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MARYLAND: Maryland Academy of Sciences, Ms. Mary B. Hyman and Ms. Nancy J. Leyko, Maryland Academy of Sciences, 601 Light Street, Baltimore, MD 21230

MASSACHUSETTS: Massachusetts Science Talent Search, Dr. Mary H. Laprade, Director, Clark Science Center, Smith College, Northampton, MA 01063

MICHIGAN: Sigma Xi, the Scientific Research Society, Dr. Donald R. Petersen, Michigan STS, P.O. Box 2237, Midland, MI 48641

MINNESOTA: Science Museum of Minnesota, Dr. Adela S. Elwell, Field Director, Opportunities in Science, Route 8, Box 479, Bemidji, MN 55601

MISSISSIPPI: Mississippi Academy of Sciences, Donald R. Cotten, Professor of Science Education, University of Southern Mississippi, P.O. Box 8414, Southern Station, Hattiesburg, MS 39406

MISSOURI: Missouri Academy of Science, Dr. Brian R. McGuire, Assistant Professor of Chemistry, Division of Science, Northeast Missouri State University, Kirksville, MO 63501

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NEBRASKA: Nebraska Academy of Sciences, Dr. James A. Woodland, Science Consultant, Nebraska Department of Education, 301 Centennial Mall South, Lincoln, NE 68509

NEW JERSEY: The New Jersey Academy of Science, Professor Ida A. Leone, Plant Pathology Department, Cook College, Box 231, New Brunswick, NJ 08903

NEW MEXICO: New Mexico Tech, Dr. David K. Shortess, Prof. of Biology, New Mexico Tech, Box 3732, Campus Station, Socorro, NM 87801

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

OKLAHOMA: Oklahoma Junior Academy of Science, Mr. Jim Pigg, Director, Oklahoma State Science Talent Search, 401 Rock, Moore, OK 73160

OREGON: Oregon Museum of Science and Industry, Dr. Jan Paul Dabrowski, Director, Science Programs Department, Oregon Museum of Science and Industry, 4015 S.W. Canyon Road, Portland, OR 97221

PENNSYLVANIA: Pennsylvania Academy of Science, Dr. Bruce D. Martin, Associate Vice-President for Academic Affairs, Duquesne University, 502 Administration Building, Pittsburgh, PA 15282

TEXAS: College of Science, Texas A&M University, Dr. William L. Perry, Assoc. Dean for Academic Affairs, College of Science, Texas A&M Univ., College Station, TX 77843-3257

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

VIRGINIA: Virginia State Science Talent Search, Dr. John Liebermann, Jr., Chemistry Teacher/Chemical Analysis Lab Director, Thomas Jefferson H.S. for Science and Technology, 6560 Braddock Road, Alexandria, VA 22312

WASHINGTON: Washington State Science Talent Search, Ann L. Cowan, School Education Specialist, Hanford Science Center, Westinghouse Hanford Company, Box 1970, Mailstop A1-60, Richland, WA 99352

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

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

WYOMING: (See Colorado-Wyoming)

FOR USE: WEDNESDAY, JANUARY 18, 1989

THE 48TH ANNUAL STS SCIENCE TALENT SEARCH

WESTINGHOUSE
SCIENCE SCHOLARSHIPS

1989 HONORS GROUP

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

Science Talent Search

The Science Talent Search was the pioneering endeavor to discover and encourage high school seniors with the ability to be tomorrow's outstanding scientists and engineers. It has succeeded far beyond the hopes of its founders.

Aided over the years by millions of dollars in Westinghouse scholarships and similar aid from educational institutions eager to have such talented students, many of those discovered by the Search have gone on to distinguished careers. Many have received major recognition, including five who have won Nobel prizes.

The Search itself has become an institution, a prestigious tradition widely approved and supported by the academic community.

Westinghouse Electric Corporation has made a notable contribution to the advancement of science in America by financing the Science Talent Search through the 48 years of its existence.

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 educators, journalists, 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.

1989 Honors Group

The achieving of Honors in the Science Talent Search is evidence of ability and interest in science and engineering which is 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 108 females and 192 males.

From this group of 300 Honors, 40 students are chosen as Winners of the Washington trip where \$140,000 in scholarships will be announced. The Winners are announced subsequent to the distribution of this list and their names will be published in SCIENCE NEWS of January 28, 1989. A copy will be sent upon request.

