

# Intel Science Talent Search

2004 Science Talent Institute

*March 11-16, 2004*

The Intel Science Talent Search (Intel STS), America's oldest and most highly regarded pre-college science competition, provides an incentive and an arena for U.S. high school seniors to complete an original research project and have it recognized by a national jury of highly regarded professional scientists. The projects are a result of inquiry-based learning methods designed to nurture critical reasoning skills, experience science through the use of the scientific method and to demonstrate how math and science skills are crucial to making sense of today's technological world and making the best decisions for tomorrow.

The 40 Finalists of the 2004 Intel Science Talent Search, who will be competing for \$530,000 in scholarships, represent about 2.5 percent of those who completed entries in this scientific and educational competition. These 18 females and 22 males are awarded an all-expense-paid trip to Washington, D.C. to attend the Science Talent Institute, March 11-16, 2004. Each Finalist who participates in the Science Talent Institute will receive an Intel® Centrino™ mobile technology notebook computer and a scholarship of at least \$5,000. Ten of the Finalists will be selected by the board of judges to receive one of the following four-year scholarships: First Place: \$100,000, Second Place: \$75,000, Third Place: \$50,000, Fourth - Sixth Places: \$25,000, and Seventh - Tenth Places: \$20,000.

The Finalists are 16 to 18 years of age and come from 36 schools in 14 states and the District of Columbia. Chosen from among 1652 entrants, they submitted a report on their scientific research, the official entry form and supporting documents. Completed entries were received from 47 states, the District of Columbia, Guam, Puerto Rico and two overseas schools. *Finalist ages in this publication are as of March 16, 2004.*

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# INTEL SCIENCE TALENT SEARCH

*“Finding Tomorrow’s Scientists”*

## ***History***

Created in 1942 by Science Service, one of the most respected non-profit organizations advancing the cause of science, as a means for encouraging talented high school students to pursue a career in science, math, engineering and medicine, the Science Talent Search has become an American institution.

The Science Talent Search has recognized over 2500 finalists with more than \$5 million in scholarships. Alumni of the STS include more than 100 recipients of the world’s most coveted science and math honors including three National Medal of Science winners, ten MacArthur Foundation Fellows, two Fields Medallists and five Nobel Laureates.

In 1998, Intel Corporation was named the new title sponsor of this competition that was formerly sponsored by the Westinghouse Foundation. Since assuming this role, Intel has significantly improved the STS by bringing back some of the traditions long associated with the program. Additionally, Intel increased awards and scholarships from \$207,000 to \$1,250,000.

## ***Awards and Scholarships***

**Semifinalists** Each of the 300 students named a semifinalist in the Intel STS will receive a \$1,000 award for their outstanding science research. These awards will be mailed to the semifinalists after the Science Talent Institute (STI) in the Spring.

**Schools** Each school will receive an award of \$1,000 for each Semifinalist named in the Intel STS. The award must be used to further support excellence in science, math or engineering education at the recipient school. In the case of home schooling, the awards will be given to the affiliated school or school district of the home school. The award will be mailed to the school after the STI in the Spring.

**Finalists** The top prize will be a \$100,000 four-year scholarship. The second place finalist will receive a \$75,000 scholarship and the third-prize winner will go home with a \$50,000 scholarship. Fourth- through sixth-place finalists each receive a \$25,000 scholarship; seventh- through tenth-prize winners will receive a \$20,000 scholarship. The remaining 30 finalists will receive a \$5,000 scholarship award. In addition to the scholarship awards, each of the finalists participating in the Science Talent Institute will receive an Intel® Centrino™ mobile technology notebook computer.

## ***The Process***

Each year, over 1500 seniors enter the Intel Science Talent Search. Each completed entry consists of the student’s written report on their scientific research, the lengthy official entry form that elicits evidence of student creativity and interest in science, and supporting documents.

All Intel Science Talent Search entries are reviewed and judged by top scientists from a variety of different disciplines. The top 300 entrants are selected as semifinalists, and from these 300 semifinalists, 40 finalists are chosen to attend an all-expense-paid trip to Washington, D.C. to the Science Talent Institute (STI), where they will undergo final judging. On the basis of a rigorous round of interviews, 10 top scholarship winners are selected.

While in Washington, DC, students meet leading scientists and visit places of historic and political importance. Past winners have met with the President and First Lady, the Vice President and distinguished science advisers. The young scientists display their prize-winning exhibits at the prestigious National Academy of Sciences, where they describe their research to thousands of visitors—many of them important figures in governmental and scientific communities. Many others studying the exhibits are highly motivated students who are planning to enter the Science Talent Search in their senior year.

While the purpose of the Science Talent Institute is the science competition, the students say they most value the opportunity to meet and interact with their scientific peers, often for the first time. Friendships and professional associations made during the five days of the STI continue through and beyond college.

### ***Background Statistics***

Statistics show that 95 percent of former Science Talent Search winners have pursued some branch of science as their major field of study. More than 70 percent have gone on to earn Ph.D.s or M.D.s. Career choices are about evenly divided among the physical sciences, the biological sciences and medicine.

Since 1942, New York State has produced the majority of finalists, accounting for 850 or 33%. California is in second place with 180, followed by Illinois with 153; Pennsylvania, 103; Florida, 93; New Jersey, 84; Virginia, 83; Maryland 82; Massachusetts, 81; Ohio, 78; Texas, 62; Wisconsin, 49; and Indiana, 47.

Other states that have produced at least ten finalists are Michigan and Connecticut, 38 each; Oregon, 35; Minnesota, 33; Georgia, 27; Colorado and Oklahoma 24 each; Arizona, 23; Missouri and the District of Columbia, 21 each; Nebraska and Washington, 19 each; Iowa, Tennessee and West Virginia, 18 each; Alabama and New Hampshire, 17 each; Montana, 16; New Mexico, 15; Kansas and Hawaii, 14 each; North Carolina, 13; Louisiana, 11; and Mississippi, 10.

### ***Intel Corporation***

Intel's sponsorship of the Science Talent Search is part of the Intel *Innovation in Education* initiative, a global, multimillion dollar effort to help realize the possibilities of science and technology in education. The goal is to prepare today's teachers and students for tomorrow's demands. Intel develops and supports education programs that help meet the needs of students and communities worldwide through: improving science, math, engineering and technology education; improving education through the effective use of technology in classrooms; and broadening access to technology and technical careers.



**Boris Alexeev**  
*Cedar Shoals High School*

**GEORGIA**

**Boris Alexeev**, 17, of **Athens**, addresses a problem in the theory of automata, the mathematical basis for the field of pattern matching or recognition, for his Intel Science Talent Search project in **computer science**. Boris, who has submitted his work for publication, believes he has discovered the answer to a problem often given in introductory automata texts concerning minimized deterministic finite automata (DFA). Boris believes by studying minimization of DFAs, thereby reducing the number of states in a program's algorithm, they can be made to use less memory and run faster. His work could be used for applications ranging from deciphering the genome and DNA sequencing to speech processing and optical character recognition. After graduating from **Cedar Shoals High School**, Boris plans to attend Harvard or MIT. A native of Russia, Boris is a member of the school math club and has helped run an annual statewide mathematics competition for high school students, even contributing numerous test questions. An avid rock climber, who earned second place in the UGA Bouldering Competition, he also enjoys coin collecting. Boris is the son of Dr. Valery and Natalia Alexeev.



