtis 17 Evanston Township H.S. 1019 Asbury 60202 Crystal Lattice Matching: A First Step in Epitaxial Growth of New Materials and Phases
- Radu, Cristian Mircea 18 Evanston Township H.S. 1206 Dewey St. 60202 Autocatalytic Properties of the Hydrolysis of Selected Esters
- Schofer, Evan Avram 17 Evanston Township H.S. 2326 Central Park Ave. 60201 Dielectric Totally Internally Reflecting Concentrators With Aspheric Front Surfaces
- Seth, Kim Allan 17 Evanston Township H.S. 2323 Central Park Ave. 60201 Analysis of the Tonal Characteristics of the French Horn
- Thompson, Karl Remon 17 Evanston Township H.S. 2661 Asbury 60201 Effect of Concentration and Temperature Changes on the Period of Oscillation of a Bromine-Driven Chemical Oscillator
- Woods, Solomon Isaac 16 Evanston Township H.S. 515 Sheridan Rd. 60202 Modeling a Frictionless Pendulum
- Naperville Hoshen, Gur 17 Naperville Central H.S. 812 Shiloh Cir. 60540 Conductivity Analysis of Polyiodide Solutions
- Rolling Meadows McComb, Susan Marie 17 Rolling Meadows H.S. 211 N. Kaspar, #G7, Arlington Heights 60005 Effect of Malathion on Soil Microorganisms

#### INDIANA

- Indianapolis Eizember, Laura Ellen 18 Roncalli H.S. 4464 Southway Rd., Greenwood 46142 Effects of Light Intensity on Perception of Color in Pseudo-Ischromatic Plates
- Terre Haute Sacopulos, Michael James 17 Terre Haute North Vigo H.S. 240 Hamilton Dr. 47803 Thiarrubrine A: A Potential Antibiotic Produced by Certain Compositae

#### IOWA

- Bettendorf Stoffel, Christine Marie 17 Bettendorf H.S. 5324 36 Ave. Ct., Moline, IL 61265 Evidence for Allelopathy in Buckhorn Plantain (Plantago lanceolata L.): Experimentation and Chemical Analysis
- Rockwell City Krause, Blane Alan 18 Rockwell City H.S. R.R. 1 50579 Mechanical Manipulation of Randomly Oriented Parts
- Rolfe Christensen, Michael James 18 Rolfe Community H.S. R.R. 2, Gilmore City 50541 Lie Detector: Friend or Inaccurate Foe?

#### KANSAS

- Overland Park Overholser, Linda Sue 17 Shawnee Mission South H.S. 10903 W. 99 Pl. 66214 Solid-Phase Assay for Platelet Adhesion

#### KENTUCKY

- Lexington Berger, Jeffrey Allen 17 Lafayette H.S. 852 Laurel Hill Rd. 40504 Somaclonal Variation for Oil and Morphology in Soybean Regenerants
- Louisville Shafii, Taraneh 17 Ballard H.S. 6305 Shadow Wood Court, Prospect 40059 Prevalence and Use of Transitional Objects: A Study of 230 Adolescents

#### MARYLAND

- Bethesda Fan, Jason Chia-Sun 16 Landon School for Boys 6002 Beech Ave. 20817 Class of Stochastic Problems Involving Markov Chains
- Miles, David Wilson 17 Walt Whitman H.S. 7202 Broxburn Dr. 20817 Investigating the Luminol Oxidation Reaction Using a Microcomputer
- Waldman, Todd Alan 17 Walt Whitman H.S. 7814 Maryknoll Ave. 20817 Induction of an Amber Mutation in Gene Lon of Escherichia coli by Oligonucleotide-Directed Mutagenesis