(age follows name; home address underlined)

ALABAMA

Vestavia Pareek, Kapil 16 Vestavia Hills H.S. 2504 Panorama Pl. 35216 Effects of Bleaching Temperature on the Rate of Retinal Regeneration With Bacterio-opsin in Purple Membrane

ARIZONA

Globe Flake, Kathryn Joy 17 Globe H.S. 33 Remington Rd. 85501 Comparative Crater Proportions on the Icy Moon of Saturn

ARKANSAS

Little Rock Skinner, Christopher McLean 16 Hall H.S. 3724 Sierra Forest Dr. 72212 On the Diophantine Equation $ap^x + bq^y = c + dp^z + q^w$

CALIFORNIA

Alhambra Chen, Ernest Hsiung-Yun 17 Alhambra H.S. 208 E. Bay State St., Apt. L 91801 Comparison of the Left and Right Hands' Ability to Learn Novel Skilled Tasks
Tran, Dao Thien 17 Alhambra H.S. 331 S. Seventh St. 91801 Gravity Inversion and Vision

Chico Yu, Francis Chun-Hua 16 Alhambra H.S. 379 W. Las Flores Ave., Arcadia 91006 Kline-Fogleman Airfoil
Abolins, Mark Joseph 17 Pleasant Valley H.S. 483 Panama Ave. 95926 Distribution of the Total Thickness of a Marine Sandstone Among Its Individual Storm Beds
La Canada Pinto, Vijay Paul 17 St. Francis H.S. 4711 Gould Ave. 91011 Do Total and HDL Cholesterol Levels Vary Among Different Ethnic Groups?
La Habra Nigrini, Peter Andrew Eric 17 La Habra H.S. 510 Papyrus Dr., La Habra Heights 90631 Effects of (-) Catechin, a Starch Biosynthesis Inhibitor, on Growth Rates and Glucose Metabolism in the Marine Algae Dunaliella
Los Altos Hills Penn, Michael Philip 18 Pinewood H.S. 1176 Laureles Dr., Los Altos 94022 Hexamethyldisilazane and Pel Dri as an Alternative Preparation of Stentor coeruleus for Scanning Electron Microscopy
Los Angeles Ham, Yoon Oh 18 King/Drew Medical Magnet H.S. 534 S. Saint Louis St. 90033 Reaction of Ruthenium (II) Tetraphenylporphyrin Complexes With Carbon Monoxide
San Francisco Lee, Tennyson Mun 18 Lowell H.S. 1123 Judah St. 94122 Multiple Processor Robot (MPR) Control Systems
San Mateo Brennan, Francis Vincent 17 Serra H.S. 1051 Hewitt Dr., San Carlos 94070 Round Drops
Van Nuys Chiu, Charles Yen 17 Van Nuys H.S. 19812 Lull St., Canoga Park 91306 Statistical Analysis of Cataplexy-Related Neurons in the Medial Medulla of the Brain

COLORADO

Boulder Hsiao, Edward Chiaming 18 Boulder H.S. 5079 Holmes Pl. 80303 Silicon Beam Purity of the Eaton NV-6200 Ion Implantation System

CONNECTICUT

Wethersfield Aaronson, Michael L. 17 Wethersfield H.S. 86 Baneberry Lane 06109 Flavonoid Studies of Helianthus cusickii GRAY

DISTRICT OF COLUMBIA

Washington Appella, Daniel Howard 17 Georgetown Day School 4112 Aspen St., Chevy Chase, MD 20815 Secondary Structure Analysis of Erwinia asparaginase

FLORIDA

Cocoa Beach Lent, Katerina Maria 17 Cocoa Beach H.S. 1620 Neptune Dr., Merritt Island 32952 Investigation of a More Efficient Means of Muscle Activation Through Electromyostimulation as a Possible Preventive Treatment for Muscle Atrophy
Fort Lauderdale Natale, Ruby Ann 17 Cardinal Gibbons H.S. 5301 N.E. 33 Ave. 33308 Effects of Girdling on Citrus Fruit Trees
Gainesville Tulenko, Katherine Anne 18 Buchholz H.S. 3707 S.W. 80 Dr. 32608 Genetic Fingerprinting to Establish Paternity in Semi-wild Mouse Populations
Johnson, Mark Rogers 18 Eastside H.S. P.O. Box 2501 32602 Analysis of Thin Film Ceramics Formed by Laser Pyrolysis
Narang, Anuj Steve 17 Eastside H.S. 4406 N.W. 32 Ave. 32606 Treatment of Diabetes mellitus Using Insulin-Gene Therapy
Hollywood Cohen, Felicia 17 Hollywood Hills H.S. 3900 N. 49 Ave. 33021 Infants and the Anticipatory Response: Take a Look Around
Miami Ferguson, Keith Anderson 17 Gulliver Preparatory School P.O. Box 248502, Coral Gables 33124 Lambda Light Chain Immunoglobulin Gene Expression in Human Hybridomas
Niceville Wolfgang III, Harry Lewis 17 Niceville H.S. P.O. Box 216, Valparaiso 32580 Two Theorems From Power Residue Sequences
North Miami Garasi, Christopher Joseph 17 North Miami Sr. H.S. 1937 N.E. 123 St. 33181 Orbital Determination of Asteroid 532 Herculina
Ocala Wang, Ruth Chen-Ju 16 Forest H.S. 506 S.E. 36 Ave. 32671 Molecular Characterization of Floridean Bean Golden Mosaic Virus
Pensacola Musgrove, Jason John 18 Escambia H.S. 10835 Berryhill Rd. 32506-6201 Neutron Activation Analysis for Trace Elements in Volcanic Ash From Mount St. Helens