**Melis Nuray Anahtar**  
*Montgomery Blair High School*

**MARYLAND**

**Melis Nuray Anahtar**, 17, of **Bethesda**, worked on a project related to the use of microelectronics and microfluidics in biology and medicine for her Intel Science Talent Search entry in **engineering**. Using soft lithography and designing/building her own microchips, she created a microfluidic device that isolates "diagnostically useful" white blood cells (WBC) from whole blood without altering their characteristics. The microfabricated device exposes whole blood to a lysing solution that selectively destroys red blood cells. Because the entire process takes less than 10 seconds, the WBC are not phenotypically changed. Standard techniques take longer than 30 minutes and significantly alter the WBC structure so that information gained is often of little value. Melis believes her research may potentially aid in the study of patient immuno-inflammatory response to trauma or burns. A pianist and a golfer, she is co-captain of the debate team at **Montgomery Blair High School**, Silver Spring. Also on the robotics team, she has created a robotic coin sorter, which she presented at the National Air and Space Museum. The daughter of Yavuz and Nuray Anahtar, she plans to attend MIT.



**Craig Louis Auster**  
*Carmel High School*

**NEW YORK**

**Craig Louis Auster**, 17, of **Carmel**, analyzed phosphorus in the soil of the Guinea Community Archaeology Project as part of the process of reconstructing the lives of the African-Americans who lived in the 19<sup>th</sup> century Hudson Valley community for his Intel Science Talent Search project in **behavioral and social sciences**. Mapping phosphorus concentrations identified property locations where human and food wastes, bone and wood ash were regularly deposited. Craig believes his study, which included historical and archaeological research, shows that one resident, Primus Martin, a former slave, was a community leader who tried to project an image of neatness and cleanliness. Craig is first in his class of 316 at **Carmel High School**, where he is president of the Human Rights Club, a member of the Spanish National Honor Society and co-editor of the yearbook. He has received the Rensselaer Medal, the Putnam County Youth Bureau Outstanding Volunteer Youth Service Award and the University of Rochester Social Sciences/Humanities Award. The son of Scott and Elizabeth Auster, Craig plans to attend Brown University, earn a Ph.D. and work to improve people's lives and protect their rights.



**Neha Chauhan**  
*Susan E. Wagner High School*

**NEW YORK**

**Neha Chauhan**, 17, of **Staten Island**, identified potential new preventive and therapeutic roles of dietary polyphenolic and flavonoid compounds in preventing Alzheimer's disease (AD) for her Intel Science Talent Search project in **medicine and health**. Neha combined her chemical extraction, fluorescence and electron microscopy skills to demonstrate structural relationships of walnut extract and flavonoids found in food such as vegetables, herbs, tea and red wine, that inhibit formation of insoluble amyloid beta-protein fibrils. When deposited within the human brain, these fibrils cause AD. As founder and national president of *Teens for Alzheimer's Awareness*, Neha hopes to use her research and teaching talents to educate society, particularly young adults, about AD. After graduating from **Susan E. Wagner High School**, she hopes to complete an M.D./Ph.D. program in biological sciences at Harvard, ultimately specializing in the field of geriatrics. Ranked first in her class of 457, Neha has received not only numerous science honors and awards, but also a scholarship for her outstanding achievements in arts and dance. Neha is the daughter of Drs. Ved and Abha Chauhan.



**Yuyin Chen**  
*Cranbrook Kingswood School*

**MICHIGAN**

**Yuyin Chen**, 17, of **West Bloomfield**, submitted a **mathematics** project about graph theory to the Intel Science Talent Search. Yuyin considers the optimal way to remove all edges from a complete graph  $K_n$  in the least number of steps. At most  $w$  edges at a time can be removed, and no more than one edge from each connected part at each step. For each  $w$ , he finds upper and lower bounds for the ratio of the optimal number to the number of edges in  $K_n$  as  $n$  increases. His results are new for finite  $w$  greater than 2. Cutting problems in graph theory have extensive applications, including Very Large Scale Integration Systems and geographical information systems. Born in China, Yuyin attends **Cranbrook Kingswood School** in Bloomfield Hills where he is editor-in-chief of the school newspaper, founder and president of the math club, president of the QuizBowl and computer teams, and plays the violin in the school orchestra. He has co-authored a paper on graph theory that has been accepted for publication in *Congressus Numerantium*. The son of Jingke and Joy Chen, Yuyin hopes to study math and economics at Harvard or MIT, become a teacher and make discoveries in mathematics.



**Ann Chi**  
*Terre Haute South Vigo High School*

**INDIANA**

**Ann Chi**, 17, of **Terre Haute**, used computational chemistry methods to examine the fundamental but complex reactions of the yttrium metal atom (Y) with ethane ( $C_2H_6$ ) for her Intel Science Talent Search project in **chemistry**. Ann's computational study projects the intermediate transition state structures and potential energy surface involved in the  $Y + C_2H_6$  reactions. Her research is the theoretical counterpart to experimental studies performed elsewhere and suggests an alternative mechanism to the one proposed by laboratory experimentalists. First in her class of 388 at **Terre Haute South Vigo High School**, Ann is on the golf team and serves as president of the math and Latin clubs. Winner of numerous awards in music and math, she was a national finalist in the Scripps-Howard Spelling Bee and an Indiana Academic All-State golfer. An accomplished musician, she is second violinist of the Terre Haute Symphony Orchestra and concertmaster for the Crossroads of America Youth Symphony. Ann, who has perfect SAT scores, is the daughter of Dr. Henjin Chi and Yuli Lo Chi and hopes to attend Harvard, eventually earning her doctorate in aerospace engineering.



**Daniel Chimin Choi**  
*Syosset High School*

**NEW YORK**

**Daniel Chimin Choi**, 17, of **Syosset**, constructed and tested a two-compartment “microbial” fuel cell that derives electricity from bacterial respiration using the bacterium *Shewanella oneidensis*, and demonstrated a 750 percent improvement in current generation in comparison to previously developed fuel cells. To achieve this, Dan’s Intel Science Talent Search project in **microbiology** encompassed modified microbial growth, RNA isolation, DNA microarray labeling, hybridization and data analysis, as well as development of a properly architected electrochemical graphite felt anode. In his research, Dan identified the gene in *S. oneidensis* that was responsible for the ability to release electrons during respiration into the anolyte medium, and hopes to express this gene in a more well-studied organism, *E. coli*, in effect, making a glucose-powered fuel cell. Currently Dan is the news editor of the school newspaper, co-captain of the varsity QuizBowl team and president of the astronomy club, and is a self-taught musician. After graduating from **Syosset High School**, Dan plans to enter Harvard and ultimately complete a doctorate in biomedical engineering. He is the son of David and Hea Young Choi.



