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OREGON AND CALIFORNIA STUDENTS WIN REGIONAL SIEMENS COMPETITION AT CALIFORNIA INSTITUTE OF TECHNOLOGY (CALTECH)

Regional Winners Move on to Final Phase of Competition: National Finals in Washington, D.C.
Vineet Edupuganti (Portland, OR) Wins Top Individual Honors;
Nikhil Cheerla (Cupertino, CA) and Anika Cheerla (Cupertino, CA) Win Top Team Honors

ISELIN, NJ, Nov. 14, 2016 –Three students have been named National Finalists in the Siemens Competition in Math, Science & Technology after earning top spots in one of two regional competitions that took place this past weekend. The Competition is the nation's premier science research competition for high school students and promoting excellence by encouraging students to undertake individual and team research projects. For more information go to: www.siemens-foundation.org

Vineet Edupuganti of Portland, OR, earned top individual honors and a \$3,000 scholarship for developing a biodegradable battery that can power ingestible medical devices. Nikhil Cheerla of Cupertino, CA, and Anika Cheerla of Cupertino, CA, shared the \$6,000 team scholarship for developing a tool that automates the process of diagnosing and measuring cancerous tumors, which could save the time of pathologists who currently count tumor cells manually. They are among 96 students overall selected to compete in regional competitions across the country this month out of a pool of more than 1,600 projects submitted for the competition this year.

These top regional winners are now moving on to the final phase of the Siemens Competition to present their work at the National Finals in Washington, D.C., December 5-6, 2016, where \$500,000 in scholarships will be awarded, including two top prizes of \$100,000.

The students presented their research this weekend to a panel of judges at the California Institute of Technology (Caltech), host of the [Region One](#) Finals.

"These students are truly the best of the best," said David Etwiler, CEO of the Siemens Foundation. "They are high school students presenting graduate-level research to improve the lives of people around the globe. We're proud to support them and further that cause."

The Siemens Competition, launched in 1999 by the Siemens Foundation, increases access to higher education for students who are gifted in STEM and is based on the culture of innovation, research and educational support that is the hallmark of Siemens. This competition, administered by Discovery Education, recognizes and builds a strong pipeline for the nation's most promising scientists, engineers and mathematicians.

The Winning Individual for Region One

Vineet Edupuganti, a senior from Oregon Episcopal School in Portland, OR, won the individual category and a \$3,000 scholarship for his project entitled, "Development of a High-Performance Biodegradable Battery for Transient Electronics."

Vineet's work could simplify how medical practitioners diagnose conditions that affect internal organs. He developed a biodegradable battery that can power ingestible medical devices. The battery dissolves after the device has served its purpose, which means it can be swallowed without causing harm to the human body. This technology can be used to power medical devices that track and diagnose conditions that affect internal organs, like gastrointestinal disorders, which currently require complex imaging or invasive procedures to diagnose.

"Imagine, instead of going in for an MRI, you swallow a pill with an ingestible sensor and for the next three days it tracks what's happening in your body and sends that data wirelessly to your doctor. Then, once it's served its purpose, the pill dissolves and causes no harm to you. That's what Vineet's battery could make possible," explains competition judge Dr. Julia Greer, Professor of Materials Science, Mechanical Engineering, and Medical Engineering at Caltech. "This is an innovative, creative and original project that represents Vineet's own independent thinking and troubleshooting."

Vineet is an aspiring entrepreneur who would like to find real-world applications for research that he can eventually take to market. He is fascinated by the newly-emerging field of biodegradable electronics because he sees its potential to affect change in a wide array of industries. Vineet received a third place grand award at the Intel International Science and Engineering Fair in 2015 and 2016. He plays classical piano, guitar and tennis.

Vineet's mentor is Dr. Raj Solanki, Professor of Physics at Portland State University.

The Winning Team for Region One

Nikhil Cheerla of Cupertino, CA, and Anika Cheerla of Cupertino, CA, won the team category and will share a \$6,000 scholarship for their project entitled "Mitosis Detection and Tumor Grading Using Deep Convolutional Neural Networks."

Nikhil and Anika are a brother-sister duo who developed an artificial intelligence tool that could potentially automate the detection of cancerous tumors and measure the stage of tumor growth. Currently, tumor diagnosis is a laborious and error-prone task. Once a patient biopsy is taken, pathologists must manually identify and count the number of cancerous cells that are

undergoing division, which can take many hours. At times, pathologists can disagree on details of a diagnosis. Nikhil and Anika's technology aims to automate tumor diagnosis and growth measurement by assessing the pattern of cell divisions in a tissue, which is a step towards making the process more accurate, faster, and replicable.