- Pensacola (cont.) Yu, Kevin Cherng-Kai 17 Woodham H.S. 6541 Scenic Highway 32504 Voice Recognition
- Port Orange Kleid, Gene Ann 18 Spruce Creek H.S. 489 Hopi Ct. 32019 Formulation of the Correct Compositional Phase of a $\text{Bi}_x\text{Sr}_y\text{Ca}_z\text{Cu}_n\text{O}_{7-p}$ Target
- Nayar, Sailesh 17 Spruce Creek H.S. 1423 Dexter Dr., N. 32019 Effect of Thyroxine on Regenerating *Dugesia tigrina*
- Rockledge MacKenzie, John Devin 17 Rockledge H.S. 1287 Rockledge Dr. 32955 Innovative Fabrication Technique for Practical Appliances of the Superconducting Perovskite $\text{YBa}_2\text{Cu}_3\text{O}_7$
- St. Petersburg Jerome, Christopher Andrew 17 Canterbury School of Florida 1225 59 St. S., Gulfport 33707 Preparation Characterization of Zinc Selenide
- Sunrise Adelman, Daniel 18 Piper H.S. 7901 N.W. 44 Ct., Lauderhill 33351 Biophysical Disruption of Cellular Structures and Indoleacetic Acid Synthesis as Mechanisms of Ultrasonic Plant Growth Stimulation in *Coleus blumei* and *Helianthus annuus*
- Wright, Dale Edward 17 Piper H.S. 860 Somerset Ave., Davie 33325 Crucifer Extracted Beta-carotene as an Arrestor of Crown Gall Induced Tumors and Its Potential Use in Cancer Prevention
- Tampa Castle, Steven Lane 17 Gaither H.S. 4407 Kettle Creek Ct. 33624 Synthesis of Difluoro[1]benzothieno[2,3-c]quinolines

GEORGIA

- Savannah Baker, Judith Ann 17 Jenkins H.S. 806 Penn Waller Rd. 31410 Biochemical Toxicology of Malathion Resistance in the Indianmeal Moth
- Snellville Browning, Brent Keith 17 Brookwood H.S. 2458 Williamsdowns Cir. 30278 Tubular Implementation for Aerodynamic Efficiency

HAWAII

- Honolulu Leong, May Y. 17 McKinley H.S. 1425 Liliha St., #12G 96817 Behavior of Substances Associated With the Immune System

ILLINOIS

- Aurora Guler, Mehmet Levent 17 Illinois Mathematics and Science Academy 110 Evergreen St., Anna 62906 Ionic Interactions in the Mechanism of the $(\text{Na}^+ + \text{K}^+)\text{-ATPase}$ Pump
- Lockwood, Rowan 17 Illinois Mathematics and Science Academy 1124 Post Dr., Rockford 61108 Evidences of Bipedalism in (Larger) Pterosaurs Derived From a Biomechanical Methodology
- Belleville Lee, Henry Tao-Chung 17 Belleville West H.S. 317 W. Cleveland Ave. 62220 Decimal Fractions With Connections to Divisibility Rules and Cyclic Numbers
- Chicago Jager, Rama Dev 17 Marist H.S. 6254 Dolores Dr., Oak Forest 60452 Beta-Adrenergic Receptors Are Increased on CD8 T-Suppressor Lymphocytes in Multiple Sclerosis: A Comparison Among Chronic, Stable, and Relapsing/Remitting Patients
- Faibisoff, Isaac Joshua 17 Mather H.S. 3016 W. Jarvis 60645 Windtunnel Testing of an Airplane Design
- Cohen, Brian Frederick 17 Whitney Young Magnet H.S. 1139 N. Mayfield 60651 Measuring the Spin of an Electron
- Evanston Kelz, Max Benjamin 17 Evanston Township H.S. 2300 Sherman 60201 Rates of Solvolysis of Three Tertiary Alkyl Halides
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- Lurie, Alexander Berman 17 Evanston Township H.S. 641 Sheridan Square 60202 Analysis of Contact Bounce: Multiple Hits Through One-Dimensional Collisions
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- Ulmer, Andrew T. 17 Evanston Township H.S. 2021 Noyes St. 60201 Optical Pulsations From the Hercules X-1/HZ Hercules Binary Star System
- Lake Forest Dienes, Klee 15 Lake Forest Academy 326 Sutton Rd., Barrington Hills 60010 Analysis of the Resultant Draw-Down Boundaries of Systems of Wells

IOWA

- Jefferson Highley, Aaron Masahiko 17 Jefferson-Scranton H.S. 402 South Chestnut 50129 Homochromatism in *Octopus dofleini*