- Ellicott City Meng, Maxwell V. 16 Centennial H.S. 5542 Windysun Ct., Columbia 21045 Apolipoprotein A-I Metabolism in Humans with Familial Hypoalphalipoproteinemia Associated with Premature Coronary Artery Disease
- Greenbelt Thomas, Hans Joachim 17 Eleanor Roosevelt Senior H.S. 3621 Tyrol Dr., Landover 20785 Classification of a Three-Dimensional Target Regardless of Orientation
- Oxon Hill Mueller, Boris Andreas 18 Oxon Hill H.S. 607 Pine Rd., Fort Washington 20744 Electronic Measurement of Collapse Pressures of Condensed Monolayers
- Potomac Yeh, Grace En-Mei 17 Winston Churchill H.S. 9208 Benridge Ave. 20854 Calibration of Integrating Sphere and Hemisphere
- Silver Spring Kaufman, Rebecca Jane 17 Springbrook H.S. 13421 Locksley Ln. 20904 Calcification of Healed Myocardial Infarcts
- Timonium Hirschfeld, Robert Ari 17 Dulaney H.S. 1109 Timber Trail Rd., Towson 21204 Momentum in Angular Systems (A Particle Approach)

#### MASSACHUSETTS

- Andover Goodman, Paula Tiferet 17 Phillips Academy 5516 Pia St., Honolulu, HI 96821 Effect of Interferon-alpha and Interleukin-2 on the Binding and Lysing Activity of Human Lymphocytes at the Single-Cell Level
- Newton Centre Heafitz, Andrew Mark 17 Newton South H.S. 45 Daniel St., Newton 02159 Motor Driven Aerial Photography System (M.A.P.S.)
- Somerville Battinelli, Elisabeth Marie 17 Somerville H.S. 22 Hudson St. 02143 Complementation and Phenotypic Determination of Exo<sup>+</sup> and Double Nodulation of Nod<sup>+</sup> Rhizobium Transconjugates

#### MICHIGAN

- Ann Arbor Chou, Patrick Chien-pang 16 Pioneer H.S. 2480 Picadilly Cir. 48103 Reproduction of Millikan's Oil Drop Experiment: Preliminary Step in the Search for the Fractional Charge
- Decatur Yaeger, Jason Robert 17 Decatur H.S. 93356 36 St., Lawton 49065 Glyphic Analysis of the Tablet of the 96 Glyphs
- Detroit Ashcom, Genevieve Susanne 17 Renaissance H.S. 18984 Huntington 48219 Heterogeneous Enzyme-Linked Competitive Binding Assay for Folate
- Flint Ouellette III, Edward J. 18 Carman-Ainsworth H.S. 5121 Briar Crest Dr. 48504 MPRO 16: Harnessing 16-Bit Multiprocessing
- Kalamazoo Hall, William David 18 Kalamazoo Central H.S. 2532 Rusridge Ave. 49007 Development of an Optical Scanner

#### MINNESOTA

- Minneapolis Kepner, Jeremy Victor 17 St. Anthony H.S. 1225 7 St., S.E. 55414 Designing, Building, and Testing a New Type of Turbine: Directed Pressure Turbine
- New Ulm Malecki, Amy Ann 17 New Ulm Senior H.S. Rt. 3, Box 1 56073 Antibody-Dependent Enhancement of Macrophage Infection by Lactate Dehydrogenase-Elevating Virus
- St. Clair Pluym, Tammy Carol 18 St. Clair H.S. Box 225 56080 Effect on the Spatial Positioning of Daphnia in Relation to Magnetic and Electric Fields
- Slayton Moritz, Valerie Carol 18 Slayton Public H.S. Box 235, Hadley 56133 Does Letter Configuration Affect Assimilation?

#### MISSISSIPPI

- Starkville Ball, John Eugene 17 Starkville H.S. Rt. 5, Box 1 S. Montgomery Ext. 39759 A Novel Approach to the "3x + 1" Problem

#### MISSOURI

- Rolla Chen, James Kenneth 17 Rolla Senior H.S. 805 Cedar Hill Ct. 65401 Determination of the Dissociation Constant of N-Hydroxysuccinimide
- St. Joseph Zweerink, Jeffrey Alan 18 Central H.S. 916 Ashland Ct. 64506 Synthesis and Characterization of Potential Conductive Polymers



