

The Siemens logo is displayed in a bold, teal, sans-serif font. It is positioned in the upper right corner of the page, set against a white rectangular background that has a thin vertical white bar on its left side. The background of the entire page is a blurred image of laboratory glassware, including a flask with red liquid on the left and a graduated cylinder with dark liquid on the right, with various numbers like 50, 60, 70, and 80 visible on the glass.

Siemens Competition

Math : Science : Technology

National Gala Recognition Dinner

Liberty Science Center
Jersey City, New Jersey
December 6, 2009

A large, faint, circular graphic consisting of a grid of thin, intersecting lines, resembling a globe or a technical drawing. It is centered on the page, overlapping the text area and the background image of laboratory glassware.

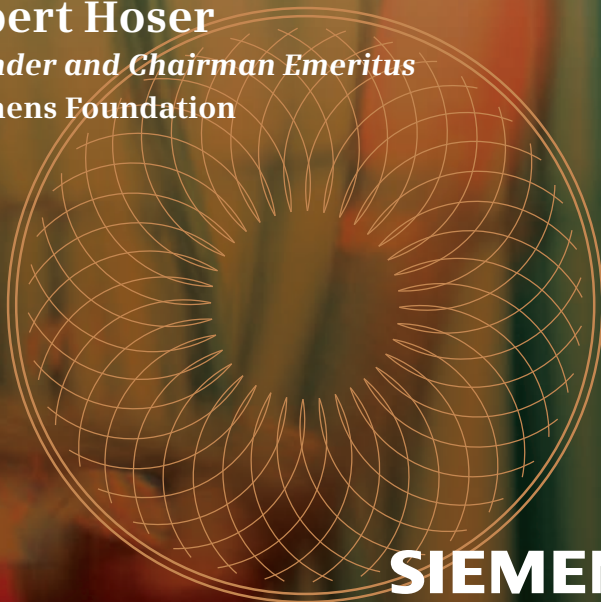
Siemens Competition

Math : Science : Technology

“It is my dream that one day there will be as many trophies for math and science displayed in American High Schools as there are for football and other sports.”

Albert Hoser

Founder and Chairman Emeritus
Siemens Foundation



SIEMENS

DECEMBER 6, 2009

National Recognition Dinner

Welcome

EMLYN KOSTER, PH.D

President & CEO

Liberty Science Center

Excellence in Partnership

JAMES WHALEY

President

Siemens Foundation

YOULANDA COPELAND-MORGAN

The College Board

Dinner

James Whaley

Remarks

DR. DWIGHT WILLIAMS

President & CEO

Mixed Greens Energy and Engineering, Inc.

Recognition Ceremony

James Whaley

THOMAS MCCAUSLAND

Chairman of the Board

Siemens Foundation

Dr. Dwight Williams

Founders Award

ALBERT HOSER

Chairman Emeritus

Closing Remarks

James Whaley

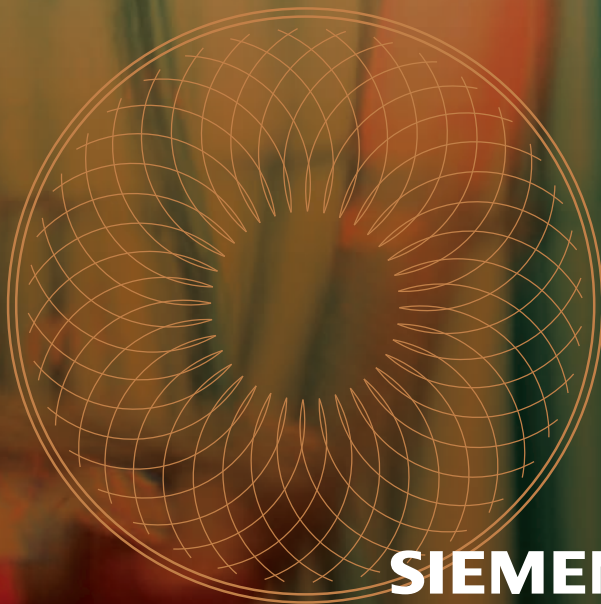
*This evening's musical selections performed by
Stuyvesant High School AP Music Theory Students.*

Siemens Competition

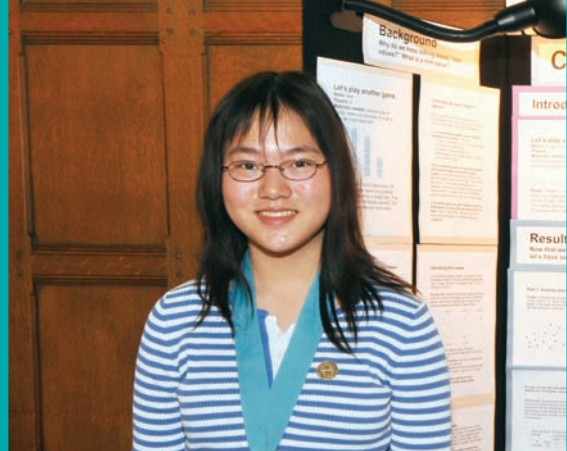
Math : Science : Technology

Congratulations
to the 2009
National Finalists

Individual
Competitors



SIEMENS



Region 1 Silver Medal Winner

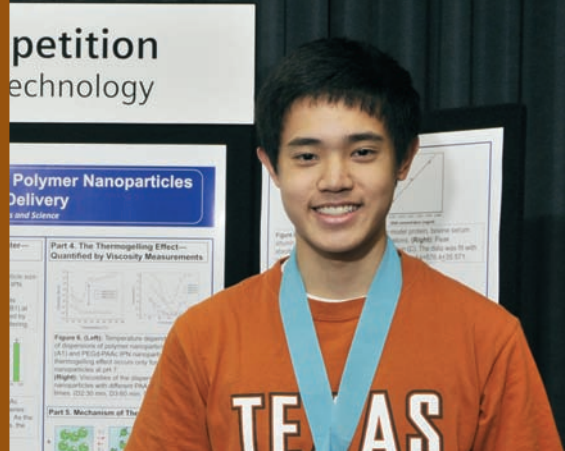
LYNNELLE YE

*Palo Alto High School
Palo Alto, California*

Chomp on Graphs and Subsets

Ms. Ye's project in the field of game theory studied games in which two players take turns to eliminate nodes, or edges, of a graph. The player to remove the graph's last node wins the game. Game theory is applied in fields ranging from economics to engineering to systems where individuals compete in a shared environment. The aim of the research was to understand the best possible strategy for playing this game and to determine which player will win from each starting graph when each plays her best possible strategy. Ms. Ye worked on this project with her mentor Mr. Tirasan Khandhawit, a Graduate Student at the Massachusetts Institute of Technology in Cambridge, Massachusetts.