KANSAS

- Shawnee Reardon, Jennifer Elaine 16 Shawnee Mission Northwest H.S. 8520 Richards Rd., Lenexa 66215 Effect Enhanced UV-B Radiation Has on the Migration Characteristics and Primary Productivity of the Marine Diatom, *Thalassiosira pseudonoma*: Three-Year Study

KENTUCKY

- Cynthiana Sale, Kimberly Lynn 18 Harrison County H.S. Rt. 4, Box 135 41031 Geochemical Analysis of Selected Sites of the Lexington Limestone and Clays Ferry Formations of Central Kentucky
- Henderson Brady, Jill Ann 17 Henderson County Sr. H.S. 1108 Sandefur Dr. 42420 Caffeine as a Possible Natural Occurring Pesticide: Three-Year Study

MARYLAND

- Baltimore Ambati, Balamurali Krishna 11 Baltimore City College H.S. 401 E. Northern Pkwy., #1 21212 Artificial Intelligence Guided Neural Networks: Polynomial Time Algorithm for the Generalized Multi-Dimensional Traveling Salesman Problem
- Moses, Charles Anthony 17 Mount Saint Joseph H.S. 105 Rosewood Ave., Catonsville 21228 Image-Processing by Amplitude Spatial Filtering
- Bethesda Chiang, Lisa Yiang Yu 17 Walt Whitman H.S. 5812 Sonoma Rd. 20817 Positive Response of Low-Transforming Oncogenes in Serum-Free Media
- Liu, Susan Ju-Ting 18 Walt Whitman H.S. 8305 Hackamore Dr., Potomac 20854 Role of Phospholipases A_2 and C in the Neuronal Differentiation of PC12 Cells
- Greenbelt Comiso, Glen Arnold 17 Eleanor Roosevelt H.S. 11013 Elon Dr., Bowie 20715 Laser Diffraction of Fabrics
- Middletown Tallmon, Kirsten Pina 17 Middletown H.S. 6402 South Clifton Rd., Frederick 21701 Effects of Ozone Stress and Carbon Dioxide Enrichment on Leaf Porosity
- Owings Mills Lin, Jenny Jen-Yi 17 McDonogh School 10209 Tanager Lane, Columbia 21044 Protein S Radioimmunoassay and PEG Precipitation
- Potomac Ellenberg, Jordan S. 17 Winston Churchill H.S. 10801 Larkmeade Lane 20854 Investigation of k-ary n-tuples of Integers
- Huang, Julie Cha-Huey 17 Winston Churchill H.S. 8838 Sleepy Hollow Ln. 20854 DNA Binding Proteins That Interact With Gamma Globin Gene Promoter
- Rockville Reich, Daniel Salo 17 Charles E. Smith Jewish Day School 200 Primrose St., Chevy Chase 20815 Evaluation of the Coulomb Potential for High Temperature Superconductors
- Wu, Priscilla Pei-I 17 Thomas S. Wootton H.S. 10005 Kentsdale Dr., Potomac 20854 Thermal Reaction of CH_2O with NO_2 Studied by Ftr Spectroscopy
- Silver Spring Gobioff, Howard Bradley 17 Montgomery Blair H.S. 13410 Norden Dr. 20906 Planar Interaction of Dual Pairs of Paired Bodies
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- Stowe, Timothy David 17 Montgomery Blair H.S. 1123 W. Nolcrest Dr. 20903 Quantum Table of the Elements: Geometrical Representation of the Relationship Between Atomic Structure and Chemical Behavior
- Towson Wirth, Karl Eben 17 Towson H.S. 904 Greenleigh Rd., Baltimore 21212 Laser Velocimetry Studies of Particle Velocity in Different Density Gases

MASSACHUSETTS

- Belchertown Gancarz, Gregory 17 Belchertown H.S. 247 Franklin St. 01007 Conductive Polypyrrole
- Page, James Sherwood 17 Belchertown H.S. 125 Bluemeadow Rd. 01007 Effects of Cryogenic Treatment on High Quality Tool Steels
- Braintree Pelletier, Jon Damien 17 Braintree H.S. 17 Lemoyne St. 02184 Aerodynamics of Discus Flight

- Newton Goldmakher, Gregory Victor 17 Newton South H.S. 74 Pelham St. 02159
New Method for Creating Semi-Intact Cells
- Topsfield Wilcox, Jason Randolph 18 Masconomet Reg. H.S. 81 Surrey Lane, Boxford 01921 Effects of Social Behavior and Public Policy on the AIDS Epidemic
- West Roxbury Jackson, Andrew William 17 Roxbury Latin School 299 South St., Medfield 02052 Design, Production, and Use of Focusing Holographic Transmission Diffraction Gratings