# MONTANA

Butte Snell, David Alan 18 Butte H.S. 324 Galaxy Drive 59701 Using a Small Wind Tunnel to Test an Experimental Laminar Flow Control: Short Takeoff and Landing Airfoil

# NEBRASKA

Waverly Schroeder, Paul Brian 17 Waverly Secondary H.S. Rt. 13, Lincoln 68527 Effects of Intake Shape and Configuration

# NEVADA

Incline Jacobsen, Christopher John 17 Incline H.S. Box 4356, Incline Village 89450 Shared Memory Parallel Processing

# NEW JERSEY

Jersey City Brzozko, Jan Ryszard 18 Hudson Catholic H.S. 66 Fairview Ave. 07304 Steam Bubbles Production in the Human Brain as a Result of High Longitudinal Acceleration-Zero Order Approximation Model  
Martinsville Kiang, Margaret E. 17 Bridgewater-Raritan H.S. East 779 Starview Way, Bridgewater 08807 Effect of Different Rates on Temporal Tracking  
Montville Chao, Michael Chi-Chang 18 Montville Township H.S. 3 Stratford Ct. 07045 Automatic Theorem Proving in Number Theory  
Somerville Ellis, Thomas Bernard 17 Immaculata H.S. 38 Hillcrest Rd., Martinsville 08836 Algorithmic Methods for Generating Reversal Sums  
Waldwick Greene, Erich Justin 15 Waldwick H.S. 107 Madison Ave., Midland Park 07432 Diagonal Products in a Triangle of Rational Numbers  
Warren Township Mitzner, Dawn Lee 17 Watchung Hills Regional H.S. 30 Brook Dr., Watchung 07060 Effects of Radon Gas on Phenotypic Expression in *Drosophila*

# NEW MEXICO

Albuquerque James, Micheal Leslie 17 Eldorado H.S. 11905 St. Marys Dr., N.E. 87111 Coil Gun Magnetic Accelerator  
Sebring, Page Elizabeth 17 St. Pius X H.S. 3818 La Hacienda Dr. N.E. 87110 Enhanced Immunity to Enteric Pathogens in Breast-Fed Neonates: The Role of Breast Milk Cells  
Grants Hendrix, Carma Jane 17 Grants H.S. 1101 Franciscan Ave. 87020 Can the Microwave Do It?  
Pearl, Steven Howard 17 Grants H.S. P.O. Box 728 87020 Intelobot: The Intelligent Walking Robot  
Los Alamos Hsue, Priscilla Ying 17 Los Alamos H.S. 895 Los Pueblos 87544 Through the Looking Glass Backwards: Investigation on Optical Phase Conjugation

# NEW YORK

Baldwin Levy, David Jonathan 17 Baldwin Senior H.S. 2927 Laurel Ave. 11510 Plasticity of Neurosecretory Terminals  
Sacks, Elli I. 18 Baldwin Senior H.S. 730 St. Lukes Pl. 11510 Tactile Recognition of Audio-Speech Sounds Synthesized at Very Low Frequencies  
Bayside Liaw, Andy 18 Bayside H.S. 163-39 21 Ave., Whitestone 11357 Uniquely Factorable Sets of Integers of the Form  $ak+b$   
Abdelaziz, Eman 16 Benjamin N. Cardozo H.S. 58-47 207 St. 11364 Laser Direct Writing for Patterning Printed Circuit Boards  
Bergheiser, Matthew Jason 17 Benjamin N. Cardozo H.S. 57-53 225 St. 11364 Investigation Into the Areas of Fractal Patterns  
Chang, Elizabeth E. 17 Benjamin N. Cardozo H.S. 41-20 Little Neck Pkwy., Little Neck 11363 Characterization of Placental-Derived Mitogenic Factor (PDMF) for Human Fetal Adrenocortical Cell Cultures  
Chuang, Yen-Ning 17 Benjamin N. Cardozo H.S. 224-03 Horace Harding Expwy. 11364 Application of Laser Pyrolysis in the Fabrication of  $Ti:LiNbO_3$  Waveguide  
Gross, David Lawrence 16 Benjamin N. Cardozo H.S. 61-33 215 St. 11364 Covering Sets of Congruences and the Densities of Other Systems  
Lublin, Jennifer Caryn 17 Benjamin N. Cardozo H.S. 213-05 75 Ave. 11364 Auto-Units and the Expressibility of Non-Cyclic Groups

