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WASHINGTON, CALIFORNIA STUDENTS WIN REGIONAL SIEMENS COMPETITION AT CALIFORNIA INSTITUTE OF TECHNOLOGY

Regional Winners Move on to Final Phase of Competition: National Finals in Washington, D.C.
Sriharshita Musunuri (Mill Creek, WA) Wins Top Individual Honors;
Anlin Zhang, Rachana Madhukara and Kevin Ren (San Diego, CA) Win Top Team Honors

ISELIN, NJ, November 13, 2017 –Four 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 Siemens Competition is the nation's premier science research competition for high school students and promotes excellence by encouraging students to undertake individual or team research projects. For more information go to: www.siemens-foundation.org

Sriharshita Musunuri from Mill Creek, WA, earned top individual honors and a $3,000 scholarship for designing a new polymer nanoparticle that could diagnose and treat a deadly form of sepsis caused by bacterial infections. **Anlin Zhang**, **Rachana Madhukara** and **Kevin Ren,** all from San Diego, CA shared the $6,000 team scholarship for research that created a new mathematical model to more precisely analyze the spread of infectious disease. They were among 101 students overall selected to compete in regional competitions across the country this month out of a pool of more than 1,860 projects submitted for the competition.

These regional winners now move to the final phase of the Siemens Competition to present their work at the National Finals in Washington, D.C., December 4-5, 2017, where $500,000 in scholarships will be awarded, including two top prizes of $100,000. All of the finalists will receive at least $25,000 in scholarship money.

The students presented their research this weekend to a panel of judges at The California Institute of Technology, host of the Region One Finals.

“These students have produced incredibly high-quality research on some of the most complex issues we face today,” said David Etzwiler, CEO of the Siemens Foundation. “We are proud of the work these high school students are conducting to solve difficult challenges and improve the lives of people around the world.”

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. The competition, administered by Discovery Education, develops a pipeline for the nation's most promising scientists, engineers and mathematicians.

The Winning Individual for Region One

Sriharshita Musunuri, a senior from the Henry M. Jackson High School, in Mill Creek, WA, won the individual category and a $3,000 scholarship for her project titled, "Computational and Experimental Design of MIP Nanoparticles: A Novel Theranostic Solution to Detect and Neutralize Endotoxins."

Sriharshita's project addresses a difficult challenge faced in U.S. hospitals every day: gram-negative bacteria that causes sepsis which can cause organ failure in patients, and is the leading cause of death in US hospitals. Lipopolysaccharides (LPS) are harmful biomolecules found on the surface of gram-negative bacteria and are responsible for over 50% of sepsis cases. Shriharshita designed a new polymer nanoparticle that captures the harmful LPS bacterial endotoxins and could be used to treat and diagnose the bacterial infection.

"Sriharshita's research leads to faster diagnostic testing in clinical settings that could reduce patient deaths from sepsis," says Dr. Brittany Needham, a postdoctoral scholar at Caltech. "She approached this problem in a far more comprehensive way than others have and her method was particularly impressive. She figured out a way not only to detect this life-threatening bacteria, she also found a way to help prevent it."

Past efforts to detect and extract LPS effectively have been hampered by high costs or incompatibility with human body fluids. Sriharshita's research could make it easier to detect the presence of LPS and prevent the resulting endotoxic shock syndrome that can lead to sepsis, multiple organ failure, and death.

Sriharshita is also the founder of a non-profit organization that raises sepsis awareness called InflammAid. She is also a Davidson Fellow Laureate, a 2-time Intel ISEF finalist, winning Best-of-Category in Physical Energy and the Innovation Exploration Award for her work on thermoelectrics.

Sriharshita's mentor is Christopher Lausted at the Institute for Systems Biology.

The Winning Team for Region One

Anlin Zhang, Rachana Madhukara and **Kevin Ren** from San Diego, CA won the team category and will share a $6,000 scholarship for their project entitled, "Epidemic Dynamics on Symmetric Networks."

Anlin, Rachana and Kevin applied mathematical models to better identify and analyze the movement of dangerous infectious disease. Recognizing the role that social interactions and social cliques, like families, groups or cities, play in the spread of disease, they created a new mathematical model to more precisely analyze the spread of infectious disease. The threat of disease epidemics continues to be a global concern, and emergency preparedness and public health experts are constantly looking for

innovations in the way they assess, track and predict the spread of health crises like Ebola, SARS, cholera and other diseases.