MICHIGAN

- Birmingham Chandra, Naveen Shivapuja 17 Detroit Country Day School 299 Orange Lake Dr., Bloomfield Hills 48013 Phototropic and Morphogenic Responses of *Pilobolus crystallinus* to Light
- Detroit Crockett, Dante Kolon 17 Renaissance H.S. 20192 Sorrento 48235 Dielectric Properties of Polymer Blends
- Yee, Susan Lynn 17 Renaissance H.S. 6884 Auburn 48228 Biochemical Determinants of Fluoropyrimidine Activity in Murine Leukemia Cells
- Okemos Schiamberg, Scott Raphael 17 Okemos H.S. 3596 W. Arbutus 48864 Preparation and Behavior of Inhibitors of Sialidases

MINNESOTA

- Forest Lake Edlund, Wendy Sue 18 Forest Lake H.S. 391 Thomas St., Lino Lakes 55014 Unstable Mutants of Nitrate Reductase in *Chlamydomonas*
- Grand Rapids Holmquist, Melvin Lee 17 Grand Rapids Sr. H.S. 201 Happy Hollow Rd. 55744 Integrated Strain Gauge Bird Scale: Phase III
- Rochester Felsch, Jason Scott 18 John Marshall H.S. 1929 Viola Rd., N.E. 55904 Briggs-Rauscher Oscillating System: Subreaction Rate Relationship
- Olson, Timothy Harley 18 Mayo H.S. 302 17 St. S.W. 55902 Quantitative Analysis of the Effects of Inhibition on the Kinetics of Urease and Invertase Systems
- Thompson, Michael Alan 18 Mayo H.S. 1448 Windsor Chase Dr. 55902 Screening of Mouse cDNA for the snRNP E Protein Gene
- Winona Foster, Amber Nicole 17 Winona Sr. H.S. 1300 Bundy Blvd. 55987 Effects of Electronic Games on Human Physiology: Seven-Year Investigation

MISSOURI

- Columbia Sherman, Daniel Allen 17 Hickman H.S. 811 S. Greenwood Ave. 65203 Putative Enhancer Sequence Required for the Viability of the Autonomous Parvovirus Minute Virus of Mice
- Palmyra Bringer, Rachel Lane 17 Palmyra H.S. Box 2, R.R.1, Maywood 63454 Effects of Various Herbicides on the Geotactic and Phototactic Behavior in Planaria
- Saint Joseph Buckles, Lisa Renee 17 Central H.S. 2205 Briarcliff Ave. 64503 Superconductors: Expected and Unexpected Observations
- Hickman, Julia Ann 18 Central H.S. R.R. 3 64505 Comparisons of Self-Reported Stress Levels of H.S. Students in Honors and Regular Academic Programs
- Steele Summitt, Nia Carol 17 South Pemiscot H.S. P.O. Box 142, Holland 63853 Freeze Hardiness: Effects of Cold Temperatures on the Phospholipid Composition and Organelle Characteristics of *Glycine max*

MONTANA

- Helena Whitney, Allene Marie 17 Capital H.S. 1621 Hauser 59601 Development of a New Field Test for Toxicity of *Anabaena flos-aquae*
- Kalispell Oliver, Steven James 17 Flathead H.S. 1455 Smith Lake Rd. 59901 Phototactic Response Times at Various Light Intensity Levels in *Mysis relicta*
- Missoula Minske, Jocelyn Kelly 17 Big Sky H.S. 4121 S. 7 W. 59801 Active Presence and Dominance of the Electromagnetic Force in the Early Universe and the Shape Parameters of Quasar Superclusters

NEW HAMPSHIRE

- Concord Liu, Judy Chii-Wen 17 St. Paul's School c/o St. Paul's School 03301 Effects of Spacing on Propeller Forces/Noise

NEW JERSEY

- Hillsdale Chander, Divya 17 Pascack Valley H.S. 574 Wayne Dr., River Vale 07675 Matrix-Driven Translocation as a Possible Mechanism for Gastrointestinal Invasion by *Salmonella typhimurium*
- Long Branch Ballato, John Michael 18 Long Branch H.S. 150 Atlantic Ave. 07740 Digital Refractometry: A New Way to Measure the Index of Refraction of Optical Materials
- Middletown Cofield, Philip David 17 Middletown North H.S. 10 Venus St., New Monmouth 07748 Mechanical Analog of the Rutherford Experiment
- Millburn Chang, Sandra 17 Millburn H.S. 407 Hartshorn Dr., Short Hills 07078 Agglutinating Effects of Seed Lectins on Animal Erythrocytes
- Oakland Servadio, Maria Rose 17 Indian Hills H.S. 110 Seminole Ave. 07436 Cloning of Tandem Repeats
- West Orange Kaiser, David Isaac 17 West Orange H.S. 44 Ferris Dr. 07052 Working Apparatus for Determining Metals' Rates of Corrosion