Sklangberg, Howard Richard 17 Benjamin N. Cardozo H.S. 56-03 E. Hampton Blvd. 11364 Effect of Induced Microtubule Polymerization Upon the Extension of Dorsal Root Ganglion Neurites  
Yoon, Manjoong 17 Benjamin N. Cardozo H.S. 50-15 196 St., Fresh Meadows 11365 Feasibility of an Energy Transfer  $H_2$  Laser at 3500 A.  
Yu, Hsun-Ming Charlie 17 Benjamin N. Cardozo H.S. 143-12 38 Ave., Flushing 11354 Maximum Number of Non-Overlapping and Finite Regions on a Partitioned  $1/n$  Plane  
Bronx DeJager, Philip Lawrence 17 Riverdale Country School 4465 Douglas Ave. 10471 Reactivity of Monoclonal Antibodies (MoAb) Cocktails with Cultured Human Colon Tumor Cell Lines  
Brookhaven Bernstein, Daniel Julius 15 Bellport H.S. 5 Brewster Ln., Bellport 11713 New Fast Algorithms for  $\pi$  and  $e$   
Brooklyn Hsiao, Huiian Joy 17 Brooklyn Technical H.S. 31-52 137 St., Flushing 11354 Generalization of the Relaxed Menage Problem Using Recursive Functions  
Parham, Johnny Eugene 16 Brooklyn Technical H.S. 601 E. 20 St., #4C, New York 10010 Acoustical Wave Visualization Using Moire Technique  
Tse, Man Yiu 17 Brooklyn Technical H.S. 1479 70 St., Apt. 5 11228 Development of Class Two Perfect Totient Numbers  
Singh, Leonard P. 17 Erasmus Hall H.S. 3202 Ave. D, Apt. 1C 11226 Mimicking the Baeyer-Villiger Reaction Using Sodium Perborate to Oxidize Cyclic Ketones to Esters  
Schneider, Mark Alan 17 Edward R. Murrow H.S. 1958 68 St. 11204 Self-Reference and Other-Reference in Samples of Open-Ended Speech as a Measure of Egocentricity  
Gavi, Benny 18 South Shore H.S. 2141 East 70 St. 11234 Comparison of Proteins Found on the Cell Membranes of Melanoma and Normal Skin Cells  
Shustrin, Jarrett Todd 16 South Shore H.S. 1075 E. 57 St. 11234 Effect of PEMFs of a Certain Frequency on the Rate of Cell Population Growth of Melanoma Cells in Tissue Culture  
Buffalo Noe, Mark Carl 17 St. Joseph's Collegiate Institute 24 Carriage Circle, Williamsville 14221 Development of an Assay to Detect Mutation of DNA by Carcinogens  
Dix Hills DeCarlo, Douglas Michael 17 Half Hollow Hills H.S. East 308 Vanderbilt Pkwy. 11746 Rapid Algorithm for Testing Potential Factors of Mersenne Prime Candidates  
Elmhurst Kao, Julia Huiwen 17 Newtown H.S. 42-23 Forley St. 11373 Intracellular Calcium and Apoptosis in Salivary Glands of *Musca domestica*  
Markovic, Libuska Maria 17 Newtown H.S. 92-07 52nd Ave. 11373 Parental Perceptions of Their Children's Attitudes Toward Suicidal Behavior  
Wiseman, Teresa Ann 17 Newtown H.S. 85-15 55 Ave. 11373 Comparison of Anorexic Attitudes  
Flushing Khan, Rafat Ambreen 17 Flushing H.S. 128-50 41 Ave., Corona, New York 11368 Retention of Religious Beliefs  
Yi, Hyang Jin 17 Flushing H.S. 38-34 147 St. 11354 Teenagers' Attitude Toward Abortion  
Bellavia, Michael 17 Francis Lewis H.S. 43-50 165 St. 11358 Effects of pH and Temperature on the Subtilisin Carlsberg (Novo Alcalase 2.4L)-Soya Protein Free Enzyme-Substrate System  
Benjamin, Cecily Lyn 17 Francis Lewis H.S. 115-101 222 St., Cambria Heights 11411 Influence of Black English vs. Standard English on Employment Opportunities  
Bernstein, Alexander 17 Francis Lewis H.S. 57-56 Cloverdale, Bayside 11364 Comparison of the Self-Esteem Among H.S. Corrective Lens Wearers  
Chen, Jackson 17 Francis Lewis H.S. 50-36 190 St. 11365 Effects of Exogenous TGF- $\alpha$  Antibody on the Growth of Human Cancer Cells *in vitro*  
Fung, Eric Chee-Hin 17 Francis Lewis H.S. 75-15 184 St. 11366 Characterization of Kerogen in Stuart Oil Shale Using Fourier Transform Infrared Spectroscopy  
Luan, Gordon Chin Hung 17 Francis Lewis H.S. 46-05 194 St. 11358 Surface Investigation of the Deposition of Rhodium Onto Incipiently Wetted Polycrystalline  $SrTiO_3$   
Sirakis, Lemonia 17 Francis Lewis H.S. 190-16 37 Ave. 11358 Study of the Decline in Visual Acuity Through Werner's Theory of Process and Achievement  
Forest Hills Ahn, Se-Hyun 18 Forest Hills H.S. 41-25 44 St., Sunnyside 11104 Effect of Listening Interval on Auditory Signal Detection