**Rachael Theresa Collier**  
*Mediapolis High School*

**IOWA**

**Rachael Theresa Collier**, 17, of **Burlington**, examined the toxicity of transgenic *Bt* corn pollen and limestone road dust on monarch butterfly larvae for her **environmental science** project for the Intel Science Talent Search. Monarch larvae feed solely on leaves of the common milkweed, which grows between gravel roads and cornfields. Prior research on the effect on monarch larvae of consuming *Bt* corn pollen produced conflicting results, and Rachael found no prior studies on the effect of limestone dust. She believes her research shows that *Bt* corn pollen is not toxic to monarch larvae, but that limestone dust deposited on leaves at naturally occurring levels results in significant larvae mortality, identifying the need for habitat preservation. Rachael is president of the National Honor Society, co-captain of the cross-country track team and participates in mock trial at **Mediapolis High School**. The recipient of numerous honors, she spent last summer in Peru as a Borlaug-Ruan World Food Prize International Intern doing potato tuber moth research. The daughter of Phillip and Lynette Collier, Rachael plans to attend the University of Iowa and become an environmental engineer or a researcher.



**Jennifer Anne D'Ascoli**  
*Academy of the Holy Names*

**NEW YORK**

**Jennifer Anne D'Ascoli**, 17, of **Niskayuna**, entered a **biochemistry** project in the Intel Science Talent Search that studied the structure of two common edible plant flavonoids. Inspiration for her project — *Blueberry Pie: Friend or Foe?* — came when she compared the yellow-green interior of a raw blueberry to the deep purple color inside blueberries found in a baked pie. Jennifer's project focused on the molecular structural changes that occur when two flavonoids, both with demonstrated anticancer potential for breast and prostate cancers, are heated to cooking temperatures, hoping to see if the heat-modified structural transformations are more biologically active than their unheated forms. Jennifer's work, submitted to the *Journal of Biochemistry*, suggests that they are — and that they may become more effective anticarcinogenic agents as a result. At **Academy of the Holy Names** in Albany, Jennifer participates in the mock trial, drama and math clubs and retreat team. She won 1<sup>st</sup> Grand Award in Physics at the Intel ISEF as well as numerous other awards in French, math, science and literature. The daughter of Dr. Richard and Karen D'Ascoli, Jennifer hopes to attend MIT.



**Phillip Thomas Deutsch**  
*La Canada High School*

**CALIFORNIA**

**Phillip Thomas Deutsch**, 17, of **La Canada**, investigated novel methods of determining the conformations or shapes of substituted ethanes, a simple type of organic molecule, for his Intel Science Talent Search **chemistry** project. In studying methods of conformational analysis to predict reaction rates, he had determined that previous methodologies that analyzed the equilibrium position of conformations in solution did not meet rigorous standards and set out to find one that would. He investigated three numerical methods suggested by nuclear magnetic resonance data, and believes that the validity of one method could improve the Altona procedure, the dominant method currently used. Phillip believes that knowledge about the conformations of ethanes could lead to insights about the conformations of more complicated molecules like proteins, which could have useful biological and medical implications. At **La Canada High School**, Phillip plays in the flute choir and the concert and marching bands. In 2003, he was a semi-finalist for both the U.S. Chemistry and Physics Olympiad Teams. The son of Drs. Andrew Deutsch and Jeanne Wallace, he hopes to study computer science at Caltech.





**Lisa Doreen Glukhovsky**  
*New Milford High School*

**CONNECTICUT**

**Lisa Doreen Glukhovsky**, 18, of **New Milford**, studied a method of rapidly and accurately measuring the distance to potentially hazardous near-Earth asteroids for her **earth and space sciences** project for the Intel Science Talent Search. High-resolution images of the asteroid were taken simultaneously from one European and one U.S. observatory and a computer spreadsheet was created to calculate the distance to the asteroid using parallax shift, the apparent position shift of a relatively near object against a more distant background when observed from different locations. Lisa's distances differed by less than 1 percent compared to NASA's predictions, which take days and powerful computers to calculate. Lisa believes her method of measuring near-Earth asteroids could one day help mitigate the danger of asteroid collisions with Earth. First in her class of 341 at **New Milford High School**, Lisa has perfect SAT scores. The daughter of Zakhar and Anna Glukhovsky, she is fluent in French, Russian and Hebrew, plays piano and violin and is concertmistress of the school orchestra. The recipient of numerous honors, Lisa hopes to pursue a career as a teacher or research scientist.



**Allyson Molly Goldberg**  
*Croton-Harmon High School*

**NEW YORK**

**Allyson Molly Goldberg**, 17, of **Croton-on-Hudson**, studied the impacts of body temperature and time of day on cognitive performance; and the effects of body temperature on daytime naps for her Intel Science Talent Search project in **behavioral and social sciences**. Ally's two groups of human subjects each underwent an active heating or cooling condition and a control condition. Analyses of cognitive performance and naps for all conditions suggested that time of day exerted the greater influence on performance, and that the quality of sleep during naps is compromised by lower body temperatures. She thinks her findings will help scientists better understand circadian rhythms and could be used to promote effective daytime sleep. First in her class of 85 at **Croton-Harmon High School**, Ally is class and Student Faculty Congress vice president and captain of the cross country and track teams. She has served as a dance counselor/choreographer at a children's theater camp and as layout editor for a literary magazine. A member of the organic agriculture garden club, she has also built her own canoe. The daughter of Marshall and Sheryl Goldberg, Ally may one day be a pediatrician or teach biology.



## Duy Minh Ha

*Ulysses S. Grant High School*

### OREGON

**Duy Minh Ha**, 18, of **Portland**, studied the effects of long-term estrogen replacement therapy (ERT) on white and gray brain matter via magnetic resonance imaging (MRI) for his Intel Science Talent Search project in **medicine and health**. Duy's major finding is that long-term ERT preserves white matter, while having little morphological effect on gray matter during the healthy aging process. He believes his work may explain some of the positive cognitive changes found in women when undertaking ERT as well as their lowered risk for Alzheimer's disease. As part of his project, Duy developed a new software tool to quantify his MRI data. First in his class of 406 at **Ulysses S. Grant High School**, Duy sings in the *a cappella* choir, participates in science, math and octagon clubs, and authored a poster presentation at a national cardiology conference. The son of Anh Mai Ha and Anh Thi Ngoc Tran, Duy has won many science awards and a gold medal on the National Latin Exam. Duy plans to attend nearby Reed College, become a neurologist and eventually open his own research lab so he can advocate for those with neurodegenerative disorders — especially in third world countries like his native Vietnam.