Ms. Ye is a senior and the 2008 China Girls Math Olympiad Gold Medal winner, garnering the highest score on the USA team that year. She is also a three-time Math Olympiad Summer Program (MOSP) qualifier and two-time attendee. She has qualified for the USA Math Olympiad three times and been named to her school's Science Olympiad team since 2007. Additionally, Ms. Ye has qualified for the Research Science Institute. She has been President of her school's Math Club since 2007 and has served as Coach for the Jane Lathrop Stanford Middle School MathCounts since 2006. Ms. Ye's extracurricular activities include reading, creative writing, art and ballroom dancing. Her dream job is to become a Professor of Mathematics when she completes her studies, as it is one of her top passions. She notes that her interest in the field was piqued when she somewhat accidentally qualified for her middle school's MathCounts team in sixth grade. Ms. Ye is fluent in Mandarin Chinese as well as Shanghainese, a dialect of Chinese.



Region 2 Silver Medal Winner

PETER HU

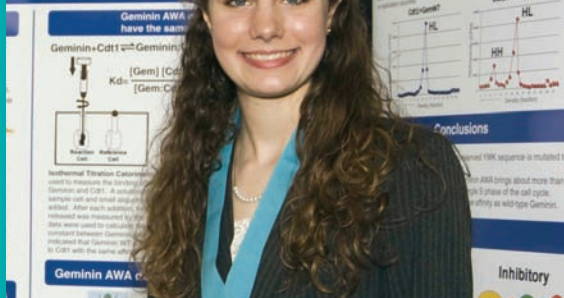
*Texas Academy of Mathematics and Science
Denton, Texas*

Novel Thermogelling Dispersions of Polymer Nanoparticles for Controlled Drug Delivery

Mr. Hu's materials science/nanoscience project aims to develop a novel, biologically compatible material for protein drug delivery. While therapeutic proteins are critically important to treating various diseases, a suitable protein drug carrier is yet to be found. Mr. Hu's research, titled *Novel Thermogelling Dispersions of Polymer Nanoparticles for Controlled Drug Delivery*, focused on creating a biologically compatible protein drug carrier, effectively avoiding prior toxicity issues. Mr. Hu's mentor for this project was Professor Liping Tang from the Department of Bioengineering at The University of Texas at Arlington.

Mr. Hu, a senior from Denton, Texas, aspires to one day lead a research team at a university or facility such as the National Cancer Institute. Currently, he is Vice President of the Junior Engineering Technical Society and is organizing a science demonstration team to promote interest in math and science among elementary and middle school students. Mr. Hu is also a member of his school's Research Organization; he tutors other students in math and physics and was selected as a finalist in the 2009 Intel International Science and Engineering Fair. His personal hero is his orchestra director Mr. David Mairs, as his passion for teaching and his ability to inspire people around him has motivated Mr. Hu to achieve more. Both of Mr. Hu's parents are physicists, spurring his interest in science at a young age. In addition to his academic pursuits, Mr. Hu plays the piano and violin, and enjoys basketball and table tennis.

reveals the mechan
NA re-replication



Region 3 Silver Medal Winner

MARISSA SUCHYTA

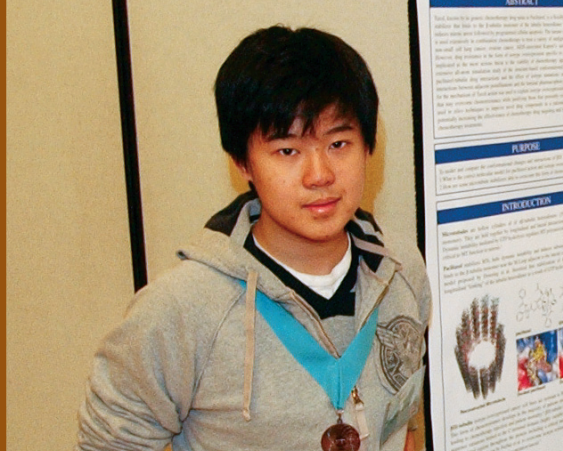
University of Chicago Laboratory High School, Eugene, Oregon

Geminin Mutant Reveals the Mechanism to Inhibit DNA Re-replication

Ms. Suchyta's biochemistry project researched the mechanism by which the protein Geminin prevents DNA from replicating more than one time before a cell divides. Over-replication of DNA will lead to genetic instability, which in turn gives rise to cells exhibiting uncontrolled cell division. The work adds to our knowledge of how DNA replication is controlled and has implications to develop new approaches to treating diseases like cancer. Her mentor for this project was Dr. Thomas McGarry, Assistant Professor of Medicine at the Feinberg School of Medicine, at Northwestern University in Chicago, Illinois.

Ms. Suchyta is a senior from South Barrington, Illinois, who is taking college courses in addition to her full high school schedule. Even with this course load, she has maintained straight A's throughout all of high school. In college, she would like to double major in Neurobiology and Molecular/Cellular Biology, eventually becoming a neurosurgeon with a PhD in molecular oncology. She placed second at Nationals in the National History Day Competition and was named a Regional Winner in the Discovery Young Scientist Challenge. Ms. Suchyta competes on the Model United Nations and Varsity Science Olympiad teams.

Ms. Suchyta founded the first Midwest chapter of the American Cancer Society's "High Schools Against Cancer" campaign and began her own nonprofit organization that donates gift buckets to teenage oncology patients. Through her work with the American Cancer Society (ACS), she has been invited to be on the organization's board and has presented research at the ACS Annual Meeting. Additionally, Ms. Suchyta has been the President of the Gavel Club, Captain of the Forensics Team and the Captain of the Mock Trial Team. She is also a Peer Leader and is near completion of earning the Girl Scout Gold Award. Furthermore, Ms. Suchyta is a competitive ballroom dancer, specifically in the Latin division. She plays the violin as well as the mandolin and speaks French fluently.



Region 4 Silver Medal Winner

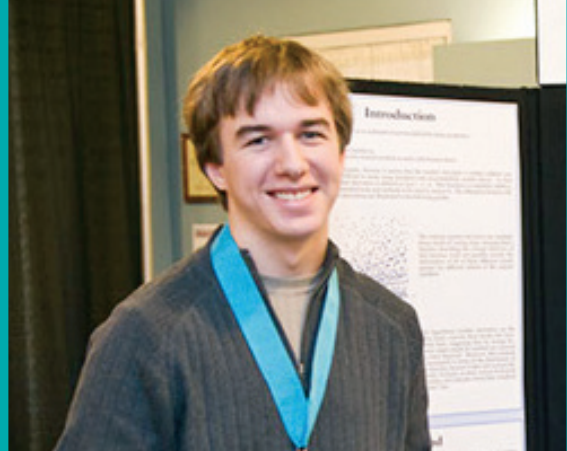
RUOYI JIANG

Ward Melville High School East Setauket, New York

Targeting Loop Dynamics in β I/ β III Isotype Tubulin: The Application of In Silico Techniques in Combating Chemotherapy Drug Resistance

Ruoyi Jiang's biophysics project investigated the molecular basis of a prominent mechanism of chemotherapy drug resistance. The project uses state-of-the-art computational techniques to develop a molecular understanding of how Taxol functions to kill tumor cells. Mr. Jiang's results allowed him to predict the long range effects of drug binding on the structure of that protein. The technique was validated using Taxol, showing that his computational results are consistent with experimental data. These results suggest that this method may have an important contribution in the development of a new class of pharmaceuticals. Mr. Jiang worked on this project with his mentor Dr. Carlos Simmerling, Professor of Chemistry in the Department of Chemistry at Stony Brook University in Stony Brook, New York, as well as Dr. George J. Baldo, Director of InSTAR in East Setauket, New York.