NEW MEXICO

- Alamogordo Cordova, William Anthony 18 Alamogordo Sr. H.S. 504 Cedro, Tularosa 88352 Optical Phase Front Reversal in a Nonlinear Medium
- Montezuma Beke, Tibor 18 Armand Hammer United World College P.O. Box 248 87731 Space-Filling Curve in the N-Dimensional Euclidean Space
- Stern, Michael Jared 17 Armand Hammer United World College P.O. Box 248 87731 Chemical Chaos: Experimental Mathematics and Nonlinear Dynamics in the Belousov-Zhabotinskii Reaction

NEW YORK

- Baldwin Sawyer, Christie Leigh 17 Baldwin Sr. H.S. 1595 Howard Pl. 11510 Prehistoric Subsistence Patterns, Western Iowa
- Bayside (NYC) Chung, Morris Choun 17 Benjamin N. Cardozo H.S. 219-02 64 Ave., Apt. B 11364 Structural Analysis of the Egg Using the Finite Element Method
- Datt, Sumeet 17 Benjamin N. Cardozo H.S. 76-36 265 St., New Hyde Park 11040 Chaotic Behavior in a Small Neural Network
- Feinstein, Joshua Garth 17 Benjamin N. Cardozo H.S. 75-19 195 St., Flushing 11366 Computing With Light
- Pappacena, Christopher John 17 Benjamin N. Cardozo H.S. 202-83 Rocky Hill Rd. 11361 Self-Ordered Units
- Yim, Hyunjung 17 Benjamin N. Cardozo H.S. 147-41 38 Ave., D-36, Flushing 11354 Effects of Seismic Activity on a Sliding Art Object in a Museum: Verification of a Numerical Solution to the Equations of Motion
- Brooklyn (NYC) Ma, Wai Ling 18 Brooklyn Technical H.S. 2279 East 21 St. 11229 Trinomial Fermat Numbers
- Kerr, Karl-Ann Michelle 16 James Madison H.S. 417 Ocean Ave. 11226 Comparison of the Heat Retention Capability of Low Emissivity Glass Manufactured by Sputter Coating and Pyrolytic Processes
- Birnbaum, Julius 17 Midwood H.S. 1438 East 27 St. 11210 Decreasing Cellulosic Thermal Degradation by Pendant Group Impregnation
- Garces, Jorge 17 Midwood H.S. 83-30 118 St., Apt. 2L, New York 11415 Microtechnology for Erythrocyte Agglutination and Associated Cell-Separation Serology by the Use of *Limulus* Lectins
- Gerber, Andrew James 16 Midwood H.S. 1021 East 24 St. 11210 Physicochemical and Electrochemical Properties of Organic Iodine-Containing Charge-Transfer Complexes
- Granowetter, Lenny Mark 16 Midwood H.S. 1624 Ave. W 11229 Mechanism of Stimulation of Transepithelial Sodium Transport by Neurohypophyseal Hormones: Addition or Activation of Channels?
- Klarreich, Erica Gail 16 Midwood H.S. 2809 Bedford Ave. 11210 Effect of Trifluoperazine, a Calmodulin Antagonist, on Phagocytosis in *Acanthamoeba*
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- Westcott, Thomas Robert 18 Midwood H.S. 1831 W. Ninth St. 11223 Structural-Functional Evaluation of Vertebral Osteoarthritis
- Yuen, Anita 17 Midwood H.S. 1305 Gravesend Neck Rd. 11229 Effects of Growth Hormone and Somatostatin on Glucose and Glycogen Levels in Rats

Cedarhurst Klein, Avniel N. 17 Hebrew Academy of the Five Towns and Rockaway 27 Washington Ave., Lawrence 11559 Living Dangerously: Oncologists Approach the Risk Threshold

Commack Maitland, Michael Lee 17 Commack H.S. 45 Florida Ave. 11725 pH Lability of Beta-galactosidase

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Heller, Kevin Nelson 17 Half Hollow Hills H.S. West 14 Daniel Lane 11746 Effects of Temperature on Leaf Striping in Mutator Lines of *Zea mays*

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Elma Kleinberg, Jon Michael 17 Iroquois Central H.S. 12484 Old Big Tree Rd., Wales Center 14169 Approximation of Square Roots Using Bilinear Transformations

Elmhurst (NYC) Ng, Kaman 18 Newtown H.S. 42-49 79 St. 11373 Effects of Noise from Headphone Devices on Hearing Loss

Witt, Judith Mary 17 Newtown H.S. 26-19 91 St., Jackson Heights 11369 Role of Different Levels of Exercise on Perceived Stress and Illness

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Martin, Cherryl Renee 17 Townsend Harris H.S. 135-36 232 St., Laurelton 11413 Does Exposure to Lumazine Effectively Inhibit the Expected Chemotactic Response of Vegetative *Dictyostelium discoideum* Cells to Known Chemoattractants?