Lekhter, Jerry 17 Forest Hills H.S. 105-11 63 Dr. 11375 Relationship Between Spatial Perception and Motor Coordination in Handwriting as Simulated on the IBM 4381

Park, Hae-Won 17 Forest Hills H.S. 97-37 63 Rd., Apt. 11E, Rego Park 11374 Effects of Predation-Prey Relationships on the Feeding and Locomotion of Snails

Strassler, Jill Mindy 17 Forest Hills H.S. 63-33 98 Pl., Rego Park 11374 Computer Model to Determine Whether the Heparin Polymer is Random

Valera, Mark Anthony 17 Forest Hills H.S. 63-25 Saunders St., Rego Park 11374 Pigeons Categorize Old & New Examples of Natural and Artificial Stimuli with Reassigned Responses

Great Neck Berman, Abby 17 Great Neck North Senior H.S. 50 Shore Dr. 11024 Evaluation of Thermodynamic Parameters From Density and Normal Boiling Point Parameters

Greenlawn Shindler, Kenneth Scott 17 Harborfields H.S. 30 Frazer Dr. 11740 Demonstration of the Presence of Galactose Acceptor Glycoprotein in Soybean Cell Nuclei

Holliswood Ainspan, Naomi Ellen 17 Yeshiva H.S. of Queens 76-60 167 St., Flushing 11366 Creativity, Aggressiveness, and Affiliation Among New York Mets Baseball Fans

Jamaica Brown, Belinda Antoinette 17 Hillcrest H.S. 225-17 113 Dr., Queens Village 11429 Induction of Tetracycline: Resistant Revertants From the Sensitive Variant Strains MP<sub>1</sub> and MS<sub>1</sub> (STV<sub>1</sub>) In the Presence of Bacteriocidal Concentrations of the Antibiotic

Latham Chen, Teresa Chia-ching 17 Shaker H.S. 27 Cloverfield Dr., Loudonville 12211 Transfer of Engrams in *Dugesia dorotocephala*

Long Island City DiSaverio, Antonella 17 William C. Bryant H.S. 41-63 71 St., Woodside 11377 Association of a Subpopulation of Cells Containing 45 Chromosomes and the Degree of Malignancy

Papadopoulos, Michael 17 William C. Bryant H.S. 40-12 73 St., Jackson Heights 11377 Oscillating Flow in a Round Pipe

Tsoumpariotis, Spyros Nick 17 William C. Bryant H.S. 47-33 44 St., Woodside 11377 *In vitro* and *in vivo* Selection of a Drug-Resistant Cell in the Human Glioma Patient

Pappas, John 17 Long Island City H.S. 25-20 30 Rd., Astoria 11102 Detailed Computer Model of the Q1635+267 G.L.S.