Mr. Jiang, a senior from East Setauket, New York, has placed at a variety of science competitions including the National Science Bowl. Mr. Jiang received an Honorable Mention in the Toshiba ExploraVision Competition as well as recognition for his involvement in the Science Olympiad. He is editor of his school newspaper, *Kaleidoscope*, and a member of the Science Bowl Team. His favorite subject is AP Physics. He hopes to become a research lab director upon completion of his studies. In addition to his academic accomplishments, he spends his free time doing volunteer work at the Stony Brook University Hospital. He enjoys playing the violin, tennis and loves to draw in his free time. He also speaks fluent Mandarin.



Region 5 Silver Medal Winner

DMITRIY (TIM) KUNISKY

*Livingston High School
Livingston, New Jersey*

**Probabilistic Properties of the
Logarithmic Number Derivative**

Mr. Kunisky's mathematics project concerned the number derivative, a mathematical topic that had only been studied at a basic level in the past. His approach consisted of applying more sophisticated techniques from the theory of probability to create new results regarding this function's behavior. These results may have applications both in approaches to long-standing problems of number theory, as well as a practical application to cryptography. Mr. Kunisky worked on his project with Dr. Alex Kontorovich, Professor of Mathematics at Brown University in Providence, Rhode Island.

Mr. Kunisky, a senior from Livingston, New Jersey, would one day like to be a research mathematician at a university or an independent laboratory. He is currently a member of the National Honor Society as well as the French Honor Society, and is recognized as a National Merit Scholarship Semifinalist, AP Scholar with Distinction and Merck State Scholar. He also placed second at the West Point Bridge Design Competition. Mr. Kunisky is the President of his school's Organization of Student Tutors, which helps match students needing assistance to students willing to tutor them. He also enjoys reading, watching plays, playing tennis and ultimate frisbee, and playing the guitar and piano. Mr. Kunisky was born in Moscow, Russia, and lived there for five years before moving to the United States. His mother is a former chemist and his father a former physicist; both parents strongly encouraged his inclination towards mathematics, providing an environment conducive to his independent scientific and mathematical development.



Region 6 Silver Medal Winner

LANAIR LETT

*North Carolina School of Science and
Mathematics, Durham, North Carolina*

**Histone Deacetylase 1 (HDAC-1)
Increases β -cell Proliferation in 832/13
 β -cells and Primary Rat Islets**

Mr. Lett's biochemistry project has the potential to optimize treatments for Diabetes, a disease that affects millions of people each year, through a better understanding of Beta cell growth. He examined a specific protein's potential for improving therapeutic methods for treating Diabetes. Diabetes is the fifth leading cause of death in America; its symptoms often leading to a manifestation into five of the top ten causes, such as heart disease. His mentor for this project was Dr. Jeffery Tessem, a Post-Doctoral Fellow, and Sarah W. Stedman, at the Nutrition and Metabolism Center at Duke University in Durham, North Carolina.

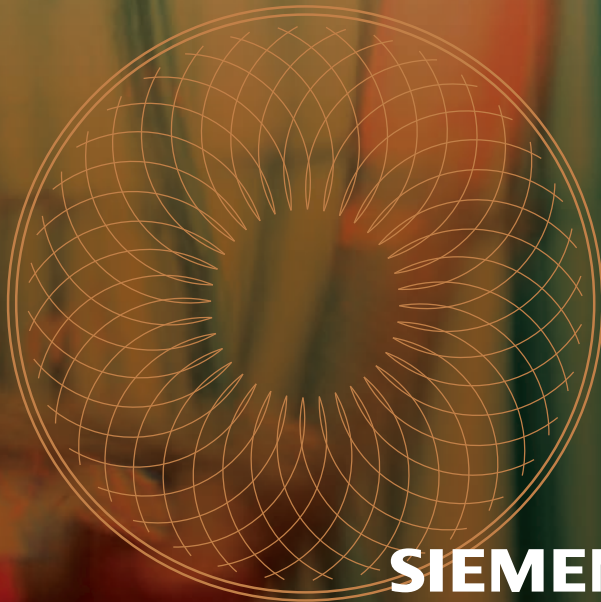
Mr. Lett is a senior from Henderson, North Carolina, who serves as the Lifestyles editor of *The Stentorian*, his school newspaper. Mr. Lett was most recently on the Regional Science Bowl Team from his school, which won second place at the event. Mr. Lett also participates in the Science Educational Experience for High School Students (Project SEED) Research Program, and volunteers as his school's Student Ambassador and at the H. Leslie Perry Memorial Library. Mr. Lett suffers from Diabetes, as do his mother and grandmother, and it was this personal experience that inspired him to conduct research pertaining to the disease. The Siemens Competition in Math Science & Technology is his first research competition. Mr. Lett considers his grandmother — who runs a 24-hr daycare, Nana's Nest, in Youngstown, Ohio — as his personal hero, because to him she is the epitome of self-sacrifice and dedication. Mr. Lett's dream job would be to work as a medical doctor while doing research involving metabolism and bioenergetics.