"Nikhil and Anika's research shows not only creativity but also initiative to solve real-world problems," said competition judge Dr. Alexandre Cunha, Director of the Center for Advanced Methods in Biological Image Analysis at Caltech. "Using artificial intelligence to address the important problem of automatic cancer detection through computing is of great societal value. This innovation could potentially save pathologists hours of tedious manual image analysis, improve performance, and quantify cancer severity in a patient more reliably. Nikhil and Anika have shown maturity to take on such an important project at the graduate school level."

Nikhil, a senior at Monta Vista High School in Cupertino, CA, is passionate about artificial intelligence and hopes to develop new learning algorithms to tackle real-world problems. He has been a Google Science Fair regional finalist, a USA Computing Olympiad platinum level finalist and a Siemens Competition semifinalist in 2015. He is also passionate about teaching others. He runs a volunteer organization called MathAndCoding, which teaches young students programming and computer science skills through free workshops in libraries and community centers. He is a piano player and enjoys composing and playing his own music.

Anika, a sophomore at Monta Vista High School in Cupertino, CA, realized she was interested in STEM when she saw her brother Nikhil enjoying science projects and solving math problems. She is a leader and teacher at MathAndCoding, the educational coding nonprofit founded by her brother. Her proudest accomplishment was teaching her first student how to code and seeing him come back for harder sessions. Anika is a two-time Google Science Fair winner and aspires to a career in artificial intelligence. She plays piano, competes in varsity and club water polo and has a second-degree black belt in Tae Kwon Do.

The team's mentor is Andrew Beck, Associate Professor at Harvard Medical School and Director of Bioinformatics at Beth Israel Deaconess Medical Center (BIDMC).

Regional Finalists

The remaining regional finalists each received a \$1,000 scholarship.

Regional Finalists in the individual category were:

- Kathy Liu, West High School, Salt Lake City, UT
- Sagar Maheshwari, Unionville High School, Kennett Square, PA
- Brian Xia, Canyon Crest Academy, San Diego, CA
- Catherine Zeng, Mission San Jose High School, Fremont, CA

Team Regional Finalists were:

- Rajiv Movva, The Harker School, San Jose, CA, and Randy Zhao, The Harker School, San Jose, CA
- Arushi Sahai, Menlo School, Atherton, CA, and Andrew Shao, Lynbrook High School, San Jose, CA
- Andrew Winnicki, Punahou School, Honolulu, HI, and John Winnicki, Punahou School, Honolulu, HI
- Daniel Zhang, Westview High School, San Diego, CA, and Edward Zhang, Torrey Pines High School, San Diego, CA

The Siemens Competition

For the 2016 Siemens Competition, 2,146 students (1271 individuals, 304 2-person teams and 89 3-person teams) submitted applications from 46 states plus the District of Columbia and 7 countries with more than 1,600 projects submitted for consideration. 498 students were named Semifinalists from which 96 were named Regional Finalists. For the regional finals, the students present their research in a closed, online forum, and entries are judged by esteemed scientific experts at six leading research universities which host the regional competitions: Georgia Institute of Technology and Massachusetts Institute of Technology (November 4-5), California Institute of Technology and University of Notre Dame (November 11-12), and Carnegie Mellon University and The University of Texas at Austin (November 18-19).

The winners of each regional weekend will be announced at 12 noon (ET) on the following Monday at <http://siemensusa.synapticdigital.com/US/Siemens-Foundation>. For news and announcements about the Regional Competitions and the National Finals, follow us on Twitter [@sfoundation](https://twitter.com/sfoundation) (#SiemensComp) and like us on Facebook at [Siemens Foundation](https://www.facebook.com/SiemensFoundation).

*Interviews, video and photos available by
visiting <http://siemensusa.synapticdigital.com/US/Siemens-Foundation>.*

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About the Siemens Foundation

The [Siemens Foundation](https://www.siemens-foundation.org) has invested more than \$90 million in the United States to advance workforce development and education initiatives in science, technology, engineering and math. The Foundation's mission is inspired by the culture of innovation, research and continuous learning that is the hallmark of Siemens' companies. Together, the programs at the Siemens Foundation are closing the opportunity gap for young people in the U.S. when it comes to STEM careers, and igniting and sustaining today's STEM workforce and tomorrow's scientists and engineers. For further information, visit www.siemens-foundation.org or follow [@sfoundation](https://twitter.com/sfoundation).

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teaching and learning with award-winning digital textbooks, multimedia content, professional development, and the largest professional learning community of its kind. Serving 4.5 million educators and over 50 million students, Discovery Education's services are in half of U.S. classrooms, 50 percent of all primary schools in the UK, and more than 50 countries. Discovery Education partners with districts, states and like-minded organizations to captivate students, empower teachers, and transform classrooms with customized solutions that increase academic achievement. Discovery Education is powered by Discovery Communications (NASDAQ: DISCA, DISCB, DISCK), the number one nonfiction media company in the world. Explore the future of education at www.discoveryeducation.com.