Benjamin, Stacy Elisabeth 16 Francis Lewis H.S. 154-17 Ash Ave., New York 11355 Color Blind? Influence of Race on Perception of Crime Severity

Gagliano, Gabriel Thomas 17 Francis Lewis H.S. 58-27 185 St., Fresh Meadows 11365 Analyzing Various Methods of Chemical Oil Recovery After Breakthrough Occurs Using a Two-Dimensional Quarter of a Five Spot Model

Lee, Caroline Sunyong 18 Francis Lewis H.S. 47-57 Hollis Ct. Blvd. 11358 Investigation of Diffusion Properties of Nickel and Vanadium Porphyrins Using Mica Membranes of Differing Pore Sizes

Lee, Jia 17 Francis Lewis H.S. 134-22 Blossom Ave. 11355 Increasing the Productive Yield of Epoxides by Dehydrating Sodium Perborate Tetrahydrate

Madejczyk, Katarzyna Irena 16 Francis Lewis H.S. 86-32 55 Rd., Elmhurst 11373 Polyurethanes: Determination of Isobaric Expansivity and Connection to Dynamic Mechanical Properties

Forest Hills (NYC) Chachanashvili, Gershon 17 Forest Hills H.S. 64-35 Yellowstone Blvd. 11375 Effect of DNA Insertion on Recombination Events in the *his* 2 Gene in *Saccharomyces cerevisiae*

Choy, Youyin 17 Forest Hills H.S. 1680 Woodbine St., Ridgewood 11385 Analysis of Growth Cone Motility and Neurite Tension in Axonal Elongation

Kipervarg, Aleksandr 17 Forest Hills H.S. 105-21 66 Ave., Apt. 5F 11375 Effect of Music Familiarity and Volume on Short-Term Memorization

Kogan, Svetlana 18 Forest Hills H.S. 104-40 Queens Blvd., Apt. 19W 11375 Non-enzymatic Glycosylation of Collagen From Various Tissues of the Eye Under *in vitro* Conditions

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Lin, Edward 18 Forest Hills H.S. 71-60 Yellowstone Blvd. 11375 Effect of High Density Wood on the Ultimate Strength of Laminated Beams

Lo, Eric 17 Forest Hills H.S. 69-81 108 St. 11375 Effects of Social Engineering on Urban Adolescent Attitudes and Self-Esteem: A Cross-Cultural Comparison

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- Greenville Li, Jonathan 17 Junius H. Rose H.S. 112 Asbury Rd. 27858 Kinetic Studies of Ozone Decomposition Affected by Hydrocarbons and UV Irradiation

OHIO

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WISCONSIN

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Waunakee Grade, John Daniel 18 Waunakee H.S. 5619 Tall Oaks Rd. 53597 Herbicidal Characteristics Influencing Uptake of Sulfonylurea Herbicides

PUERTO RICO

Ceiba Colon-Cruz, Roberto 17 Santiago Iglesias Pantin H.S. P.O. Box 674 00635 Isolation and Characterization of Natural Steroids From *Artocarpus altilis* Latex

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Since 1946 State Science Talent Searches have been held concurrently with the National Competition by special arrangement with Science Service. The 34 States and the District of Columbia listed below are cooperating in this plan to increase recognition and assistance to young scientists.

Anyone desiring information on or details of the results of State Science Talent Searches should send their inquiries to the Directors in the respective states.

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DISTRICT OF COLUMBIA: Washington Academy of Sciences, Mrs. Eddythe Durie, 3001 Leefield Drive, Herndon, VA 22071

ARKANSAS: Arkansas Academy of Science, Dr. John D. Peck, Associate Professor, Department of Biology, Lewis Science Center 103, University of Central Arkansas, Conway, AR 72032

FLORIDA: Florida Academy of Sciences/Junior Academy, Dr. John G. Windsor, Jr., and Ms. Dorothy Henley, Florida Junior Academy of Science, 4520 N.E. 15th Terrace, Fort Lauderdale, FL 33334

COLORADO-WYOMING: Colorado-Wyoming Academy of Science, Mr. Elemer Bernath, Executive Secretary, Colorado-Wyoming Junior Academy of Science, 803 Ensign, Fort Morgan, CO 80701

GEORGIA: Georgia Junior Academy of Science, Dr. Leon Benefield, Director, Georgia Junior Academy of Science, and Chair, Division of Science, Mathematics, and Nursing, Abraham Baldwin College, Tifton, GA 31793-4401

CONNECTICUT: Connecticut Science Talent Search, Dr. John Tanaka, Prof. of Chemistry and Director of Honors Programs, University of Connecticut, U-147 Wood Hall, Room 113, 241 Glenbrook Road, Storrs, CT 06268

ILLINOIS: Illinois State Academy of Science, Dr. Donald R. Dickerson and Dr. Dorothy R. Martin, Illinois State Academy of Science, Illinois State Museum, Spring and Edwards Streets, Springfield, IL 62706

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Shigemitsu, Lucy 17 Stuyvesant H.S. 86-11 Whitney Ave., Apt. 4K, Elmhurst 11373
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Pierpont, Christopher Edward 17 Shoreham-Wading River H.S. 41 South Rd., Wading River 11792

