

**Contact:**

Lisa Quirindongo  
Dentsu Communications  
203-430-3550  
[lquirindongo@dcinyc.com](mailto:lquirindongo@dcinyc.com)

Lauren Espin  
Siemens Foundation  
732-590-2182  
[lauren.espin@siemens.com](mailto:lauren.espin@siemens.com)

**BIOCHEMISTRY AND BIOENGINEERING RESEARCH BRINGS CALIFORNIA  
STUDENTS CLOSER TO NATION'S HIGHEST SCIENCE HONOR  
FOR HIGH SCHOOL STUDENTS**

**WINNERS OF SIEMENS COMPETITION IN MATH, SCIENCE & TECHNOLOGY  
REGIONAL FINALS AT CALIFORNIA INSTITUTE OF TECHNOLOGY REVEALED**

**Angela Zhang of Cupertino Wins Top Individual Prize;  
Jeffrey Ling and Helen Jiang of Palo Alto Win Top Team Prize**

PASADENA, CA, November 5, 2011 — The shortlist of contenders for the highest science honor awarded to American high school students narrowed tonight as the winners of the Siemens Competition in Math, Science & Technology Region One Finals were announced. Cancer stem cell research earned top honors and the \$3,000 Individual scholarship for Angela Zhang of Cupertino, California. Research on molecular identification of Necrotizing Enterocolitis (NEC) won the \$6,000 Team scholarship for Jeffrey Ling and Helen Jiang of Palo Alto, California. The students presented their research this weekend to a panel of judges from California Institute of Technology (Caltech), host of the Region One Finals. They are now invited to advance to the National Finals in Washington, DC, December 2-5, 2011, where \$500,000 in scholarships will be awarded, including two top prizes of \$100,000. The Siemens Competition, a signature program of the Siemens Foundation, is administered by the College Board.

“The Siemens Competition has a proud history of attracting awe-inspiring research projects from America’s best and brightest and we are pleased to see that this year is no exception,” said Jeniffer Harper-Taylor, president of the Siemens Foundation. “We can all take heart in the remarkable work being done by this next generation of young innovators as exemplified by Angela Zhang, Jeffrey Ling and Helen Jiang.”

**The Winning Individual**

Angela Zhang, a senior at Monta Vista High School in Cupertino, California, won the individual category and a \$3,000 college scholarship for her biochemistry project, *Design of Image-guided, Photo-thermal Controlled Drug Releasing Multifunctional Nanosystem for the Treatment of Cancer Stem Cells*.

In her project, Angela aimed to design a targeted, gold and iron oxide-based nanoparticle with a potential to eradicate cancer stem cells through a controlled delivery of the drug salinomycin to the site of the tumor. The multifunctional nanoparticle combines therapy and imaging into a single platform, with the gold and iron-oxide components allowing for both MRI and Photoacoustic imaging.

“Angela created a microscopic particle that is like a Swiss army knife of cancer treatment,” said competition judge Julius Su, PhD, Chemistry Researcher, California Institute of Technology. “It seeks out cancer cells, shows us where they are, and then destroys them. Angela showed great initiative in bringing together a wide array of technologies to solve a vitally important health problem. It would be a remarkable accomplishment for a scientist of any age and is certainly exceptional for a high school student.”

Angela is interested in nanomedicine and molecular imaging because they allow her to transform her interests in physics, chemistry and biology into solutions for current health problems. She won the Intel International Science & Engineering Fair (ISEF) 2011 Grand Award and the ISEF 2010 Grand Award (both for medicine and health science). Angela plays golf and the piano and would like to major in chemical or biomedical engineering or physics. She is a 2010 Siemens Competition Regional Finalist who put in 1,000 hours on her current project. Angela hopes to become a research professor. Her mentor was Dr. Zhen Cheng of Stanford University.

### **The Winning Team**

Jeffrey Ling, a junior at Palo Alto Senior High School in Palo Alto, California, and Helen Jiang, a junior at Henry M. Gunn High School, won the team category and will share a \$6,000 scholarship for their project, *Novel Diagnostic and Prognostic Utilities Integrating Clinical and Molecular Findings to Manage Necrotizing Enterocolitis in Neonatal Care*.

Necrotizing Enterocolitis (NEC) is the most common and serious gastrointestinal disease and a leading cause of overall morbidity and mortality in premature infants. In their project, the team set out to develop a data-driven system to help identify NEC infants most likely to progress to severe disease. The team’s approach integrates demographic, clinical and molecular-based classifiers in an effort to improve neonatal care.