Siemens Competition

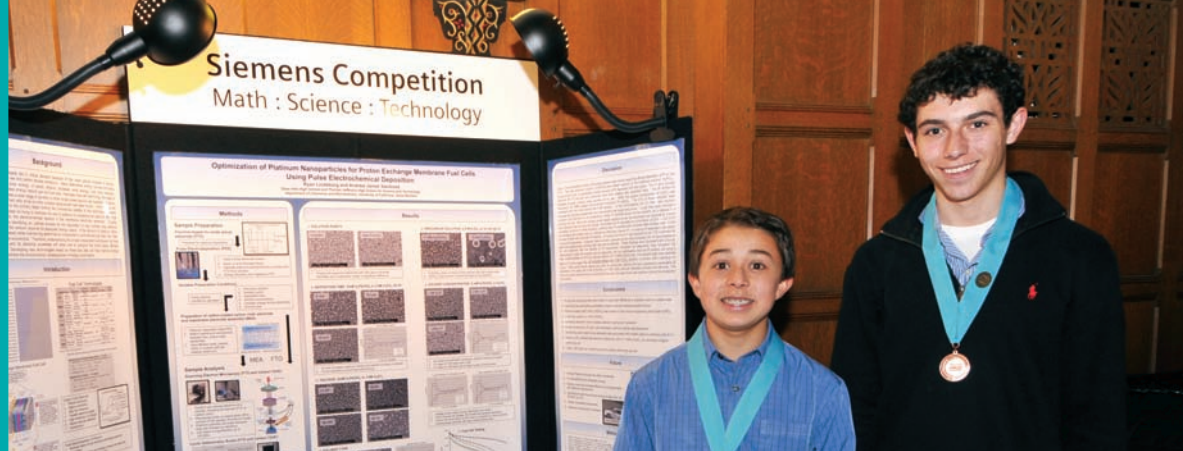
Math : Science : Technology

Congratulations
to the 2009
National Finalists

Team Competitors



SIEMENS



Region 1 Silver Medal Winner

RYAN LINDEBORG

*Dana Hills High School
Dana Point, California*

ANDREW JAMES SWOBODA

*Thomas Jefferson High School for Science and Technology
Alexandria, Virginia*

Optimization of Platinum Nanoparticles for Proton Exchange Membrane Fuel Cells Using Pulse Electrochemical Deposition

The team's materials science project looked at a novel method to maximize efficient platinum catalyst loading and enhance the performance of the proton exchange membrane (PEM) fuel cell. Among other findings, the research showcased a method to decrease the use of platinum—a very expensive metal—within the PEM fuel cell by 50 percent, thereby making the technology more economical as well as more scientifically approachable. The team's mentor for this project was Mr. Jonathan Burk, a Graduate Student in The University of California in Santa Barbara in California.

Mr. Lindeborg is a sophomore who is active in the International Project Outreach Community Service Program. He has also competed and won the Regional, State and National Improv Team Competition: Destination Imagination activities. Mr. Lindeborg serves as the CIA Director for the Junior State of America State Cabinet and is also the President of his school's Amnesty International chapter. He is an active member of Habitat for Humanity, Children's Miracle Network, Junior State of America, Family Assistance Ministries, Second Harvest Food Bank, Special Camp for Special Kids, Students Run the Los Angeles Marathon and the Friendship Shelter. Mr. Lindeborg enjoys participating in Boy Scouts and playing basketball in his free time. He is a Scholar Athlete with the Highest GPA in his class, and also plays the saxophone. Mr. Lindeborg's father (who is an anesthesiologist) and mother (who is a pharmacist) encouraged him to love math and science from an early age, and he notes them as his favorite subjects. His dream job would be to work as an Orthopedic Surgeon, where he can combine sports and medicine.

Mr. Swoboda is a junior who was his high school's alternate for the Hugh O'Brien Youth Leadership Team. He is a member of the National Honor Society, Spanish Honor Society and was a representative for FroshComm (Student Government for entering freshmen). Mr. Swoboda is a member of his School's Varsity Soccer Team, the Team America Rocketry Challenge group and is an active Club Soccer player and Team Captain. Mr. Swoboda's dream job is to be a Lead Design Engineer at Apple, as he has always had a keen interest in figuring out how things work and how to make them work better. He has published "What Seniors Write at America's Best High School," a non-profit book of college application essays written by seniors at his high school, and is currently working on the third edition.



Region 2 Silver Medal Winner

DAN LIU

Liberal Arts and Science Academy High School, Austin, Texas

SEAN KARSON

Trinity Preparatory High School, Winter Park, Florida

KEVIN CHEN

William P. Clements High School, Sugar Land, Texas

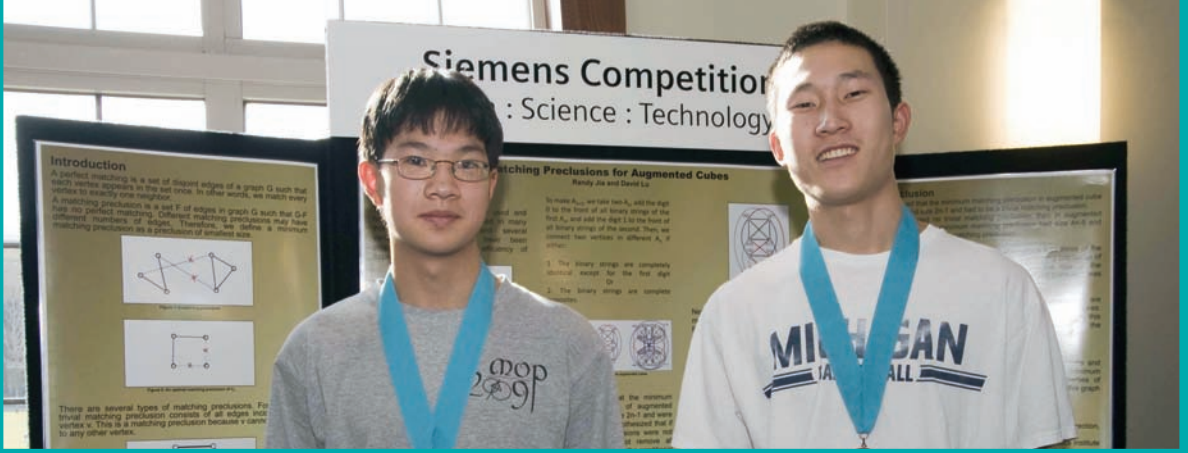
Relating Missing and Decycling Edges in Directed Graphs

The team's mathematics project has the potential to increase efficiency in real world networks by establishing an upper bound on the minimum number of connections that must be removed to destroy all cyclic pathways in systems like the World Wide Web and transcontinental trade routes. With new and delicate techniques, the team's project has advanced the infrastructure and knowledge of graph theory by providing better bounds, which is of fundamental importance to the mathematics community. The team worked with Dr. Jian Shen, Professor of Mathematics at Texas State University in San Marcos on this research project.

Mr. Karson, a senior from Winter Park, Florida, has received Excellence Awards for Honors Computer Programming C++, Graphics I, Honors Chemistry, Honors Precalculus, AP JAVA and AP Chemistry. He has also received the Rensselaer Polytechnic Institute Math & Science Award and is recognized as a National Merit Semifinalist. Mr. Karson is Captain of the Quiz Bowl Team, President of Mu Alpha Theta, a member of both the Spanish Honor Society and the National Honor Society, and volunteers for the Center of Math, Arts and Science Achievement, a program which encourages elementary school students to get excited to learn math and science. In addition to his academic honors, Mr. Karson has received the Varsity Baseball Coach's Award as well as the Most Valuable Defensive Player Award, and has been the starting third baseman on the Varsity Baseball Team since his sophomore year. He has also leveraged his love of puzzles to create a club called Rubik's Revenge, aimed to teach middle school students how to solve Rubik's Cubes.