## Bruce David Halperin

*Half Hollow Hills High School East*

### NEWYORK

**Bruce David Halperin**, 17, of **Dix Hills**, developed a new secure, patentable method for many parties to communicate anonymously over the Internet for his Intel Science Talent Search project in **computer science**. Bruce's method, Anonymous Communication Protocol (ACP), is an extension of a cryptography protocol developed in 1988 that allowed for anonymous communication among a number of users, but allowed only one message to be sent at a time. ACP enables simultaneous, secure communication among many parties while preserving the anonymity of all parties and is compatible with commonly used methods of encryption. Bruce believes his work has practical applications for digital money transfers, electronic voting systems and chat rooms for support groups such as Alcoholics Anonymous. Bruce, who has perfect SAT scores, attends **Half Hollow Hills High School East** where he is co-president of the Mathletes and is in both the Spanish Honor Society and the French Honor Society. The recipient of many awards, he placed second in the National French Contest. The son of Ira and Judy Halperin, Bruce would like to study computer science or electrical engineering.



**Qilei Hang**  
*Allegany High School*

**MARYLAND**

**Qilei Hang**, 18, of **Cumberland**, was named a finalist in the Intel Science Talent Search for her **engineering** project in materials handling. On a quarry tour, she had been intrigued by the materials stacking and reclamation process, in which stored material is drawn from cone-shaped stockpiles by tunnel conveyors. Qilei wondered how to best locate the drawpoints to reclaim the maximum amount of material and how to calculate it. To find design solutions, she used mathematical modeling to develop new equations and built miniature stockpiles to test their validity. Her equations, increasing efficiency by about 20%, are already being used in the field, and her work has been recognized by the Society for Mining, Metallurgy, and Exploration. Qilei is first in her class of 200 at **Allegany High School**, where she competes in tennis and track, and on the math and debate teams. She is principal cellist in the senior all-county and community orchestras, and her numerous awards include a first place in her category at the 2003 Intel International Science and Engineering Fair. Qilei was born in China and is the daughter of Youhong Hang and Weixing Han. She plans to study physics and biochemistry at Harvard.



**Matan Harel**  
*Stuyvesant High School*

**NEW YORK**

**Matan Harel**, 17, of **New York**, developed a mathematical model of cell movement based on extension of the cytoskeleton, a flexible network made largely of a protein called actin that gives the cell its shape, for his Intel Science Talent Search project in **physics**. In a prior elastic ratchet movement model, the actin filaments, which are made up of negatively charged subunits, push against the membrane as they grow causing it to protrude and then drag the cell body toward the extended membrane. But the model neglected the electrostatic forces between filaments. Matan created an expanded ratchet movement model that accounted for these interactions. Matan's model now requires development and incorporation of *in vivo* experimental data to generate a precise numerical simulation. Matan, who attends **Stuyvesant High School**, was born in Israel. Fluent in Hebrew, he stays connected to his country by reading Israeli books and listening to Israeli radio. His many awards include a silver medal from the New York Metropolitan Area Math Fair. A pianist and swimmer, he is the son of Haim and Edna Harel. Matan plans to pursue a career in research following his education.



**Katherine Hartman**  
*Guilderland Central High School*

**NEW YORK**

**Katherine Hartman**, 17, of **Schenectady**, submitted an Intel Science Talent Search project in **earth and space sciences** regarding stellar evolution and pulsation theory. Katy studied CQ Bootis (CQ Boo), one of a group of RRc Lyrae stars that change in radius over a fixed period of time, thus causing their light to pulsate. Using the sophisticated home-based observatory of an amateur astronomer, Katy gathered images and measurements of CQ Boo and analyzed her data by combining multicolor photometry with Fourier analysis of the generated light curves. From these, she confirmed CQ Boo's classification and determined various properties including its temperature of approximately 7100K. At **Guilderland Central High School** in Guilderland Center, Katy is founder and president of the guitar club, co-president of the student environmental action coalition and enjoys varsity tennis and curling. As part of her work with the Rising Star Internship program, she has organized star parties in dark, remote locations for elementary school students. Winner of two astronomy scholarships and other science awards, Katy is the daughter of Dr. Charles and Li Yun Hartman and hopes to attend MIT.



**Herbert Mason Hedberg**  
*North Attleboro High School*

**MASSACHUSETTS**

**Herbert Mason Hedberg**, 17, of **North Attleboro**, experimented with the telomerase enzyme found in cancer cells for his Intel Science Talent Search project in **biochemistry**. Inspired by reading an article on the role of telomerase in cancer cell proliferation—at a time when his grandmother was undergoing cancer treatment—Mason set out to develop a faster, more efficient method to screen for telomerase inhibitors and rank their potency as potential tumor suppressors. The standard method for analyzing telomerase inhibitors requires a multiple-day procedure involving telomerase isolation and hazardous reagents, but Mason's analysis, using a novel dialysis chamber that he invented (provisional patent application) and telomerase synthesized by *in vitro* gene expression, makes analysis by UV absorbance possible after an approximately 10-minute incubation. At **North Attleboro High School**, Mason has lettered in swimming and is president of the National Honor Society and science club. He is the founder of "Exciting Elementary Science," a program designed to encourage scientific curiosity. The son of Herbert Hedberg and Dr. Cynthia Hjerpe, he hopes to attend Brown University.



**Elizabeth Rose Heller**  
*Nanuet High School*

**NEW YORK**

**Elizabeth Rose Heller**, 17, of **Nanuet**, entered an **earth and space sciences** project in the Intel Science Talent Search that statistically studied historical data to evaluate the strength of the 1868 El Niño. Based on leading geologists' reports from 1525 to the present, the biggest discrepancy for classification of an El Niño event was in 1868. Using scientific ingenuity, Elizabeth compiled and analyzed select instrumental data such as land and sea surface temperatures, sea level pressures, wind and precipitation. She believes that her findings indicate that a weak-to-medium El Niño event did occur in 1868. This could lead to increased confidence in predictions of El Niño based on models that are calibrated to or verified by historical rankings. Her interest in the importance of history and historical records for understanding long-term trends in science has led her to volunteer at the Historical Society of Rockland. At **Nanuet High School**, Elizabeth plays tennis, enjoys chorus and is a member of the Foreign Language Honors Society. The daughter of Drs. Donald Heller and Mary Noberini, Elizabeth hopes to study both science and diplomacy at Vassar College.



**Ryna Karnik**  
*Oregon Episcopal School*

**OREGON**

**Ryna Karnik**, 17, of **Aloha**, submitted an Intel Science Talent Search project in **engineering** describing a method of constructing microchips using a focused ion beam (FIB) as a “molecular pencil” to directly “write” transistors onto silicon wafers. This is a departure from traditional methods, which involve a process called photolithography. Using her patent-pending technique, she created a working transistor. Applications of her findings could save microchip developers time and money when creating and testing prototype semiconductor chips. At **Oregon Episcopal School** in Portland, Ryna enjoys varsity fencing, dressage, aikido and tutoring disadvantaged elementary school students in physics. As a freshman, she built a particle accelerator from an old Van de Graaff generator. She counts among her many honors, several engineering awards at the 2003 Intel ISEF as well as qualifying as a Junior Olympics competitor in sabre fencing. Although Ryna plans to study pre-med at Stanford and eventually complete an M.D./Ph.D. program, she says she is an engineer at heart, who hopes to become a medical researcher. Ryna is the daughter of Milind and Parizad Karnik.