“Jeffrey and Helen used mass spectrometry in combination with clinical data, a novel approach which would give scientists and doctors the ability to predict the progression of the disease so they can optimize treatment,” said competition judge Brian Williams, PhD, Staff Scientist, California Institute of Technology. “The data analysis, the team’s main contribution, was done at an exceptionally high level. A unique aspect of the work is that Jeffrey and Helen are planning to make the diagnostics available to physicians via smartphones.”

Jeffrey Ling is captain of a Science Olympiad team and a 2011 USA junior Math Olympiad winner. He is active in community service, tutoring and helping middle school students with math and science. Jeffrey plays the piano and enjoys playing Frisbee and badminton. He hopes to become an inventor.

When Helen Jiang's younger sister was five years old, she broke her arm and had to go to the hospital. While staying there with her sister, Helen was inspired to find ways to help children born with diseases that forced them to stay in hospitals for long periods of time. Helen is co-president of S.A.G.E Club (business club), where students create and promote their own businesses. She plays volleyball, soccer and ultimate Frisbee and loves to sing and write lyrics. Her dream job is to become a university professor. The team's mentor was Dr. Karl Sylvester.

### **Regional Finalists**

The remaining regional finalists each received a \$1,000 scholarship. Regional Finalists in the individual category were:

- David Cheng, Calabasas High School, Calabasas, California
- Manoj Kanagaraj, Troy High School, Fullerton, California
- James Thomas, Bellarmine College Preparatory, San Jose, California
- Mai-Anh Vu, McNeil High School, Austin, Texas

Team Regional Finalists were:

- Paulomi Bhattacharya, The Harker School, San Jose, California, and Eesha Khare, Lynbrook High School, San Jose, California
- Daniel Chiou and Barry Chen, Troy High School, Fullerton, California
- Johnny Ho, Lynbrook High School, San Jose, California, and Charles Liu, Henry M. Gunn High School, Palo Alto, California
- Viola Mocz and Jonathan Teraoka, Mililani High School, Mililani, Hawaii

### **The Siemens Competition**

Launched in 1998, the Siemens Competition is the nation's premier science research competition for high school students. An all-time record of 2,436 students registered to enter the Siemens Competition this year for an unprecedented 1,541 projects submitted. 317 students were named semifinalists and 96 were named regional finalists, representing 21 states. Entries are judged at the regional level by esteemed scientists at six leading research universities which host the regional competitions: California Institute of Technology, Carnegie Mellon University, Georgia Institute of Technology, Massachusetts Institute of Technology, University of Notre Dame and The University of Texas at Austin.

Follow the Siemens Foundation on Twitter ([www.twitter.com/sfoundation](http://www.twitter.com/sfoundation)) and Facebook ([www.facebook.com/SiemensFoundation](http://www.facebook.com/SiemensFoundation)) to learn about the remarkable research being done by this year's brilliant Siemens Scholars. Then visit [www.siemens-foundation.org](http://www.siemens-foundation.org) at 9:30am EST on December 5 for a live webcast of the National Finalist Awards Presentation.

### **The Siemens Foundation**

The Siemens Foundation provides more than \$7 million annually in support of educational initiatives in the areas of science, technology, engineering and mathematics (STEM) in the United States. Its signature programs include the Siemens Competition in Math, Science & Technology, Siemens Awards for Advanced Placement, and The Siemens We Can Change the World Challenge, which encourages K-12 students to develop innovative green solutions for environmental issues. By supporting outstanding students today, and recognizing the teachers and schools that inspire their

excellence, the Foundation helps nurture tomorrow's scientists and engineers. The Foundation's mission is based on the culture of innovation, research and educational support that is the hallmark of Siemens' U.S. companies and its parent company, Siemens AG. For more information, visit [www.siemens-foundation.org](http://www.siemens-foundation.org).

### **The College Board**

The College Board is a mission-driven not-for-profit organization that connects students to college success and opportunity. Founded in 1900, the College Board was created to expand access to higher education. Today, the membership association is made up of more than 5,900 of the world's leading educational institutions and is dedicated to promoting excellence and equity in education. Each year, the College Board helps more than seven million students prepare for a successful transition to college through programs and services in college readiness and college success — including the SAT<sup>®</sup> and the Advanced Placement Program<sup>®</sup>. The organization also serves the education community through research and advocacy on behalf of students, educators and schools. For further information, visit [www.collegeboard.org](http://www.collegeboard.org).

***Video and photos of winners available on request.***

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