Mr. Liu is a junior from Austin, Texas, who aspires to one day expand the potential and efficiency of technology in the world. He is currently Vice President of the InvenTeams Club, Co-Director of his school's Math Team, and a member of the Liberal Arts and Science Academy's (LASA) National Honor Society Chapter. Mr. Liu is also a part of the LASA Camerata Orchestra and Science Olympiad Team, as well as the Circle C Select Swim Team. Mr. Liu has previously participated in the 2009 Science Olympiad Regional Competition at the University of Texas at Austin and placed second in the Disease Detectives event. Mr. Liu also won first place in the arts-and-crafts division of the 2008 UT French Competition. In his spare time, Mr. Liu loves to play badminton, and he enjoys poker and computer games. He credits his parents for developing the foundation for his interest in mathematics and innovative thinking.

Mr. Chen, a junior from Missouri City, Texas, would one day like to solve energy problems or economic issues. He is a member of his school's Mu Alpha Theta, Junior Engineering Technical Society and Computer Science Team, and is also an active volunteer through his school's Santa Exchange and at a local middle school Math Club. Mr. Chen has been selected as a Finalist at the U.S. Computing Olympiad, Semifinalist for the U.S. Physics Olympiad and Regional Winner of the Physics Bowl. He was also a three-time U.S. Mathematics Olympiad qualifier. Through Mr. Chen's participation in math competitions, he has been invited to meet the President of the United States on several occasions, and has appeared on the Regis and Kelly Show where he won the Relly Award for Best Junior Achiever. Mr. Chen's dad is a computer engineer who has taught mathematics and physics in the past, playing a large role in sparking his interest in math when he was young. His mother is also very encouraging and supportive of his passion for math and science, which contributed to his academic achievements. Mr. Chen enjoys practicing piano, playing tennis and programming games in his free time.



Region 3 Silver Medal Winner

RANDY JIA

*Detroit Country Day School
Beverly Hills, Michigan*

DAVID LU

*Detroit Country Day School
Beverly Hills, Michigan*

Matching Preclusions for Augmented Cubes

Randy Jia and David Lu's graph theory project presents a way to measure the strength of a network in the event of link failure. Their study examines the matching preclusion number as it relates to the augmented cube graph. The augmented cube has been proposed as an example of a network that is resistant to link failure. The team answers the question of how many links needed to be broken until it's no longer possible to pair up the nodes in the augmented cube. Their mentor for this project was Eddie Cheng, Professor at Oakland University in Rochester, Michigan.

Mr. Jia, a junior from Rochester Hills, Michigan, enjoys studying both math and physics most in school. He is a three-time United States Math Olympiad Qualifier and received tenth place in the Michigan Math Prize Competition. He is a member of his school's Investment and Math Competition Clubs. Mr. Jia serves as a helper for the Detroit Country Day School Math Invitational and a scorer for the Oakland Country MathCounts program. Additionally, he has participated in the Oakland University Summer Mathematics Institute every summer since eighth grade, allowing him to take college level mathematics courses for free. Mr. Jia's older brother was a Siemens Competition Semifinalist three years ago. He participates in various school volunteer opportunities such as Open House, and also serves as an Auction Volunteer. He is a member of his school's Track and Field Team and enjoys basketball and fishing. Mr. Jia would like to major in finance/economics in college and hopes to one day become a fund manager on Wall Street.

Mr. Lu, a sophomore from Bloomfield Hills, Michigan, enjoys math and the sciences. He is a Science Olympiad participant and an active member of Quizbowl. He was first interested in mathematics and sciences through the MathCounts competition in fifth grade. Since then, he's participated in several mathematics competitions and attended the USA Mathematical Olympiad program in ninth grade. Mr. Lu was the MathCounts State winner in seventh and eighth grade and was among the top 12 in the National Competition in eighth grade. He received a gold medal in the Northwestern University Midwest Talent Search in eighth grade by scoring a 2,200 on the SAT. Mr. Lu aspires to be a mathematics professor. He is a runner and participates in the Detroit Country Day School's Cross Country team as well as Track and Field.



Region 4 Silver Medal Winners

ISRAT AHMED

*Francis Lewis High School
Fresh Meadows, New York*

XIAO (CATHY) ZHOU

*Francis Lewis High School
Fresh Meadows, New York*

STEPHANIE CHEN

*Stuyvesant High School
New York, New York*

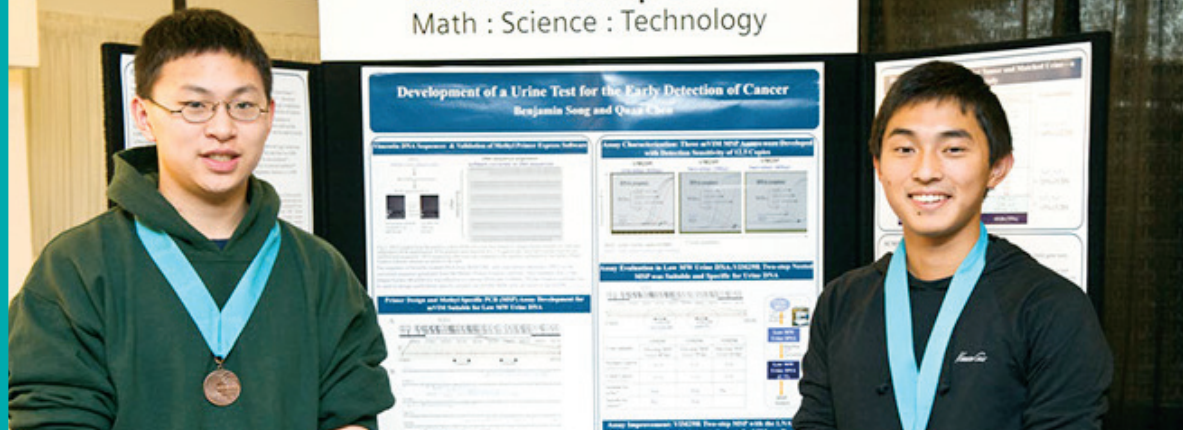
ESR Dating “Early Men” and Their Tools at Pradayrol, France and Ainikab I, Russia: “So Easy a Caveman Can Do It!”

Cathy Zhou, Israt Ahmed and Stephanie Chen’s archeological project may provide new insights into hominid migration out of Africa. The team’s dating results allow us to understand how hominids migrated through Europe and adapted to rapid climate change and the species with which they interacted. The team’s mentor for this project was Dr. Bonnie Blackwell, Research Scientist at Williams College in Williamstown, Massachusetts. Dr. Blackwell also directs the Robert F. Kennedy Science Research Institute.