**Andrei Joseph Levin**  
*Maimonides School*

**MASSACHUSETTS**

**Andrei Joseph Levin**, 17, of **Newton**, was named a finalist in the Intel Science Talent Search for his **biochemistry** project in molecular genetics focused on retroposed genes. These rare functional genes are copied from a chromosome and inserted into a different place on the genome. A genome-wide search had identified only 60 retroposed genes in humans, and Andrei used that data in his study, searching for corresponding retroposed genes in the mouse genome, which is 85% identical to that of humans. Using software he developed, computer analysis and manual inspection, he identified and analyzed 23 such genes and believes that 16 of them had not been previously discovered. Andrei plays varsity soccer at **Maimonides School**, Brookline, and is co-captain of the math team. He works with elementary school math students weekly and also volunteers at a soup kitchen. His awards include the Rensselaer Medal in Science and Math and fourth place National French Competition honors (Level 5). He is also fluent in Hebrew and Russian and is currently translating his grandfather's memoirs. The son of Drs. Leonid and Larissa Levin, Andrei plans to major in one or more scientific disciplines at MIT.



**Amos Benjamin Lubin**  
*Hanover High School, Hanover, NH*

**VERMONT**

**Amos Benjamin Lubin**, 18, of **Norwich**, submitted an Intel Science Talent Search project in **mathematics** that considers a problem in the field of differential geometry. Amos's paper studies hypersurfaces in certain non-Riemannian geometries. The basic object he studied is called de Sitter space (a concept that is similar to a sphere) which contains hypersurfaces. He finds an inequality relating their curvature and dimension with the length of an associated tensor. De Sitter space is important in physics and is also of much interest to string theorists. First in his class of 190 at **Hanover High School** in Hanover, N.H., Amos played junior varsity tennis and has served as an officer for the chess club. He has earned numerous mathematics honors as well as the Harvard Book Prize, Gold Medals in three National Latin Exams and a certificate of honor from Concours National de Français. Amos, who has perfect SAT scores, is the son of Adam and Victoria Lubin and hopes to attend Harvard. Eventually he would like to contribute to the field of mathematical physics in its continual search for fundamental physical theories that are ever more broad, simple and elegant.



**Simeon Charles McMillan**  
*Uniondale High School*

**NEW YORK**

**Simeon Charles McMillan**, 17, of **Baldwin**, submitted a three-year study that traced the relationships between frogs and toads from North and South America by bioacoustic analysis of their calls for his Intel Science Talent Search project in **zoology**. Simeon selected frogs and toads of the genus *Hylidae* for his study because they are widely distributed. Using professional recordings, he created spectrograms of their sounds and then converted them to numeric code that could be translated into cladograms or evolutionary trees. He found that while frogs and toads could change their rhythmic patterns, their frequency range is an ancestral characteristic distinct to each species. Simeon concluded that despite the differences in appearance among species, biological relationships could be traced non-invasively through their sound patterns. First in his class of 374 at **Uniondale High School**, Simeon is fluent in Spanish and active in the Spanish Honor Society. He plays violin in the school orchestra and in a string quartet he started. Among his many honors are the All-Eastern and All-State Orchestras. The son of Benet and Doloures McMillan, Simeon plans to study engineering and business at the University of Pennsylvania.



**Maria Lynn Michta**  
*Sachem North High School*

**NEW YORK**

**Maria Lynn Michta**, 17, of **Nesconset**, created a meteor detection system for her Intel Science Talent Search project in **earth and space sciences**. Maria designed a three-element Yagi antenna (a sharply directional antenna array optimized for gain, frequency and selectivity), attached it to a VHF radio receiver, and designed a data reduction algorithm to run on her microcomputer. Using her homemade device, Maria was able to detect meteor ionization trails as reflected off radio waves, even in poor weather conditions. By comparing her data to International Meteor Organization data, she believes she validated her novel detection method, which could be used to ensure the quality of artificial satellites in space. After graduating from **Sachem North High School** in Lake Ronkonkoma, Maria plans to attend the University of Connecticut. Her hobbies include track, violin and volunteering as a physical therapist. An avid athlete, Maria has earned national recognition for race walking, and she hopes to represent the United States in the 2012 and 2016 Olympic games. The winner of numerous academic and athletic honors, Maria is the daughter of Richard and Susan Michta.



**Andrei Munteanu**  
*Benjamin Banneker High School*

**DISTRICT OF COLUMBIA**

**Andrei Munteanu**, 18, of **Washington, D.C.**, was selected as a finalist in the Intel Science Talent Search for his **earth and space sciences** project in celestial mechanics. Andrei invented a new algorithm for computing the minimum distance between elliptical orbits, using analytical tools involving calculus, 3D Euclidean geometry, algebraic manipulations and numerical analysis. He not only used existing computer programs, but also wrote his own C++ code. His numerical algorithm, successfully tested on 70,000 main-body asteroids, can be used to determine the mass of asteroids, and predict collisions between asteroids and between Earth and minor bodies (asteroids, comets or meteorites). He coauthored a paper on his findings, which was presented at the 2003 meeting of the American Astronomical Society's Division on Dynamical Astronomy. Andrei is first in his class of 92 at **Benjamin Banneker High School**, and competes on the varsity "It's Academic" team. He has received numerous science and math awards and is a published poet. Andrei was born in Romania and is the son of Alexandru and Daniela Munteanu. He hopes to continue his studies at MIT.



**Moriah Katherine Nachbaur**  
*Crystal Springs Uplands School*

**CALIFORNIA**

**Moriah Katherine Nachbaur**, 17, of **Redwood City**, investigated the conservation of gene function between plant species by examining the translatability of two altered genes from *Arabidopsis thaliana*, a plant in the mustard family, into *Nicotiana tabacum*, a tobacco plant, for her Intel Science Talent Search project in **botany**. To introduce the *Arabidopsis* genes into the *Nicotiana*, Moriah also developed a new *in vitro* transformation protocol. In her two-phase study, she first generated transgenic *Nicotiana* and observed that the altered genes from the *Arabidopsis* produced similar effects in *Nicotiana*. In the second phase, she grew plants from the seeds of the transgenic *Nicotiana*, confirming gene function transferability from the parents. Moriah believes her work could lead to the development of novel plant forms with a variety of applications. At **Crystal Springs Uplands School** in Hillsborough, Moriah plays varsity badminton. A classical pianist and an award winning photographer and poet, she has earned many science honors. The daughter of Dr. Thomas and Susan Nachbaur, Moriah hopes to earn an M.D./Ph.D. and pursue a career in academic medicine or pharmacology.