Manlius Andrews, Jay Scott 17 Fayetteville-Manlius H.S. 7601 Cavalry Circle 13104 Physiological Study of Anaerobically Germinated *Raphanus sativus*

Massapequa Abramson, Scott Lawrence 17 Massapequa H.S. 22 Burns Lane 11758 Sporulation Chamber for Evaluating Pathogenicity of *Neozygites* sp., a Fungal Pathogen of Spider Mites

New York Belko, John Jacob 17 Bronx H.S. of Science 3400 Ft. Independence St., Bronx 10463 Endocytosis of the T4 Receptor Molecule

Bhatia, Anjali 17 Bronx H.S. of Science 144-87 41 Ave., Apt. 403, Flushing 11355 Natural Number Spiral and Its Generalization

Binimow, Lara Rachel 17 Bronx H.S. of Science 3800 Waldo Ave. 10463 Inhibition of Evoked Responses to Auditory, Visual, and Somatic Stimuli: Eye-Blink Artifact or Cortical Response?

Chiang, James 16 Bronx H.S. of Science 541 W. 211 St., #44 10034 Two Functions in Two Domains

Cho, Steve Y. 17 Bronx H.S. of Science 69-11 224 St., Bayside 11364 Optical Constants and Properties of Amorphous Ge-Si Multilayer Films as a Result of Annealings

Cunningham, Geraldine Mary 17 Bronx H.S. of Science 4393 Martha Ave., Bronx 10470 How Are the Children of Northern Ireland Affected by the Violence There?

Grabois, Melissa Pearl 17 Bronx H.S. of Science 3671 Hudson Manor Terrace, Riverdale 10463 Expression and Structure of DNA Sequence 50F1 *in vivo* and *in vitro*

Gurner, Deborah Michelle 17 Bronx H.S. of Science 100-24 Dekruif Pl., Bronx 10475 Exploring Weak Division and its Related Functions

Hoffman, Stuart Daniel 17 Bronx H.S. of Science 12 Tennis Pl., Forest Hills 11375 Replacement of Lipid in T2 Medium by Liposomes for *Trypanosoma brucei*

Hwang, Arlene 17 Bronx H.S. of Science 40-46 220 St., Bayside 11361 Induction and Repression of the Production of Cellulase by Cyclic AMP and Glucose in *Streptomyces griseus*

New York (cont.)

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Designed to discover and develop scientific and engineering ability among high school seniors, the Science Talent Search is conducted annually for the Westinghouse Science Scholarships and Awards by Science Service, 1719 N Street, N.W., Washington, DC 20036.

Fifteen girls and 25 boys are being invited to Washington, DC for an all-expenses-paid trip February 26 - March 2, 1987, to attend the Science Talent Institute. Here 10 winners will be selected by the board of judges to receive one of the following four-year Westinghouse Science Scholarships: One \$20,000 (\$5,000 per year), two \$15,000 (\$3,750 per year), three \$10,000 (\$2,500 per year), four \$7,500 (\$1,875 per year). The remaining 30 contestants will be given Westinghouse Science Awards of \$1,000 each.

The trip winners are 15 to 18 years of age and come from 31 cities in 16 states. They were picked by the judges from among 15,074 contestants of whom 1,295 completed their entries by writing a report on their scientific research, submitting personal data and teacher recommendations. Completed entries were received from 48 states, the District of Columbia, Puerto Rico and Department of Defense Dependents Schools.