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Wang, Ray Kuang 17 Central Catholic H.S. 4011 Winchester Rd. 18104-2036
Haile, David Lawrence 17 Holy Name H.S. 612 Muscum Rd. 19611

VIRGINIA

Alexandria

Rosen, J. David 17 Thomas Jefferson H.S. for Science and Technology 7207 Reservation Dr., Springfield 22153

WASHINGTON

Richland

Majumdar, Mahbub Alam 17 Hanford Secondary School 323 Sherman Court 99352

SCIENCE SERVICE, INC. - 1719 N Street, N.W. - Washington, DC 20036

Washington Trip Winners

of the

Forty-Eighth Annual Science Talent Search

for the Westinghouse Science Scholarships



The forty Washington trip winners of the 48th Annual Science Talent Search, among whom \$140,000 of Westinghouse Science Scholarships will be distributed, represent about 2.7% of those who completed entries in this scientific and educational competition.

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 by Science Service, 1719 N Street, N.W., Washington, DC 20036.

Thirteen females and 27 males are being invited to Washington, DC for an all-expenses-paid trip March 2-6, 1989, 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 Scholarships of \$1,000 each.

The trip winners are 15 to 18 years of age and come from 26 cities in 18 states. They were picked by the judges from among 19,062 contestants of whom 1,461 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, Guam, and Puerto Rico.

Washington Trip Winners

HOME ADDRESS FOLLOWS NAME OF SCHOOL AGE OF WINNER FOLLOWS NAME

ARKANSAS

Little Rock Skinner, Christopher McLean 16 Hall H.S. 3724 Sierra Forest Dr. 72212

CALIFORNIA

La Habra Nigrini, Peter Andrew Eric 17 La Habra H.S. 510 Papyrus Dr., La Habra Heights 90631

FLORIDA

Tampa Castle, Steven Lane 18 Gaither H.S. 4407 Kettle Creek Ct. 33624

ILLINOIS

Aurora Lockwood, Rowan 17 Illinois Mathematics and Science Academy 1124 Post Dr., Rockford 61108

Chicago Cohen, Brian Frederick 17 Whitney Young Magnet H.S. 1139 N. Mayfield 60651

Evanston Lurie, Alexander Berman 17 Evanston Township H.S. 641 Sheridan Square 60202

MARYLAND

Owings Mills Lin, Jenny Jen-Yi 17 McDonogh School 10209 Tanager Lane, Columbia 21044

Potomac Ellenberg, Jordan S. 17 Winston Churchill H.S. 10801 Larkmeade Lane 20854

MASSACHUSETTS

West Roxbury Jackson, Andrew William 18 Roxbury Latin School 299 South St., Medfield 02052

MICHIGAN

Okemos Schiamberg, Scott Raphael 17 Okemos H.S. 3596 W. Arbutus 48864

MINNESOTA

Rochester Felsch, Jason Scott 18 John Marshall H.S. 1929 Viola Rd., N.E. 55904

MISSOURI

Columbia Sherman, Daniel Allen 17 Hickman H.S. 811 S. Greenwood Ave. 65203

MONTANA

Helena Whitney, Allene Marie 17 Capital H.S. 1621 Hauser 59601

NEW JERSEY

Hillsdale Chander, Divya 17 Pascack Valley H.S. 574 Wayne Dr., River Vale 07675

NEW MEXICO

Montezuma Stern, Michael Jared 17 Armand Hammer United World College P.O. Box 248 87731

NEW YORK

Brooklyn (NYC) Ma, Wai Ling 18 Brooklyn Technical H.S. 2279 East 21 St. 11229

Gerber, Andrew James 16 Midwood H.S. 1021 East 24 St. 11210

Klarreich, Erica Gail 16 Midwood H.S. 2809 Bedford Ave. 11210

Westcott, Thomas Robert 18 Midwood H.S. 1831 W. Ninth St. 11223

Maitland, Michael Lee 17 Commack H.S. 45 Florida Ave. 11725

Heller, Kevin Nelson 17 Half Hollow Hills H.S. West 14 Daniel Lane 11746

Benjamin, Stacy Elisabeth 16 Francis Lewis H.S. 154-17 Ash Ave., New York 11355

New York City Avestruz, Al Thaddeus 17 Bronx H.S. of Science 3333 Henry Hudson Pkwy., Apt. 21R, Riverdale 10463

Druz, Tamir Alexandrovich 17 Bronx H.S. of Science 2321 Bronxwood Ave., Bronx 10469

Mahl, David Armin 17 Bronx H.S. of Science 2600 Netherland Ave., Apt. 1511, Bronx 10463

Marchal, Zoe Madeleine 17 Bronx H.S. of Science 100-17F Bellamy Loop, Bronx 10475

Posmentier, Raoul 17 Bronx H.S. of Science 50 West 97 St., #9C 10025