## **Divya Nettimi**

*Thomas Jefferson High School for Science & Technology*

### **VIRGINIA**

**Divya Nettimi**, 17, of **Oakton**, developed a method of calculating theoretically the rate at which myosin, a molecular biomotor, reacts with adenosine triphosphate (ATP), an energy source, and drives muscle contraction for her Intel Science Talent Search project in **biochemistry**. She applied a Michaelis-Menten model to the myosin-ATP reaction system and derived an equation using kinetics, thermodynamics and experimental data. Her calculations show that a myosin molecule moves along an actin filament in muscle at approximately  $2.5 \times 10^7$  nanometers per second. Divya found that the reaction rate is primarily affected by myosin, and only indirectly by ATP, suggesting more and denser muscle tissue is needed to add more myosin in order to perform more strenuous activity. At **Thomas Jefferson High School for Science and Technology** in Alexandria, she helped start the Assistive Technology Club that makes reading devices to help motor-disabled children learn to communicate. Among her long list of honors is the Congressional Award Bronze Medal. Born in India, Divya is the daughter of Vidyadhar and Kalyani Nettimi. She plans to attend Harvard and become a research scientist.



## **Sean Dilip Raj**

*Hightower High School*

### **TEXAS**

**Sean Dilip Raj**, 18, of **Sugar Land**, studied blood stem cell therapy and its potential as a treatment for heart failure in his Intel Science Talent Search project in **medicine and health**. Transplanted adult blood stem cells can generate mature cells that repair organs, including the heart, but the mechanism is not well understood. Sean demonstrated that these newly generated cells are created both by fusion (70%), where stem cells combine with existing heart cells, and by transdifferentiation (30%), where stem cells become heart cells via their unique ability to generate cardiac muscle cells. With promise of being a more accessible alternative to heart transplantation, stem cell therapy could treat many of the 5 million Americans afflicted annually. After graduating from **Hightower High School** in Missouri City, Sean would like to earn a combined B.A./M.D. at Rice and Baylor Universities and become a cardiologist. He has many science awards for his work on bottled water safety, and was honored as a U.S. finalist in the Stockholm Junior Water Prize. Sean has mentored middle schoolers on preparing for high school. Fluent in French and Gujarati, he is the son of Drs. Dilip Rajkotia and Saroj Vadhan-Raj.



**Rohini Subhadra Rau-Murthy**  
*Yorktown High School*

**NEW YORK**

**Rohini Subhadra Rau-Murthy**, 17, of **Yorktown Heights**, entered a **behavioral and social sciences** project in the Intel Science Talent Search that studied stereotypes pertaining to math and gender-related performance, primarily the long-held view that males are better at math than females, and its effect upon actual math test scores. Rohini claims to be one of the first to test two major theories simultaneously at the high school level. Her study suggests that women perform better than expected on math tests when they do not remind themselves they are the gender traditionally viewed as the poorer performers. Rohini hopes further study will recalibrate self- and societal perceptions about gender-based math performance. Long-term benefits would support young women, ideally increasing their pursuit of math-related studies and representation in the math and science workforce. A tennis player at **Yorktown High School**, Rohini plays piano, clarinet and is fluent in French and Kannada. Her classical Indian dance performances have received critical acclaim in the United States and India. The daughter of Dr. Seshashayee Murthy and Nalini Rau, Rohini hopes to study biochemistry at Harvard.



**Eduard Reznik**  
*Ward Melville High School*

**NEW YORK**

**Eduard Reznik**, 17, of **East Setauket**, entered a **physics** project in the Intel Science Talent Search describing his discovery of new families of solutions to Einstein's equations for certain types of stars that do not rotate. Some of the densest matter in the universe is concentrated within the centers of neutron stars and quark-matter stars, also called strange stars. Yet the internal structure of these stars is still a matter of controversy in the astrophysical community. To complete his project, Ed developed from scratch a computer code in Mathematica, a science programming language. His analytical solutions provide a simple set of functions describing various properties of these compact stars, including mass, energy density and pressure. First in his class of 596 at **Ward Melville High School**, Ed enjoys the philosophy, science, math and engineering clubs as well as ultimate frisbee, the Long Island diplomacy club and alternative modes of music. The Ukraine-born senior, who is fluent in Russian, hopes to study electrical engineering at Cooper Union. The son of Grigory and Edita Reznik, Ed would like to help find a more efficient means of data communication through research in nanoelectronics.



**Silas Isaac Richelson**  
*Byram Hills High School*

**NEW YORK**

**Silas Isaac Richelson**, 18, of **Armonk**, studied the primal Catalan’s conjecture for his **mathematics** project in the Intel Science Talent Search. Silas’s paper generalizes the well-known Catalan’s conjecture to quadratic fields — fields obtained by adding a square root to some nonsquare integer. Catalan’s conjecture says that 8 (which is  $2^3$ ) and 9 (which is  $3^2$ ) are the only solutions to  $1 + x^n = y^m$  where  $x, y, n, m$  are all integers greater than 1. The classical Catalan’s conjecture, posed in 1844, is a seemingly simple statement about numbers which has only recently been proved by Preda Mihalescu. Silas shows there are no other integer solutions with both  $x$  and  $y$  prime, and he gives analogous results for quadratic fields. At **Byram Hills High School**, Silas received the Award for Excellence in Mathematics, is the first tenor saxophone in the band and enjoys varsity soccer and baseball, math club, camping and peer tutoring. He also performed 200 hours of volunteer work at a nearby hospital last summer. The son of Eric and Sara Richelson, Silas plans to study applied math or physics at Stanford and one day work in industry, where he hopes to “face real problems and discover creative solutions.”



**Shaye Perry Storm**  
*Midwood High School*

**NEW YORK**

**Shaye Perry Storm**, 17, of **Brooklyn**, investigated the effects of commercial exploitation of North Atlantic codfish from the 15<sup>th</sup> century to the modern era for his Intel Science Talent Search project in **behavioral and social sciences**. He applied both traditional and innovative methods of zooarcheological analysis to fish bone material excavated from stratified layers at Akurvík, one of the first documented fishing stations in Iceland. After extracting and analyzing size and aging data from hundreds of these bones and comparing them to fish stocks today, he concluded that commercialization did cause a decrease in the average age and size of caught fish. He believes his study is a first step toward a better integration of long-term archeological and fishery data that may lead to more effective fishery management. His findings will be sent to the journal *Archaeofauna* for peer review and potential publication. Shaye is first in his class of 720 at **Midwood High School**, where he plays alto saxophone in the jazz band. His honors include storytelling champion in the New York City Board of Education Storytelling Festival. He is the son of Jerry and Cheryl Storm and hopes to study at MIT.



**Gordon L. Su**  
*Montgomery Blair High School*

**MARYLAND**

**Gordon L. Su**, 18, of **Silver Spring**, analyzed globalization's impact on income inequality in China for his **behavioral and social sciences** entry in the Intel Science Talent Search. Using trade, privatization and foreign investment as parameters of globalization, he developed a series of equations that he used to study the impact of globalization on urban-rural population and coastal-interior province inequality and the overlap between them. Gordon looked at four time periods: 1978-2001, for a broad picture; and three periods within that time frame marking distinct economic policy changes. Among his many conclusions: globalization has been good for China; globalization was higher and urban-rural inequality was lower in coastal provinces; and differences in degrees of coastal and interior globalization have contributed to inequality. A violinist and skateboarder, Gordon attends **Montgomery Blair High School** where he is co-captain of the tennis team and co-founder of the book club. Skilled in debate and passionate about politics, he interviewed the Australian prime minister for Australian TV. The son of Dr. Jow-Lih Su and Ie-Ru Wang, he plans to study economics at the University of Pennsylvania.