# Washington Trip Winners

HOME ADDRESS FOLLOWS NAME OF SCHOOL

AGE OF WINNER FOLLOWS NAME

## CALIFORNIA

Orinda Jacobson, Jessica Lynn 18 Miramonte H.S. 53 E. Altarinda Dr. 94563

## COLORADO

Colorado Springs Shepard, Thomas Claude 17 William J. Palmer H.S. 2104 N. Cascade Ave. 80907

## CONNECTICUT

Milford Barrett, Jennifer Genevieve 16 Academy of Our Lady of Mercy 20 Foran Rd. 06460

## FLORIDA

New Smyrna Beach Griffy, Charla Cristal 17 New Smyrna Beach H.S. 1709 Orange Tree Dr., Edgewater 32032

Ocala Wang, Joseph Chen-Yu 17 Forest H.S. 506 S.E. 36 Ave. 32671

## ILLINOIS

Barry Bauer, Julie Ann 17 Barry H.S. R. 2, Box 53 62312  
Chicago Chang, Louise Chia 17 University of Chicago Laboratory Schools H.S. 617 W. 58 St., Westmont 60559

Evanston Giese, Scott Clayton 16 Evanston Township H.S. 1044 Lake Shore Blvd. 60202

Naperville Hoshen, Gur 17 Naperville Central H.S. 812 Shiloh Cir. 60540

## IOWA

Bettendorf Stoffel, Christine Marie 17 Bettendorf H.S. 5324 36 Ave. Ct., Moline, IL 61265

## MARYLAND

Bethesda Waldman, Todd Alan 17 Walt Whitman H.S. 7814 Maryknoll Ave. 20817  
Ellicott City Meng, Maxwell V. 16 Centennial H.S. 5542 Windysun Ct., Columbia 21045

## MASSACHUSETTS

Newton Centre Heafitz, Andrew Mark 17 Newton South H.S. 45 Daniel St., Newton 02159

## MICHIGAN

Decatur Yaeger, Jason Robert 17 Decatur H.S. 93356 36 St., Lawton 49065  
Detroit Ashcom, Genevieve Susanne 17 Renaissance H.S. 18984 Huntington 48219  
Flint Ouellette III, Edward J. 18 Carman-Ainsworth H.S. 5121 Briar Crest Dr. 48504

## NEW MEXICO

Albuquerque Sebring, Page Elizabeth 17 St. Pius X H.S. 3818 La Hacienda Dr. N.E. 87110  
Grants Pearl, Steven Howard 17 Grants H.S. P.O. Box 728 87020

## NEW YORK

Bayside Gross, David Lawrence 16 Benjamin N. Cardozo H.S. 61-33 215 St. 11364  
Brookhaven Bernstein, Daniel Julius 15 Bellport H.S. 5 Brewster Ln., Bellport 11713  
Long Island City Pappas, John 17 Long Island City H.S. 25-20 30 Rd., Astoria 11102  
Massapequa Abramson, Scott Lawrence 17 Massapequa H.S. 22 Burns Lane 11758  
New York Kuo, David Feng-Ming 16 Bronx H.S. of Science 10-19 149 St., Whitestone 11357  
Ng, Mason 16 Bronx H.S. of Science 230 Mott St., Apt. 6 10012  
Santosa, Claudia Mary 17 Bronx H.S. of Science 160-09 Oak Ave., Flushing 11358  
Silveira, Maria Jose 17 Bronx H.S. of Science 56-12 196 St., Flushing 11365  
Yuen, Mai New 17 Bronx H.S. of Science 225 E. Mosholu Pkwy., Bronx 10467  
Grannis, Alexander Wharton 17 Stuyvesant H.S. 895 W. End Ave. 10025  
Lee, Chen-Wei A. 17 Stuyvesant H.S. 90-57 53 St., Elmhurst 11373  
Park, Hyoung Yoon 17 Stuyvesant H.S. 80-56 Surrey Pl., Jamaica Estates 11432  
Tu, Julie Yui 17 Stuyvesant H.S. 8501 Ft. Hamilton Pkwy., Apt. 2L, Brooklyn 11209