"The results provide novel insights into the fascinating topic of how diseases spread that should concern us all, as we are more closely linked as humans than ever before," said Dr. Richard Küng, a postdoctoral scholar in the Department of Computational and Mathematical Sciences at Caltech. "This work combines creativity in model design with a rigorous mathematical analysis. Typically the more realistic the model, the more complicated it is, but what was so remarkable about this project was that they were able to make models that are both realistic and simple enough to provide novel insights in how diseases may spread from a single patient and location like a child at school, to other children at the same school, to parents, and on to other cities, states and countries."

Anlin Zhang, a senior at Canyon Crest Academy in San Diego, CA, loves math. Her 9th grade math teacher sealed the deal for her when he introduced her to the endless possibilities behind every math problem. She qualified for the USA Math Olympiad, and now mentors local elementary and middle school students in the Science Olympiad programs. Anlin is the president of her high school's Girls@ Expii, an initiative to encourage girls' growth in math. She is also president of the Linguistics club and an officer of the Math Team, Girls Learn International and Human Rights clubs. Anlin enjoys dancing, playing piano and drawing. She hopes to pursue a career in applied math, such as statistics, biomathematics and computational math because she wants to use her math skills to make a real-world impact.

Rachana Madhukara, a sophomore at Canyon Crest Academy in San Diego, CA, wants to be a math pioneer just like her role model, Sophie Germain, one of the first women mathematicians. Besides her interest in math, she is an avid fencer, plays the violin, sings Indian Classical Carnatic music and works with children who are disabled. She took first place and received a scholarship in the Mathematics Senior Division of the California State Science Fair, and was a Broadcom Masters semifinalist. She speaks Kannada, Spanish and reads Braille.

Kevin Ren, a senior at Torrey Pines High School in San Diego, CA, was first exposed to STEM by his grandmother who is a driving force in his life. They used to sit together for hours doing math problems from Chinese textbooks ranging from elementary school math to calculus. She trained his critical thinking and problem-solving abilities in ways, he says, not tested in the classroom. His middle school teacher, Mr. Vaughn, inspired his math talent and motivated him to give back to the community. Kevin has become a teacher giving younger students the gift of passion for math. Kevin also enjoys physics, Quiz Bowl, chess, piano, swimming and basketball. One day, he hopes to be a mathematics professor.

The team's mentor is Dr. Laura Schaposnik of the University of Illinois at Chicago

Regional Finalists

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

Regional Finalists in the individual category were:

- **Arnob Das**, Jesuit High School, Portland, OR
- **Sohini Kar**, Saratoga High School, Saratoga, CA
- **Muhammad Rahman**, Westview High School, Portland, OR
- **Pushkar Shinde**, Oregon Episcopal School, Portland OR

Team Regional Finalists were:

- **Charles Huang**, Lynbrook High School, San Jose, CA and **Ethan Hsiao**, Cupertino High School, Cupertino, CA
- **Arjun Subramonian**, Monta Vista High School, Cupertino, CA and **Kelly Ho**, Cupertino High School, Cupertino, CA
- **Alexander Wang**, Dougherty Valley High School, San Ramon, CA; **Thomas Chen**, Mission San Jose High School, Fremont, CA, and **Kevin Gao**, Amador Valley High School, Pleasanton, CA
- **Guanpeng "Andy" Xu**, Phillips Academy, Andover, MA and **Wendy Wu**, Phillips Academy, Andover, MA

The Siemens Competition

For the 2017 Siemens Competition, 1,860 projects were submitted for consideration. 491 students were named Semifinalists from which 101 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: Massachusetts Institute of Technology (November 4); University of Notre Dame (November 4); The University of Texas at Austin (November 11); California Institute of Technology (November 11); and Georgia Institute of Technology (November 18); and Carnegie Mellon University (November 18).

Winners of the regional events will advance to the National Finals to be held at The George Washington University in Washington, D.C., December 4-5, 2017, where $500,000 in scholarships will be awarded, including the two top prizes of $100,000 and one of the most prestigious science honors awarded to high school students in the country today.

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 up-to-date news and announcements about the Regional Competitions and the National Finals, follow us on Twitter @SFoundation and Instagram @SiemensFdn (#siemenscomp) and like us on Facebook at SiemensFoundation.

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

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The Siemens Foundation has invested more than $100 million in the United States to advance workforce development and education initiatives in science, technology, engineering and math. The Siemens 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 helping close 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

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