Ms. Zhou’s favorite subjects are biology, physics, math, world history and English. She’s currently taking AP Chemistry. Since 2007, she has been in the Junior ROTC as an Academic Team Member and Regional Competition Participant, scoring third place in the Academic Bowl, as well as serving on the Fencing Team. She is a member of the Robert F. Kennedy (RFK) Science Research Institute and previously served as Treasurer of her school’s Media Production Club. Ms. Zhou would like to invent innovative technology that will improve environmental quality or space explorations. Thus, she plans to study environmental engineering or astronomy upon entrance to college. In 2008, Ms. Zhou volunteered at Councilman John Liu’s office in Flushing. She has been playing the flute for four years, and in her free time she enjoys rollerblading and ice skating. She also rejoices in ballroom dancing, as well as exploring the Great Outdoors and water rafting. Ms. Zhou speaks fluent Mandarin and is also studying Spanish.

Mr. Ahmed lists English, physics, world history, government and biology as his favorite subjects in school. His interest in government and history is evidenced by his participation in AP Government and his leadership role as President of his school’s Global Warming Awareness Club. Like Ms. Zhou, he is a member of the RFK Science Research Institute. He hopes to one day become both a geneticist and a neurologist in order to use the potential of stem cells to help cure diseases. Mr. Ahmed enjoys dancing in his free time, specifically Pop and Locking and the basics of break dancing. In his free time he plays tennis and is involved with video editing and production. He was born in Bangladesh and speaks Bengali, Japanese, Spanish, Hindi and Latin.

Ms. Chen’s favorite classes include AP Biology, chemistry, mathematics, physics and English. She is also a member of the RFK Science Research Institute, and a member of Stuyvesant High School’s Biology Olympiad, Problem Solvers and Young Arts Society. She is active in her school’s German Club as well as the Japanese Culture Club. She plans to become a heart surgeon upon completion of her studies. Beyond her academic pursuits, Ms. Chen is very passionate about art, fashion design, modeling and charity. Specifically, she is a member of iDesign and Charity a La Mode, both fashion design clubs. She is a member of the Cosplay Club, Neo Gokuraku (an anime club) and Stuy Build, a community service club. In her spare time, Ms. Chen draws anime and designs clothing, and also plays piano and alto saxophone. She speaks Spanish and Mandarin, and is currently teaching herself German and Japanese.



Region 5 Silver Medal Winners

BENJAMIN SONG

*Methacton High School,
Eagleville, Pennsylvania*

QUAN (JACK) CHEN

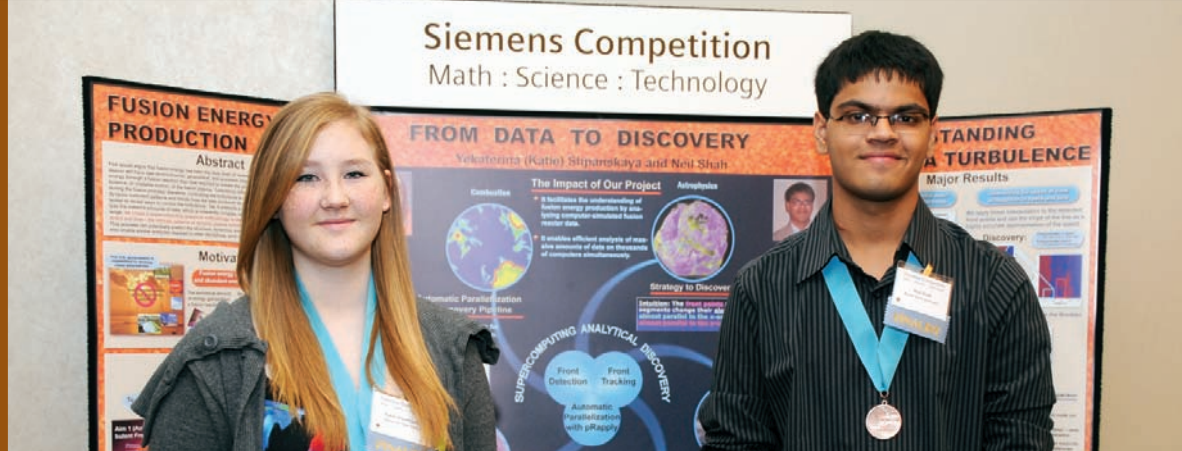
*Methacton High School,
Eagleville, Pennsylvania*

Development of a Urine Test for the Early Detection of Cancer

The team's project aimed to develop a urine test that can screen for the early detection of cancer, particularly colorectal cancer, the leading cause of cancer-related deaths in the United States. The team's project can potentially deliver a urine screening test for colon cancer and ultimately other cancers as well, possibly revolutionizing cancer screening, early detection, the monitoring of recurrence, and disease management. The team worked on their project with Dr. Ying-Hsiu Su, an Associate Professor of Microbiology and Immunology at Drexel University in Philadelphia, Pennsylvania.

Mr. Song is a junior from Audubon, Pennsylvania. He is currently a member of the National Honor Society, the Academic Decathlon, the Tri-M Music Honor Society and Treasurer of his school's Science Fair Club. Mr. Song and his team placed first in this year's International Science and Engineering Fair; he has also won first place in the Delaware Valley Science Fair, was selected as one of the Top 40 in Discovery Channel's Young Scientist Challenge and has competed in the American Young Inventors competition. Mr. Song was a Siemens Competition Regional Finalist in 2007, and one day aspires to become a doctor or researcher. Aside from his academic pursuits, Mr. Song is an accomplished piano player, having recently placed third in the World Piano Competition. He also plays the violin and enjoys playing basketball in his spare time.

Mr. Chen, a senior from Audubon, Pennsylvania, dreams of one day becoming a doctor. Currently, he is a National Merit Semifinalist, President of the National Honor Society, Member of the Student Council, and participates in his school's Indoor and Outdoor Track and Field Teams, as well as the Cross Country Team. He won first place in Drexel Discovery Day and is also a member of Kids Against Crisis, a school organization that works to spread the word about international and local crises. In his spare time, Mr. Chen volunteers at local hospitals, most recently at the Paoli Hospital and previously at the Yale-New Haven Hospital. He credits his volunteer work and his parents' consistent encouragement for his passion to pursue a career in math and science. His personal hero is his tenth grade English teacher, Mrs. Susan Cattie, whose kindness and compassion inspires him to become a better person.