**Arjun Anand Suri**  
*Clovis West High School*

**CALIFORNIA**

**Arjun Anand Suri**, 17, of **Fresno**, was named a finalist in the Intel Science Talent Search for his **biochemistry** project, researching the effect of tyrosine sulfation, a process in protein synthesis, on the binding of a molecule with a cell receptor. He used a computer algorithm to predict occurrence of the process in seven transmembrane receptor proteins and created 3D models to predict sulfation locations. He found that these sites were clustered around the binding region, suggesting their interaction with the binding molecule, and believes that his model may improve pharmaceutical designs for drugs that target these binding sites. Arjun is first author of a paper on his findings that will be submitted to *Molecular Pharmacology*. He is first in his class of 672 at **Clovis West High School**, where he plays varsity tennis, captains the academic decathlon team, edits the literary magazine, is vice president of his class and president of the Indian-Pakistani Club. Arjun has perfect SAT scores and has earned numerous awards in math, science, history and writing. He is a musician, skier, scuba diver and an emergency room volunteer. The son of Drs. Madhav and Anuradha Suri, he plans to attend Harvard.

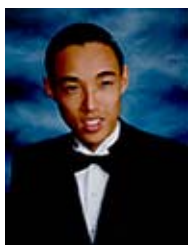


## Gaurav Subhash Thakur

*The Learning Community International*

### MARYLAND

**Gaurav Subhash Thakur**, 17, of **Rockville**, studied generalized factorial functions for his Intel Science Talent Search project in **mathematics**. Gaurav analyzed the “powerfactorial” function  $PF_n(x)$ , a function obtained by iterating powers of successive numbers. For example,  $PF_1(3) = 1^1 2^2 3^3 = 108$ . Likewise,  $PF_2(3) = 1^1 2^{2^2} 3^{3^2} = 11664$ . He extended this function to complex values of  $x$ , then derived several properties for it, as well as identities and expressions analogous to classical results for  $n!$  — the usual factorial function. The study of the powerfactorial is important because of its close connection to spectral function theory, differential geometry, string theory and the Riemann Hypothesis. After earning his diploma from **The Learning Community International** in Columbia, Gaurav plans to attend Princeton or the University of Maryland. His hobbies include computer gaming, game modification as well as designing and constructing Lego models. His interests include physics and machine design, although math is his first love. His community service activities include work as a kindergarten teacher’s assistant. Gaurav is the son of Dr. Subhash and Smita Thakur.



## Kevin Yibo Wang

*Ward Melville High School*

### NEW YORK

**Kevin Yibo Wang**, 17, of **Stony Brook**, developed a new simulation method to predict protein structure for his Intel Science Talent Search project in **biochemistry**. His research focused on the “protein folding problem”—the challenge of correctly predicting a protein’s three-dimensional tertiary structure given only its linear amino acid sequence. Kevin’s protein simulations, done on parallel supercomputers, showed a three-fold improvement over constant temperature standard simulations. He believes his research may eventually help in computer-aided drug design. Kevin will be first author of a paper to be submitted to the *Journal of Computational Chemistry*, describing his methodology and preliminary results. His methods will be made available to all researchers with the next release of a commonly used molecular modeling program (AMBER). Kevin competes on the Science Olympiad Academic team at **Ward Melville High School**, East Setauket, and has consistently medalled on regional and state levels. He is a published author and sings with the all-county and all-state choirs. Born in China, Kevin is the son of Dr. Hu Wang and Jing Yuan. He plans to continue his studies at MIT.



**Linda Brown Westrick**  
*Maggie L. Walker Governor's School*

**VIRGINIA**

**Linda Brown Westrick**, 18, of **Mechanicsville**, submitted an Intel Science Talent Search project in **mathematics** concerning the “number derivative,” a concept introduced in a recent mathematics contest, which is analogous to the familiar calculus derivative. Linda developed fundamental properties of this new derivative and its relationship to factorization of integers. She further extended the notion to the rational numbers and analyzed solutions to the differential equations  $x' = a$  and  $x' = ax$ , where  $x'$  is the number derivative of  $x$ . After graduating from **Maggie L. Walker Governor's School** in Richmond, Linda hopes to attend Harvard eventually earning her doctorate in mathematics. She is founder and president of the school's math club, project manager for the robotics club, and active in QuizBowl. Linda's many interests include swing dancing, varsity soccer, piano, weightlifting, building calculators out of transistors and programming computers. Fluent in German, she says she would like to learn many languages because each one allows her to think differently. The daughter of John and Anne Westrick, Linda took a spiritual pilgrimage to Lakota holy lands two summers ago.



**Jayne Frances Wolfson**  
*Byram Hills High School*

**NEW YORK**

**Jayne Frances Wolfson**, 18, of **Armonk**, entered a **behavioral and social sciences** project in the Intel Science Talent Search that studied cognitive development in toddlers from the view of “pretend play.” The experiment tested toddlers' ability to engage in pretend situations and remember those situations after two weeks. This experiment lead Jayne to propose that children's understanding of reality versus pretend play develops in four stages, a progression sequence for cognitive development that must happen for a child to understand the difference between what is real and what is pretend. At **Byram Hills High School**, Jayne is a member of the student board that plans social activities, is a mathematics tutor for a local middle school, plays on the field hockey team, and was elected captain of the JV lacrosse team. She is a member of the National Cum Laude Society and the National Foreign Language Honors Society. An accomplished dancer, she is a member of the Acadettes, an invitation-only tap dance group and a member of the Westchester Theater Dance Performing Troupe. The daughter of Robert Wolfson and Susan Anderson, Jayne hopes to attend Columbia, Northwestern or USC.



**Felicia Yuen-Lee Yen**  
*Half Hollow Hills High School East*

**NEW YORK**

**Felicia Yuen-Lee Yen**, 17, of **Dix Hills**, conducted breast cancer and gene therapy research for her Intel Science Talent Search project in **medicine and health**. In the first phase of her project, using the genetic data of 100 cancer-associated genes, Felicia developed a diagnostic test for breast cancer with the capacity to predict the development of a tumor from normal tissue in the early developmental stage of tumor formation. Her prototype microarray panel diagnostic test demonstrated a remarkable 83-to-93 percent success rate. Felicia also investigated the use of a genetically modified adenovirus in conjunction with heat-shock drugs to cure cancer by selectively killing mutated cancer cells while leaving normal cells intact. Felicia attends **Half Hollow Hills High School East** where she is co-president of the National Honor Society, co-president of Mathletes, co-captain of Science Olympiads and Science Explorers, senior president of the Academic Team and a competitive swimmer. Outside of school she is co-director of Habitat for Humanity and a flutist with the Gemini Youth Orchestra. The daughter of Dr. Clifford and Yuet Yen, she plans to earn an M.D./Ph.D., become a clinical physician and do research.



