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## **Four teen-agers at head of the class | Their science exhibits judged the best, win fair sweepstakes:[7,1,2,6 Edition]**

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**Full Text** (1012 words)

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Fifteen-year-old Sonia Gupta, fascinated by diseases and the mutations that cause them, decided last November to spend the following months in the company of fruit flies.

Five days a week, three to four hours a day after school, Sonia worked at a UCSD lab engineering genetically mutant flies and studying how those mutations altered their wings.

Then the sophomore at Torrey Pines High School in Del Mar analyzed the DNA signatures of mutant flies to identify where in each fly's genetic code the mutation is imprinted.

Her work, fit for a graduate student, won her one of four senior division sweepstakes awards at this year's Greater San Diego Science & Engineering Fair. Four other students won junior division sweepstakes.

More than 750 students entered the 48th annual fair, which continues through Sunday at the Balboa Park Activity Center, 2145 Park Blvd. Family Day, with San Diego Zoo ambassadors, science shows, a scavenger hunt and raffle prizes, is scheduled today from 10 a.m. to 5 p.m.

With so many outstanding entries, judges chose 106 students, including the eight sweepstakes winners, to compete in the California State Science Fair on May 20-21 in Los Angeles.

Senior sweepstakes winners were Sonia, Torrey Pines High School junior Hanna Wisniewska, Mount Everest Academy freshman Noel Lopez, and La Jolla High School sophomore Harish Khandrika.

This year's science fair was Sonia's first. But the accomplished student, who plays varsity tennis and piano, already has distinguished herself at a summer program for gifted students at Johns Hopkins University and at another summer program in England.

To find a lab for her research, Sonia said she opened the telephone book and searched the Internet, calling researchers until one of them, UC San Diego biology Professor Ethan

Bier, agreed to allow her to work at his lab as an intern.

The experience exhilarated her, leading the young student to think about a career in genomic research.

"I've always been interested in mutations, because that's what causes diseases," Sonia said.

Hanna, 17, from Carmel Valley, attends the same college-level chemistry class at Torrey Pines High as Gupta. She landed an internship at the Ferring Research Institute in La Jolla to conduct her research.

She wanted to study peptidic drugs. Naturally occurring peptides, or molecularly bonded groups of amino acids, play a large role in the body's hormones, regulating vital functions in the body.

But the molecular bonds of peptides are vulnerable to being broken by the body's enzymes, so Hanna wanted to study how such drugs can be better stabilized during their manufacture to prevent their breakdown in the digestive tract.

Hanna found that by slightly altering the drugs' structure, she could make them more stable. She concluded, however, that more studies are needed to see if those changes might alter the drugs' effectiveness.

Born in Poland, Hanna moved with her family to the United States five years ago, and has learned her flawless English since then. Her work for the fair won her the sweepstakes award and also a trip to Taiwan sponsored by the Taiwanese American Foundation of America.

"I was not expecting to win it," she said of her project. "This is the first time I've done the science fair."

Hanna, who sings in church with her father, helps coordinate local Polish festivals and participates in school theater. She said she wants to be a patent lawyer for new biomedical advances.

"This made me see there's lots of possibilities in science I didn't know about."

Noel, a San Diego resident who wants to be an inventor, showed the fair's judges three electric motors he designed, each one more efficient than the other, and all more efficient than a commercially available design.

The 15-year-old freshman at Mount Everest Academy, an independent- study school in the San Diego Unified School District, was schooled at home for many years before joining the academy.

"When they announced it, I was crying," said his proud mother, Lori, who prepared him for high school at home. Noel's father is a shoemaker.

Noel researched his project -- to make better electric motors for any purpose -- using basic textbooks and opening up small, basic electromagnetic motors to see how they're made.

"I really worked hard, and I succeeded," he said.

Noel is a Renaissance man in the making. He plays the keyboard, composes his own tunes, acts, performs Mexican folk dances and writes poetry.

"I'm hoping he'll be the next da Vinci," said his mother.

For his work at the fair, Noel was chosen to compete at the Intel International Science and Engineering Fair in May in Kentucky.

Harish, from La Jolla, was nowhere to be found the day after he won his senior sweepstakes award. He was presenting his project to the Junior Science and Humanities Symposium in Los Angeles.

Harish worked at UCSD's Center for Astrophysics and Space Sciences analyzing satellite data to study radiation from distant supernova explosions.

He studied the decay of radioisotopes streaming from the supernovae through space toward Earth, learning about the origin of elements in the universe and how they are reprocessed into new stars and planets.

Harish, with Noel, will advance directly to the international science competition in Kentucky.

Major sponsors for the 48th annual fair, which began Wednesday, include The San Diego Union-Tribune, Qualcomm, Balboa Park, the San Diego County Water Authority, Agouron Pharmaceuticals, the Reuben H. Fleet Science Center, the Biomedical Research Institute of America, and Intel.

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#### **[Illustration]**

4 PICS; Caption: 1. Hanna Wisniewska, 17, (left) and Sonia Gupta, 15, posed for a photo near Hanna's exhibit. The two Torrey Pines High students were sweepstakes award winners. 2. Noel Lopez, 15, won in the sweepstakes with an engineering project called Original Electric Motor Designs. (Eds. 1,7) 3,4. Rebecca Levin (left) and Katherine Stephens-Doll, both 14, were among the junior division sweepstakes winners, Rebecca with a medicine and health entry and Katherine with a physics project. Rebecca attends La Jolla Country Day School; Katherine, the Children's Creative and Performing Arts Academy. (B- 3:1,7; B-2:6); Credit: 1,2,3,4. Laura Embry / Union-Tribune photos

Credit: STAFF WRITER

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People: Gupta, Sonia, Wisniewska, Hanna, Lopez, Noel, Khandrika,  
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