Region 6 Silver Medal Winners

YEKATERINA SHPANSKAYA

*Math and Science School (Home School)
Raleigh, North Carolina*

NEIL SHAH

*Northwest Guilford High School
Greensboro, North Carolina*

**Supercomputing Analytical Discovery of Plasma Instabilities
in Fusion Energy Reactors**

Mr. Shah and Ms. Shpanskaya’s computer science project findings facilitate the understanding of fusion, by analyzing computer-simulated fusion reactor data, and pave the way for an efficient analysis of massive amounts of data on powerful computer architectures, consisting of hundreds or thousands of processors operating in parallel. The team worked on this project with the help of their mentors: Dr. Anatoli V. Melechko, an Associate Professor in the Materials Science and Engineering Department at North Carolina State University; Dr. Nagiza Samatova, a Professor in the Computer Science Department at the North Carolina State University and Senior Scientist in Oak Ridge National Laboratory; Dr. C.S. Chang, a Research Scientist at New York University; Mr. Guruprasad Kora, a Research Scientist at Oak Ridge National Laboratory and Dr. Paul Breimyer, a Research Scientist for the Lincoln Lab at the Massachusetts Institute of Technology.

Mr. Shah, a senior from Greensboro, North Carolina, is a member of the Future Business Leaders of America and President of the Weaver Academy Chapter. He won first place in the State Network Design Competition, as well as fifth place in the National Network Design Competition. Mr. Shah is a National AP Scholar, AP Scholar with Distinction and National Merit Semifinalist. He is the Founder/President of the Speech and Debate Team at Weaver Academy. He is also co-captain of FIRST Tech Challenge Team at Weaver Academy, and serves as Student Ambassador at Weaver Academy. Mr. Shah is an A+ Certified IT Technician Network, a Certified Security Professional and Microsoft Certified Professional. He holds an Honor Status at the National Forensic League and volunteers in the Natural Science Center of Greensboro. His hobbies include research, programming, reading and playing Ultimate Frisbee.

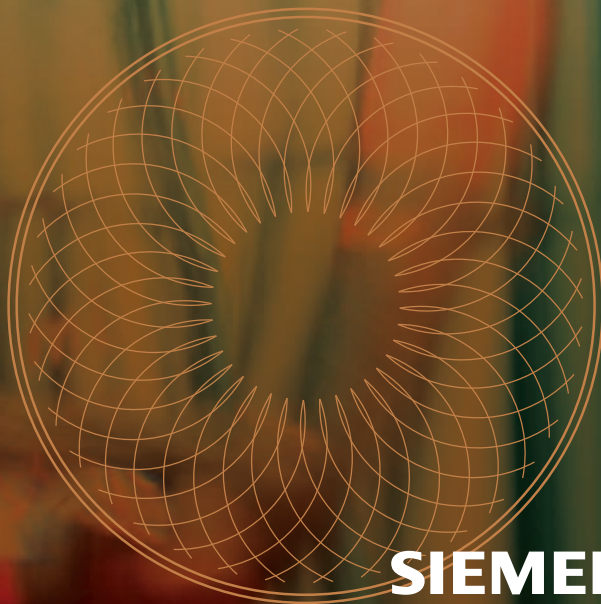
Ms. Shpanskaya, a sophomore from Raleigh, North Carolina, has been named to the A/B Honor Roll at Broughton High School and is a member of National Young Leaders. Her favorite subjects in school are biology, calculus, civics and economics, chemistry and statistics. Ms. Shpanskaya is a member of the North Carolina State University (NCSU) Students and Technology in Academia and Research and Service (STARS) Alliance. She also enjoys tutoring math to NCSU’s undergraduate students. Ms. Shpanskaya co-designed and maintains a web site titled “How to Make Humans.” She is also a member of the Math Club, Broughton High School Dance Club, Machine Learning and Data Mining Research Team and Public Speaking Club. She partakes in Animal Science community service and enjoys reading, fiction writing, playing tennis and dancing as her hobbies.

Siemens Competition

Math : Science : Technology

Congratulations
to the 2009
Siemens Teachers As
Researchers (STAR)

Award Recipients



SIEMENS



STAR AWARD HONOREES

About the Siemens Founder's Award

In 2009, the Siemens Founder's Award will be given to five high school teachers who have encouraged students to participate in math, science or technology research and have provided the necessary support consistent with the Siemens Foundation's mission of enhancing math and science in U.S. high schools. The teachers are being recognized for their contributions and support of the Siemens Competition in Math, Science and Technology and have been awarded an opportunity to participate in a hands-on summer research immersion program at Oak Ridge National Laboratories in Tennessee. The Siemens Founder's Award is given in honor of Albert Hoser, Founder and Chairman Emeritus of the Siemens Foundation.



DR. TERENCE BISSOONDIAL

George W. Hewlett High School
Hewlett, New York

"In all that I have done to date or see myself doing, I think I shall know of no deed closer to perfection than teaching and researching, to influence eternity and not to fade into oblivion, unknown and unremembered. This philosophy has infected many of my students who did or are doing science with me. The thought of discovering something that no one else in the world has done before (regardless of its magnitude) is euphoric!"

Dr. Bissoondial has taught various levels of Biology, Chemistry, Zoology and Physical Science for 15 years. He is currently teaching Environmental Science and science research classes. He thinks that conducting research in high school helps students to start asking the appropriate questions, without which research is not possible. It fosters their concerns for particulars and the mechanisms of things and helps to develop meticulous and systematic approaches for procedures and analysis. In the years that he has conducted research with his students, 70 students have submitted projects to the Siemens Competition; 55 have reached the level of Semifinalists and two were Regional Finalists.



MR. PETER J.W. LANGLEY
Oregon Episcopal School
Portland, Oregon

“I try to make each lesson personally relevant to each student by asking questions of all students in class, bringing in interesting and topical local objects, and engaging students in at least one laboratory per week. I try to radiate a love and reverence for living things, natural cycles, and conservation.”

Mr. Langley has been teaching for almost 31 years and is currently teaching Biology and Honors Biology, a senior Natural History elective and a greenhouse activity which has raised plants for the charity Growing Gardens. His teaching philosophy is to create an atmosphere that makes a lesson “good fun” as well as educational. At OES, students start research in 6th grade and continue until 11th grade. Numerous students have entered the Siemens Competition and reached levels from Semifinalists to National Finalists; about 5-10 projects are entered each year. The Oregon Academy of Science awarded him the Outstanding Science and Mathematics Teacher Award for 2006.



DR. A.J. SCHEETZ
Staples High School
Westport, Connecticut

“My philosophy is to allow students to decide what they want to learn. If they are motivated and interested in something, they will learn whatever background information they need in order to understand their topic.”

Dr. Scheetz began teaching in 2001 after a career as a research scientist. He is currently the science department chair, grades 6-12, for the Westport Public Schools. He believes that students need hands on experiences and that by giving students such experiences, we can continue to attract bright minds to science. Each year students from Staples High School participate in the Siemens Competition. He is currently developing a high school scientific research program, monitoring over 50 different student research projects. Part of his task is to extend science research into the middle school grades.



MS. KAREN SHEPHERD
Plano Senior High School
Plano, Texas

“Effective teachers know that truly successful classrooms occur only when they teach not just from the mind, but also from the heart. Those teachers become counselors, mentors, and even gurus to their students. If students are to care about learning, they must know in their hearts that you care for them. Given mutual respect and concern, students believe that they can master anything.”