**Ning Zhou**  
*Wayzata High School*

**MINNESOTA**

**Ning Zhou**, 16, of **Plymouth**, investigated the genetic cause of variations in the size of the corpus callosum, part of the brain that connects the left and right hemispheres and which is associated with a variety of disorders, for his entry in the Intel Science Talent Search in **medicine and health**. His study mapped genetic loci controlling corpus callosum size in the mouse brain using brain sections from 191 recombinant inbred mice. Ning's mapping identified a genetic locus on chromosome 10 and two interactive genetic loci on chromosomes 1 and 6, which strongly suggests that corpus callosum size is inheritable. He believes his work could one day lead to minimally invasive treatments for diseases such as schizophrenia, Attention Deficit Hyperactivity Disorder and dyslexia. First in his class of 702 at **Wayzata High School**, Ning is on the debate team and captain of both the Minnesota State High School Math League and the State All-Star Math Team. He is a Schubert Club regional piano solo finalist, teaches in a Chinese school and is a board member of TeenLinks. Born in China, Ning is the son of Drs. Xiaohong Zhou and Lily Xia. He plans to pursue a career in biological research after attending Harvard.

## 2004 Intel Science Talent Search

### *Finalists Listed by State*

<b>California</b>	Phillip Thomas Deutsch, <i>La Canada School</i>	8
	Moriah Katherine Nachbaur, <i>Crystal Springs Uplands School</i>	16
	Arjun Anand Suri, <i>Clovis West High School</i>	20
<b>Connecticut</b>	Lisa Doreen Glukhovsky, <i>New Milford High School</i>	9
<b>District of Columbia</b>	Andrei Munteanu, <i>Benjamin Banneker High School</i>	16
<b>Georgia</b>	Boris Alexeev, <i>Cedar Shoals High School</i>	4
<b>Iowa</b>	Rachael Theresa Collier, <i>Mediapolis High School</i>	7
<b>Indiana</b>	Ann Chi, <i>Terre Haute South Vigo High School</i>	6
<b>Massachusetts</b>	Herbert Mason Hedberg, <i>North Attleboro High School</i>	12
	Andrei Joseph Levin, <i>Maimonides School</i>	14
<b>Maryland</b>	Melis Nuray Anahtar, <i>Montgomery Blair High School</i>	4
	Qilei Hang, <i>Allegheny High School</i>	11
	Gordon L. Su, <i>Montgomery Blair High School</i>	20
	Gaurav Subhash Thakur, <i>The Learning Community International</i>	21
<b>Michigan</b>	Yuyin Chen, <i>Cranbrook Kingswood School</i>	6
<b>Minnesota</b>	Ning Zhou, <i>Wayzata High School</i>	23
<b>New York</b>	Craig Louis Auster, <i>Carmel High School</i>	5
	Neha Chauhan, <i>Susan E. Wagner High School</i>	5
	Daniel Chimin Choi, <i>Syosset High School</i>	7
	Jennifer Anne D'Ascoli, <i>Academy of the Holy Names</i>	8
	Allyson Molly Goldberg, <i>Croton-Harmon High School</i>	9
	Bruce David Halperin, <i>Half Hollow Hills High School East</i>	10
	Matan Harel, <i>Stuyvesant High School</i>	11
	Katherine Hartman, <i>Guilderland Central High School</i>	12
	Elizabeth Rose Heller, <i>Nanuet High School</i>	13
	Simeon Charles McMillan, <i>Uniondale High School</i>	15
	Maria Lynn Michta, <i>Sachem North High School</i>	15
	Rohini Subhadra Rau-Murthy, <i>Yorktown High School</i>	18
	Eduard Reznik, <i>Ward Melville High School</i>	18
	Silas Isaac Richelson, <i>Byram Hills High School</i>	19
	Shaye Perry Storm, <i>Midwood High School</i>	19
	Kevin Yibo Wang, <i>Ward Melville High School</i>	21
Jayne Frances Wolfson, <i>Byram Hills High School</i>	22	
Felicia Yuen-Lee Yen, <i>Half Hollow Hills High School East</i>	23	
<b>Oregon</b>	Duy Minh Ha, <i>Ulysses S. Grant High School</i>	10
	Ryna Karnik, <i>Oregon Episcopal School</i>	13
<b>Texas</b>	Sean Dilip Raj, <i>Hightower High School</i>	17
<b>Virginia</b>	Divya Nettimi, <i>Thomas Jefferson High School for Science &amp; Technology</i>	17
	Linda Brown Westrick, <i>Maggie L. Walker Governor's School</i>	22
<b>Vermont</b>	Amos Benjamin Lubin, <i>Hanover High School, Hanover, NH</i>	14



## 2004 Intel Science Talent Search

### *Finalists Listed by Last Name*

Alexeev, Boris	Athens, GA	4
Anahtar, Melis Nuray	Bethesda, MD	4
Auster, Craig Louis	Camel, NY	5
Chauhan, Neha	Staten Island, NY	5
Chen, Yuyin	West Bloomfield, MI	6
Chi, Ann	Terre Haute, IN	6
Choi, Daniel Chimin	Syosset, NY	7
Collier, Rachael Theresa	Burlington, IA	7
D'Ascoli, Jennifer Anne	Niskayuna, NY	8
Deutsch, Phillip Thomas	La Canada, CA	8
Glukhovsky, Lisa Doreen	New Milford, CT	9
Goldberg, Allyson Molly	Croton-on-Hudson, NY	9
Ha, Duy Minh	Portland, OR	10
Halperin, Bruce David	Dix Hills, NY	10
Hang, Qilei	Cumberland, MD	11
Harel, Matan	New York, NY	11
Hartman, Katherine	Schenectady, NY	12
Hedberg, Herbert Mason	North Attleboro, NY	12
Heller, Elizabeth Rose	Nanuet, NY	13
Karnik, Ryna	Aloha, OR	13
Levin, Andrei Joseph	Newton, MA	14
Lubin, Amos Benjamin	Norwich, VT	14
McMillan, Simeon Charles	Baldwin, NY	15
Michta, Maria Lynn	Nesconset, NY	15
Munteanu, Andrei	Washington, DC	16
Nachbaur, Moriah Katherine	Redwood City, CA	16
Nettimi, Divya	Oakton, VA	17
Raj, Sean Dilip	Sugar Land, TX	17
Rau-Murthy, Rohini Subhadra	Yorktown Heights, NY	18
Reznik, Eduard	East Setauket, NY	18
Richelson, Silas Isaac	Armonk, NY	19
Storm, Shaye Perry	Brooklyn, NY	19
Su, Gordon L.	Silver Spring, MD	20
Suri, Arjun Anand	Fresno, CA	20
Thakur, Gaurav Subhash	Rockville, MD	21
Wang, Kevin Yibo	Stony Brook, NY	21
Westrick, Linda Brown	Mechanicsville, VA	22
Wolfson, Jayne Frances	Armonk, NY	22
Yen, Felicia Yuen-Lee	Dix Hills, NY	23
Zhou, Ning	Plymouth, MN	23

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