Ms. Shepherd has spent 26 years as an educator and currently teaches Advanced Placement® Biology and Research and Design. She notes that students who are encouraged by a teacher with a passion for learning, dream bigger dreams and set higher goals. As the sponsor of her school district’s LASER program since its inception 20 years ago, she has mentored and nurtured hundreds of young scientists, even at international levels. Students who have entered the Siemens Competition since 2000 from her school have reached the level of Semifinalist and competed at the regional and national events. She has received numerous awards including being honored as the Texas State Teacher of the Year in 2006.



DR. ANDREA WHITE
Spruce Creek High School
Port Orange, Florida

“There should be someone in the classroom who is excited about the day’s activities and it might as well be the teacher! I want there to be as much excitement in the classroom as students perceive in the outside world. The cornerstone of my approach to education: students don’t care how much you know until they know how much you care.”

Dr. White has been teaching 11th grade IB Biology Standard Level and 12th grade IB Biology Higher Level for a decade. Last year she also taught AP® Biology. She began teaching 38 years ago. Dr. White wants to restore the sense of wonder students had about the living world around them when they were young, just at a more sophisticated level. She says that while students may not remember lectures tomorrow, they will remember every excruciating detail about their own science research projects. Her students have participated at the regional events of the Siemens Competition, and she has earned the Teacher of the Year award in her school district.



The College Board is a not-for-profit membership association whose mission is to connect students to college success and opportunity. Founded in 1900, the College Board is composed of more than 5,700 schools, colleges, universities and other educational organizations. Each year, the College Board serves seven million students and their parents, 23,000 high schools, and 3,800 colleges through major programs and services in college readiness, college admission, guidance, assessment, financial aid, enrollment, and teaching and learning. Among its best-known programs are the SAT®, the PSAT/NMSQT® and the Advanced Placement Program® (AP®). The College Board is committed to the principles of excellence and equity, and that commitment is embodied in all of its programs, services, activities and concerns.

**For further information, please visit:
www.collegeboard.com**



KEYNOTE SPEAKER

DR. DWIGHT WILLIAMS

*President/CEO of Mixed Greens Energy
and Engineering, Inc.*

Research Affiliate at MIT

Dwight L. Williams, Ph.D., P.E. has served as Chief Engineer/Principal Nuclear Physicist in the U.S. Department of Defense (DoD), Technical Applications Division and as a Visiting Professor at the Massachusetts Institute of Technology (MIT) with a dual appointment in the Department of Nuclear Science and Engineering and the Department of Political Science, Security Studies Program. Currently, he serves as President/CEO of Mixed Greens Energy and Engineering, Inc. — a firm specializing in highly advanced and environmentally responsible research and applications. Dr. Williams also maintains status at MIT as a Research Affiliate, which enables him to continue to engage in academic research.

Dr. Williams played a leading role in many aspects of nuclear research, including serving on a White House senior steering group to develop a national strategy for nuclear research and leading several research projects of particular interest to Congress. He also has presented various aspects of his findings to approximately ten Congressional and Senate committees. As a result of Dr. Williams' success in this area he has earned several awards. His most recent awards include a Certificate of Congressional Recognition, two Director of National Intelligence (DNI) citations for outstanding presentations to Congress, and a DNI Fellow Award — the highest award available for American scientists who develop James Bond/Mission Impossible devices.

Beyond Dr. Williams' advanced scientific activities, he participates in numerous professional and technical societies such as the National Society for Professional Engineers, where he served as President of the Potomac Maryland Region, and the American Nuclear Society, where he served on the Environmental Sciences Executive Committee and the Special Committee on Nuclear Non-Proliferation. In an effort to promote science and engineering to the public, he regularly coordinates regional MATHCOUNTS competitions, delivers keynote speeches, and grants interviews to major media establishments.

Siemens Foundation

The Siemens Foundation provides college scholarships and awards each year for talented high school students in the United States. Its signature programs, the Siemens Competition in Math, Science & Technology and Siemens Awards for Advanced Placement reward exceptional achievement in science, math and technology.

Siemens Competition

The Siemens Competition is the nation's premiere math, science and technology research competition for students. Each year, the nation's best and brightest students compete for the scholarships and awards ranging from \$1,000 to a grand prize of \$100,000.

Siemens Awards for Advanced Placement

Since 1998, the Siemens Foundation has been the proud sponsor of the Siemens Award for the Advanced Placement. Administered by the College Board, The Siemens Awards for the Advanced Placement were designed to promote excellence in math and science education. The program celebrates high school students who excel on the College Board's Advanced Placement Program® (AP®) math and science exams, as well as the teachers who are leading the nation in participation and performance in these disciplines.

Students and teachers in each of the 50 states and the District of Columbia are considered for this recognition. The Siemens Foundation is proud to recognize excellence among AP students and the teachers whose remarkable dedication fosters students' success.

Siemens We Can Change the World Challenge

Today's students will inherit a world that's very different from the one their parents inherited. The good news is that many of them are interested in learning about how to take responsibility for their environment and their future. The Siemens We Can Change the World Challenge gives students the opportunity, tools and inspiration to become those agents of change. Student teams from across the country will be challenged to create sustainable, reproducible, environmental improvements in their classrooms, local communities and the world.

The Siemens We Can Change the World Challenge is a national K through 12 sustainability education initiative aligned

to national education standards and uniquely tailored to match students' growing comprehension abilities throughout their school-aged years. By partnering with Discovery Education and the National Science Teachers Association, the Siemens Foundation will serve as a pioneer in recognizing sustainability efforts within the K-12 education system.

Siemens Science Day

After realizing the critical importance of reaching students at an early age, Siemens launched Siemens Science Days with the hopes of generating excitement about math and science. Siemens Science Day's mission is to promote math and science literacy throughout the country by providing classroom materials that will help children develop the knowledge, skills and self-confidence needed to succeed in school and in the workforce.

Developed for students in the fourth, fifth and sixth grades, the program emphasizes the importance of math and science and their impact on society through fun and engaging hands-on activities. The program positions math and science as fun and "cool" subjects.

Partnering with Discovery Education provides the Siemens Foundation with an instant platform to reach 21st Century Learners with media rich, engaging curriculum that inspires and informs today's youth. Each online lesson plan is partnered with an exciting video from Discovery.

Siemens Teacher Scholarships

At Siemens Foundation, we know the value of good math and science teachers. That's why we've dedicated over \$1,000,000 in scholarships to support students pursuing careers in these fields. The Siemens Teacher Scholarships are designed to provide students tuition assistance for undergraduate degrees in education, math or science at historically black colleges and universities. From grade school to grad school, the Siemens Foundation is committed to the future and those who will create it.